FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

KILLYCRONAGHAN CLOSED LANDFILL REMEDIATION PROJECT

Natura Impact Statement

Prepared for:

Monaghan County Council

Monaghan County Council

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KILLYCRONAGHAN - NATURA IMPACT STATEMENT

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Abstract: Fehily Timoney and Company is pleased to submit this Natura Impact Statement to Monaghan County Council to inform them in carrying out their statutory obligations relating to the Habitats Directive requirement for Appropriate Assessment for plans and projects seeking consent. 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) was commissioned by Monaghan County Council to provide a Natura Impact Statement for the remediation of a closed landfill at Killycronaghan, Co. Monaghan.

This report has been prepared to inform the competent authority in completing their statutory 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 (as amended), and Part XAB of the Planning and Development Act, 2000 (as amended).

1.1 Legislative Context

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive) provides legal protection for habitats and species of European importance. The Directive requires that where a plan is likely to have a significant effect on a European Site, while not directly connected with or necessary to the nature conservation management of the site, it will be subject to 'Appropriate Assessment' to identify any implications for the European site in view of the site's Conservation Objectives. Specifically, Article 6(3) of the Habitats 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.*

The provisions of Article 6(3) do not apply where the proposed plan or project is '*connected with or necessary to the management of the site*'. In this case, the proposed remediation works on the closed landfill site are not directly connected with or necessary to the management of any European site(s).

Article 6(3) of the Habitats Directive is implemented by the provisions of sections 177U and 177V of the Planning and Development Act, 2000 (as amended). Article 177U requires that before consent is given, the competent authority must carry out a screening for appropriate assessment to assess, in view of best scientific knowledge, if the development, individually or in combination with another plan or project is likely to have a significant effect on the European site. If it cannot be excluded, on the basis of objective information, that the proposed remediation works, individually or in combination with other plans or projects, will have a significant effect on a European site, an appropriate assessment of its implications for the European Site(s) in view of the Site's conservation objectives is required to be carried out.

1.2 Methodology

The assessment was conducted 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 (European Commission, 2001);
- 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 (European Commission, 2021);
- 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) (Environment Heritage and Local Government, 2010);
- Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission (2019). 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, 2021).

1.2.1 Process

The NIS as presented has been developed to address these requirements 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 adverse effects, mitigation measures and residual effects.

The potential for in-combination effects with other plans and projects is also assessed having regard to the identified impacts of the proposed landfill remediation works.

Having regard to the European Commission Communication on the Precautionary Principle (European Commission, 2021) the:

> *"absence of scientific evidence on the significant negative effect of an action cannot be used as justification for approval of this action. When applied to Article 6(3) procedure, the precautionary principle implies that the absence of a negative effect on Natura 2000 sites has to be demonstrated before a plan or project can be authorised. In other words, if there is a lack of certainty as to whether there will be any negative effects, then the plan or project cannot be approved."*

The European Commission Notice (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 in-combination 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).

1.2.2 Information Consulted in the Preparation of this Report

A desk study was carried out to collate available information on the closed landfills natural environment. This comprised a review of the following publications, data and datasets:

- Environmental Protection Agency (EPA) (on-line map-viewer including the Appropriate Assessment Tool)[1];
- Department of Housing, Planning, and Local Government- EIA Portal;
- National Parks and Wildlife Service – online European site network information, including site conservation objectives[2];
- National Parks and Wildlife Service – Information on the status of EU protected habitats and species in Ireland (including Article 17 and Article 12 Reports);
- National Biodiversity Data Centre[3].
- Monaghan County Development Plan 2019-2025 (Monaghan County Council, 2019).

An ecological walkover survey was carried out at the site on the 14th of May 2022 by an independent Ecologist engaged by FT (see Appendix 3 for full report). The survey consisted of walking the site. Note was taken of habitats, invasive floral species, mammal signs (including Otter), fish habitat suitability, potential bat roosts and birds present on site, as well as by the Kilgormly stream and Magheramey River near the site.

1 https://gis.epa.ie/EPAMaps/ Accessed 08/06/2023.

2 www.npws.ie Accessed 08/06/2023

3 www.biodiversityireland.ie Accessed 08/06/23

2. PROJECT DESCRIPTION

2.1 Background

Monaghan County Council (MCC) is responsible for the remediation of Killycronaghan Closed Landfill in accordance with a Certificate of Authorisation (CoA) for the site (Licence number: H0366-01). The CoA was issued to MCC by the Environmental Protection Agency (EPA) under Regulation 7(6) of the Waste Management (Certificate of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008.

Condition 3 of the CoA requires MCC to implement remediation works to this closed landfill in order to ensure *"..proper closure of the activity ensuring protection of the environment"*.

To enable MCC undertake the remediation condition set out in the CoA, an application under Section 177AE of the Planning and Development Act 2000 (as amended) is required. The EPA during their approval of the CoA screened in the project for Appropriate Assessment, hence an application under Section 177AE is required.

It was previously reported by MCC that the closed landfill accepted waste throughout the 1970s, ceasing in 1984.

2.2 Existing Environment

2.2.1 Project Location and Site Description

Killycronaghan Closed Landfill is located within the townland of Killycronaghan (see Figure 2-1 for site location). The application site is 3.75 hectares (ha) in size. This site is approximately 8 km northeast of Clones town, 1.7 km southwest of the village of Smithborough and 1 km from the N54 national road. The site is accessed from local road L2151 which partially adjoins the eastern boundary of the site. The proposed landfill capping boundary is 74 m from the L2151.

The site is located within a primarily rural setting in an area of rolling topography dominated by drumlins.

Waste deposited at the site comprised of municipal solid waste (MSW) to a maximum depth of 4.8m below ground level (BGL). The closed landfill is currently covered with topsoil which supports improved agricultural grassland.

The site is surrounded by agricultural land with poultry buildings located within the eastern area of the site, close to the site entrance. The land use in the area is primarily agricultural with the site currently used for pasture.

The site is partially bounded to the north, east and southeast by the Kilgormly stream. The Magheramey River partially adjoins the site to the northwest. Surface water ditches bound the site to the southwest. The site is located within the catchment of the River Erne, with all local surface water entering the Lough Erne lake system approximately 18 km to the west.

There are several small lakes located in the vicinity of the site. Coaghen Lough is located approximately 0.9 km to the east of the site. Two smaller unnamed lakes are located approximately 0.5 km and 0.7 km east of the site, while Lough Oony is located approximately 1. 2km northwest of the site.

There are no dwelling houses located within 100 m of the site although there is poultry housing approximately 80 m north of the east boundary.

2.2.2 Desktop Study

The site is located within the 10 km grid square H52 and the 2k m grid square H52U. There were no non-native invasive flora within the site boundary or the 2km search radius held in the NBDC dataset.

There are no records of Otter (*Lutra lutra*) in the NBDC data set in the 2 km grid square the site is located in.

There are no records of Whooper Swan (*Cygnus cygnus*) in the NBDC data set in the 2 km grid square the site is located in.

2.2.3 Habitats

There are no habitats within the closed landfill site that conform to those listed under Annex I of the EU Habitats Directive.

Within the site boundary the only habitat type is improved agricultural grassland (GA1). This habitat is dominated by rye grass and is heavily fertilised. Other species present include dandelion *Taraxacum vulgaria*, white clover *Trifolium repens*, broad-leaved dock *Rumex obtusifolius*, and greater plantain *Plantago major*. Adjacent to the site boundary there is a small grove of broadleaved woodland (WD1) and a short treeline (WL2) on the hill to the south west well away from the buried waste. There was a small wetland area outside the west corner of the site boundary; this was heavily drained and quite species poor but included abundant rushes *Juncus sp.* in addition to grasses such as Yorkshire-fog *Holcus lanatus*, creeping bent *Agrostis stolonifera*, and plants such as creeping buttercup *Ranunculus repens*, marsh thistle *Cirsium palustre*, water mint *Mentha aquatica* and cuckooflower *Cardamine pratensis*.

No invasive botanical species were found within the red line boundary during the site visit on the 14th of May 2022.

2.2.4 Otter (*Lutra lutra*)

No Otter holts or features likely to be used as holts were found within 200 m of the site boundary. A total of six regular sprainting spots were found within 200m of the site boundary. At least four sprainting spots are considered territorial marking spots, as they are located at landmarks along the river system. Of these three spraints were located at bridges and one at a confluence. At four locations along the Magheramey River otter footprints were found.

2.2.5 Kingfisher (*Alcedo atthis*)

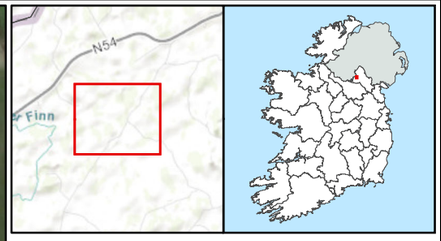
An active Kingfisher nest was located in a clay bank along the Kilgormly stream ~150 m from the site boundary. The Kilgormly stream was assessed as sub-optimal for Kingfisher foraging activities due to its shallowness and small size. The adjacent Magheramey River provides much more suitable foraging habitat and perches. Therefore, it is likely that Kingfisher chose the nesting site at the Kilgormly stream due to its elevated nature and commutes to the Magheramey River for foraging. The Kilgormly stream is ~20 m from the site boundary at the closest point and there is a risk of disrupting connectivity of nesting Kingfisher from their foraging habitat due to disturbance from the works.

2.2.6 Fish habitat

The Kilgormly stream within the vicinity of the site is made up of two stretches which are quite different in nature. The lower stretch begins at the Magheramey stream and extends upstream to a bridge which has been identified as a possible barrier to fish passage as the stream is forced the underground and there is a build-up of debris at this feature. This lower stretch has a low gradient which results in a lower flow velocity and a greater deposition of fine sediment (silt, sand and fine gravel). This stretch has been over-widened by mechanical means, and this, in combination with the presence of fine particulate matter, has resulted in the growth of emergent macrophytes, particularly branched bur-reed *Sparganium erectum*, some of which have colonised the width of the channel, and some of which is growing in a braided channel manner. Riparian vegetation is of a low grassy nature, and this section is largely free of tree/shrub type riparian vegetation. Minnow *Phoxinus phoxinus* and three-spined stickleback *Gasterosteus aculeatus* were observed in moderate to low numbers in the lower stretch of the stream. The habitat is considered to be optimal for three-spined stickleback due to the presence of aquatic vegetation and slow moving water. There is a large amount of lamprey ammocoete habitat present within this stretch, however, there is very little optimal spawning habitat for lamprey species, and so the presence of a potential barrier to fish passage at the upstream end of this stretch governs the degree to which it is colonised. If this barrier is generally passable to upstream migrating spawning adults, then a population is likely as the young drift downstream to colonise, however if it is generally not passable to upstream migrating spawning adults then a good population is unlikely. Trout *Salmo trutta* were present and are free to move up and down to the Magheramey depending to water levels.

The upper stretch of the Kilgormly stream begins at the possible barrier to fish passage and continues upstream past the site. This stretch is characterised by a steeper gradient and extensive tree/shrub type riparian vegetation. The steeper gradient results in more diverse instream habitats as well as larger riverbed sediment ranging from sand through gravel to cobble. There is more spawning opportunity for trout and lamprey. There is little lamprey ammocoete habitat present. Good juvenile trout habitat was recorded with some pockets of optimal adult trout holding habitat. Riparian cover is good which benefits water quality and fish habitat, as well foraging opportunities for otter. The Magheramey river is a heavily modified watercourse and is part of the OPW arterial drainage scheme. This section of the channel is either partially or completely man made, and it is likely that the valley once supported an extensive wetland before the drainage scheme was carried out. The watercourse has a very low gradient, and the valley is broad and flat with emergent drumlin features scattered throughout. Instream habitats in the main channel are characterised as being slow moving deep glide, with very little habitat diversity. As such, no spawning habitat was found for salmonid and lamprey species, and it is likely that there is very little suitable spawning habitat in the main channel within a few kilometres, with the resident trout and lamprey most likely spawning in the tributary streams which feed into it. Pike *Esox lucius*, perch *Perca fluviatilis*, roach *Rutilus rutilus*, bream *Abramis brama* European eel *Anguilla anguilla*, trout and salmon *Salmo salar* are all present in the Earne system which the Magheramey is part of. All of these species are likely to inhabit the Magheramey, however the European eel is likely present in very low numbers and the Atlantic salmon is likely present in very low numbers if at all. Additionally, the rare and protected pollan *Coregonus autumnalis pollan*, only occurs in five large lowland waterbodies: Lower Lough Erne, Lough Neagh, Lough Allen, Lough Derg and Lough Ree; this is a lake dwelling species and so would not be found in the Magheramey river.

Path: R:\Map Production\2022\P22-071\Workspaces\P22-071_GIS_Fig2-1_Site_Location_A3.mxd



Legend

Site Boundary

TITLE:	Aerial Photography Site Location		
PROJECT:	Killycronagahn		
DRAWING NO:	2.1		
CLIENT:	Monaghan County Council		
SCALE:	1:5000	**REVISION:**	0
DATE:	09/06/2023	**PAGE SIZE:**	A3

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2.3 Project Description

2.3.1 Purpose

MCC are seeking the approval of An Bord Pleanála for the completion of Closed Landfill Remediation Works at a Closed Landfill site in Killycronaghan, County Monaghan.

Construction of an engineered cap is required to isolate the waste body from rainfall inputs which contribute to leachate generation which has the potential to contaminate surface and groundwaters. The proposed engineered cap will also be designed to minimise the risk of landfill gas migration. The proposed capping area within the site is 2.6 ha in size.

2.3.2 Project Overview

The remediation works will include:

- The development of a site access;
- The development of a temporary site compound and office area;
- Site clearance, including the removal of an existing gate, existing timber post and wire fencing and clearance of existing vegetation;
- Grading/profiling of the existing site area;
- Installation of an engineered landfill capping system covering an area of 2.6 ha;
- Installation of surface and subsurface surface water drainage infrastructures;
- Installation of passive landfill gas management infrastructure;
- The installation of stock proof fencing, and a new access gate on-site;
- Landscaping of the final formation of the capping area using a high value native grass cover;
- Post completion of the remediation works ongoing environmental monitoring and maintenance of the engineered cap and onsite drainage system will be required.

2.3.3 Construction Phase

The construction period for the proposed development will be 6-8 months.

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 between 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.

2.3.3.1 Development of a Site access

Existing access to the site off the L2151 will be extended to the proposed temporary site compound and will be re-surfaced with Clause 804.

2.3.3.2 Development of Temporary Site Compound and Office Area

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

Generators will be used on-site for power supply during the temporary works. Water will be provided via water tankers. Mobile on-demand fuelling will be utilised for refuelling plant.

Periodic road sweeping will be required where necessary.

2.3.3.3 Site Clearance

Overgrown vegetation on site will be cut back, mulched and re-spread on-site.

2.3.3.4 Grading/Profiling of Existing Profile

The existing waste body was covered following cessation of waste filling with a soil cap.

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

- Surface and sub-surface drainage;
- Safe execution of the site remediation works;
- Safe access for maintenance of the cap.

Re-profiling will principally involve the (shallow) cutting of material at local high spots. These “cut” materials will be used as “fill” in local depressions. All cut and fill works will be carried out within the site boundary. All excavated material will be reused on-site, no excavated material will leave the site.

Thereafter imported granular “dust” material 50mm to 100mm thick will be used to provide formation for the engineered cap. Across the proposed capping boundary (2.47 ha or 24,700 m^2, 1,235 – 2,470 m^3 of material will be required.

The re-profiled surface will provide the foundation for the engineered landfill cap (Drawing Reference: P22-071-1300-0001 and P22-071-1300-0002).

2.3.3.5 Installation of Engineered Landfill Capping System

The engineered landfill cap "barrier" system will:

- Cover an area of approximately 24,700 m²;
- Isolate the waste body from rainfall inputs which might otherwise produce leachate. This will protect underlying ground water 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 engineered cap shall comprise of the following:

- Vertical standpipes;
- A passive below liner landfill gas venting system;
- A 1 m LLDPE barrier to isolate the waste body from rainfall inputs and prevent uncontrolled fugitive gas emissions from the waste body;
- Over liner gas management system;
- A subsurface drainage system;
- A surface drainage system;
- A subsoil layer average thickness 800 mm;
- A topsoil layer average thickness 200 mm barrier.

Below Liner Landfill Gas System

Currently landfill gas as may be present vents to atmosphere via diffuse surface emissions and lateral migration. 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 as may be present to a series of vertical standpipes venting to atmosphere at 2-3 m above the final ground level via passive ventilation.

The below liner gas collection geocomposite is a cuspated synthetic product that is 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 released to the atmosphere via solid HDPE pipes.

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 about the perimeter of the site.

Subsurface Drainage

The over liner sub surface drainage collection geocomposite is a cuspated synthetic product that is rolled out above the LLDPE barrier. It forms a "cavity" to intercept rainfall inputs into the cap. Subsurface drainage flows from the drainage geocomposite are transferred via supporting pipework system to a surface drainage system at the tow of the cap and ultimately to the downstream watercourse via a precast or cast insitu concrete headwall.

Surface Drainage

French drains around the capping perimeter will collect and direct surface water runoff to the receiving watercourses. Proposed French drains will be provided with 300 mm diameter HDPE SDR 17 slotted pipes.

Subsoil Layer

Suitably sourced subsoils will then 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 800 mm deep.

The purpose of the subsoil layer will be to protect the synthetic geocomposite materials 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 seeding.

The topsoil layer will be 200 mm deep.

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

2.3.3.6 Temporary Works

Leachate Management

Storage tanks 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.

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.

Odour Management

Odour management is not expected to be an issue as the waste is older than 25 years and the works have been designed to reduce the risk of exposing waste.

In the event that it is exposed, waste will be covered up at the end of each working day.

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.

Stock Proof Fencing

Following placement of the cap a perimeter stock proof fence 1.3 m high will be installed around the landfill footprint.

The access gate to the site will be installed. Redundant fences and gates will be transported and disposed of offsite in a licenced facility.

2.3.3.7 Permanent Works: Management and Monitoring Infrastructure

Vertical Standpipes

Vertical standpipes shall be installed within the waste body prior to reprofiling works. The arisings will be placed in dedicated low spots on site prior to re-profiling and covered at the end of each working day to minimise odour nuisance. The vertical standpipes will provide a preferential pathway for LFG to escape to atmosphere minimise risks associated with migration to offsite receptors.

Standpipes diameter will comprise a slotted HDPE pipe with a gravel surround.

Installed ventilation standpipes will include a carbon filtration packs to "scrub" any odour and low concentrations of methane from the landfill gas prior to venting. Wind driven rotating cowls will also be used to induce a negative pressure within the standpipe improving potential LFG flow.

Installation of Landfill Gas/Leachate Management Infrastructure

New monitoring wells (3 no. groundwater and landfill gas monitoring and 3 no. leachate monitoring wells; each up to ca. 20m deep, ca. 1m high and 100m wide) will be installed to monitor landfill gas, leachate, and groundwater. Arisings from boreholes will be managed 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.

Existing wells (3 no. groundwater and landfill gas monitoring wells) as are present outside of the waste footprint will be retained to support future environmental monitoring as may be required by the EPA.

Grass Cover/Landscaping for Pasture

Post capping and placement of the subsoils and topsoil layers it is proposed to landscape the site 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.

2.3.4 Operational Phase

The operational/post construction works will include:

- Ongoing environmental monitoring in accordance with the CoA;
- Ongoing maintenance of engineered cap and drainage systems on-site.

2.3.4.1 Environmental Monitoring

Monitoring staff will be required to access installed infrastructure (wells and surface water monitoring locations) to take samples and monitor gas quality during the aftercare period post construction in accordance with Schedule 3 of the CoA.

2.3.4.2 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.

2.3.4.3 Maintenance of Surface Water Perimeter Drains

Surface water perimeter drains will be maintained by cutting vegetation using strimmers, flails or similar.

2.3.4.4 Maintenance of Below Ground Dual Purpose Gas and Sub-surface Pipework

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

3. NATURA IMPACT STATEMENT

3.1 Introduction

Monaghan County Council has sought a Certificate of Authorisation (CoA) from the EPA for the remediation of the historic landfill at Killycronaghan Closed Landfill.

The EPA has concluded in it's Screening for Appropriate Assessment Determination:

> *The activity is not directly connected with or necessary to the management of my European Site and the Agency considered, for the reasons set out below, that it cannot be excluded, on the basis of objective information, that the activity, individually or in combination with other plans or projects, will have a significant effect on any European Site and accordingly determined that an Appropriate Assessment of the activity was required.*

The reason for this determination is as follows:

> *There is a hydrological connection between the closed landfill and Upper Lough Erne NI SPA (Site Code: UK9020071), Upper Lough Erne NI SAC (Site Code: UK0016614) and Lough Oughter and Associated Loughs SAC (Site Code: 000007).*

Leachate is currently produced at the closed landfill site and will continue to do so throughout construction. The works will not disturb the interred waste and there will be no increase in leachate produced during construction. The works proposed will prevent further leachate from entering ground water once complete.

Further consideration is given in this Natura Impact Statement (NIS) to the elements of the proposed landfill remediation works with the potential to adversely affect the integrity of the Upper Lough Erne NI SPA, the Upper Lough Erne NI SAC and the Lough Oughter and Associated Loughs SAC, with respect to the sites' conservation objectives.

Refer to Section 2 for the project description and baseline environment.

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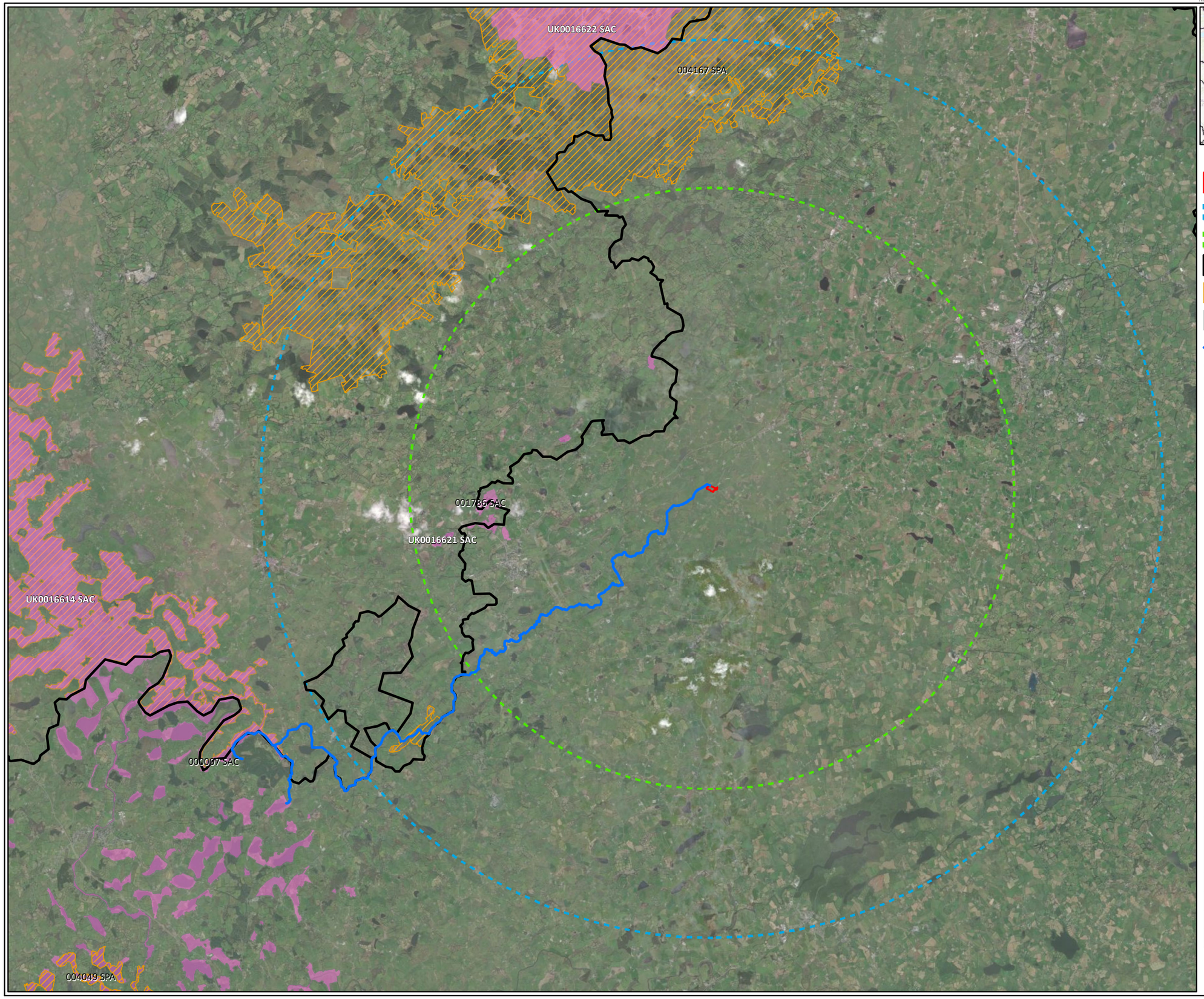

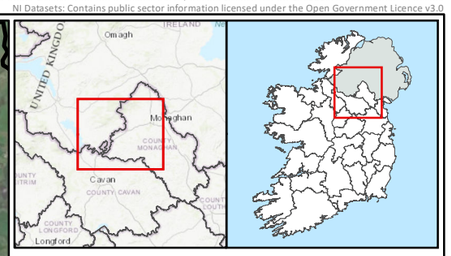

Legend

- Site Boundary
- 15km Site Boundary Buffer
- 10km Site Boundary Buffer
- ROI - NI Border
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Hydrological Pathway

Note: This drawing shows datasets from both Republic of Ireland and Northern Ireland (UK). Credits reflect all datasets that are being used.

N W E S

0 5 10 20 Kilometers

TITLE:	European Sites within Zone of Interest		
PROJECT:	Killycronaghan		
FIGURE NO:	3.1		
CLIENT:	Monaghan County Council		
SCALE:	1:125000	**REVISION:**	0
DATE:	27/06/2023	**PAGE SIZE:**	A3

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3.2 European Sites Description

3.2.1 Lough Oughter and associated Loughs SAC

Lough Oughter and its associated loughs are located in the lowland drumlin belt in northern and central Cavan. The SAC is located ca. 26.9 km downstream of the closed landfill. The site consists of an interconnected maze of about 90 inter-drumlin lakes and 14 basins in the course of the Erne River, with many islands and peninsulas. The site is also hydrologically connected with Upper Lough Erne which is designated as an SAC and SPA in Northern Ireland, and these sites are discussed below.

The Lough Oughter and associated Loughs SAC is designated for Natural Eutrophic Lakes, Bog Woodland and Otter. Additional to these conservation interests, the SAC also contains areas of dry woodland, marsh, reedbed and wet pasture. The site additionally supports populations of water birds including nationally important numbers of Whooper Swan, Tufted Duck and Cormorant, important numbers of Greenland White-fronted Goose, Great Crested Grebe, Wigeon, Teal and Pochard. Snipe, Lapwing and Golden Plover also utilise the wet grassland areas. Part of the area of Lough Oughter and associated Loughs SAC overlaps with Lough Oughter SPA. The SAC and SPA are located ca. 26.4 km downstream of the closed landfill.

The main threats and pressures that may impact the Lough Oughter and associated Loughs SAC are set out in the Natura 2000 Data Form and are presented in Table 3-1:

Table 3-1: Threats, Pressures and Activities with Impacts on the Lough Oughter and associated Loughs SAC as recorded in Table 4.3 of the standard data form[4]

Code	Threats & Pressures	Rank (H-high, M-medium, L-low)	Inside (i)/ outside (o)/ both(b)
A10.01	Removal of hedges and copses or scrub	H	b
B01.02	Artificial planting on open ground (non-native trees)	M	o
E01.03	Dispersed habitation	L	o
G01	Outdoor sports and leisure activities, recreational activities	M	i
H01.04	Diffuse pollution to surface waters via storm overflows or urban run-off	H	o
H01.05	Diffuse pollution to surface waters due to agricultural and forestry activities	H	b
I01	Invasive non-native species	H	b
J02.01.03	Infilling of ditches, dykes , ponds, pools, marshes or pits	L	b
M01.03	Flooding and rising precipitations	H	b

[4] Standard data Form for the Lough Oughter and associated Loughs SAC: N2K IE0000007 data forms (europa.eu) (date accessed 24/05/2023)

Table 3-2: Summary of the potential occurrence of qualifying interests in watercourses connected to the historic landfill site and the Lough Oughter and associated Loughs SAC

Qualifying Interest Code	Item Description	Occurence[5]
1355	Otter (*Lutra lutra*)	Otter range in the Lough Oughter and associated Loughs SAC is estimated at 93.6% (Reid et al. 2013). Otter is a mobile species and during walkover surveys has been found to utilise areas in the Magheramey River and Kilgormly Stream within 200 m of the closed landfill site. This species could be affected by the landfill remediation works due to direct disturbance effects or indirect effects on prey. The in-stream distance between the closed landfill and the SAC is ca. 26.9 km, the general foraging range of otter is ca. 10 km.
3150	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation	The conservation objectives report (see Footnote [5]) for the Lough Oughter and associated Loughs SAC notes that while little is known about the characteristics or ecology of this lake habitat in Ireland, it is considered likely to occur in many or all of the lakes within the SAC. This habitat type could be affected by the landfill remediation works due to effects on water quality.
91D0	Bog woodland	The conservation objectives report (see Footnote [5]) for the Lough Oughter and associated Loughs SAC notes bog woodland is present within the SAC. The minimum area of bog woodland within the SAC is 2.77 ha according to Daly et al. in prep. While Nairn and Duff (1999) recorded 108 ha of birch woodland on peat within the SAC boundary terming it 'potential bog woodland'. This suggests that further areas of bog woodland habitat are likely to be present within the SAC. This habitat is terrestrial, and the hydrological link is too weak for the works to have any potential to affect this habitat type.

[5] Occurrence of species and habitats was informed by the Conservation Objectives of the Lough Oughter and associated Loughs SAC, and some text was taken directly from the Conservation Objectives Report: (CO000007.pdf (npws.ie)) (accessed 25/05/23).

Having regard to Table 3-2 the qualifying interests of the SAC which may potentially be within the zone of influence of the project are:

- Otter (*Lutra lutra*) – Confirmed presence within 200 m of the site, along the banks of the Magheramey River and Kilgormly Stream Upper Lough Erne NI SAC As the SAC is ca. 26.9 km downstream of the landfill site, it is unlikely that the otter associated with the SAC are present near the landfill (otter foraging range is ca. 10 km).
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation - hydrological connection to the closed landfill site

3.2.2 Upper Lough Erne NI SAC

Upper Lough Erne NI SAC is located in the lowland drumlin belt in County Fermanagh and is hydrologically linked with Lough Oughter and associated Loughs in the Republic of Ireland. The site consists of a very large natural eutrophic lake with a multitude of small satellite lakes in a predominantly limestone catchment.

The Upper Lough Erne NI SAC is designated for Natural Eutrophic Lakes, Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles, Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicon albae*) and Otter. Additional to these conservation interests, the SAC also contains areas of molina meadows, alkaline fens and bog woodland. The site additionally supports Atlantic salmon (*Salmo salar*). Most of the area of Upper Lough Erne NI SAC overlaps with Upper Lough Erne NI SPA.

The main threats and pressures that may impact the Upper Lough Erne NI SAC are set out in the Natura 2000 Data Form and are presented in Table 3-3:

Table 3-3: Threats, Pressures and Activities with Impacts on the Upper Lough Erne NI SAC as recorded in Table 4.3 of the standard data form[6]

Code	Threats & Pressures	Rank (H-high, M-medium, L-low)	Inside (i)/ outside (o)/ both(b)
B06	Grazing in forests/woodland	H	i
F03	Hunting and collection of wild animals (terrestrial)	M	i
G01	Outdoor sports and leisure activities, recreational activities	M	i
G02	Sport and leisure structures	M	i
H01	Pollution to surface waters (limnic, terrestrial, marine & brackish)	H	o
H04	Air pollution, air-borne pollutants	H	i
I01	Invasive non-native species	H	i
J02	Human induced changes in hydraulic conditions	H	i

[6] Standard data Form for the Upper Lough Erne NI SAC: UK0016614.pdf (jncc.gov.uk) (date accessed 24/05/2023)

Table 3-4: Summary of the potential occurrence of qualifying interests in watercourses connected to the historic landfill site and the Upper Lough Erne NI SAC

Qualifying Interest Code	Item Description	Occurence[7]
1355	Otter (*Lutra lutra*)	Lough Erne and holds a dense and large population of otters. The surrounding countryside is also rich in relatively unpolluted rivers and lakes and has a high density of semi-natural habitats, especially wetlands, supporting the otter population within the site. This species could be affected by the landfill remediation works due to direct disturbance effects or indirect effects on prey. The in-stream distance between the closed landfill and the SAC is ca. 26.4 km, the general foraging range of otter is ca. 10 km.
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	The extend of this habitat in the Upper Lough Erne NI SAC comprises about 3853.4 ha. The JNCC (see Footnote[7]) notes that Upper Lough Erne in Northern Ireland is a very large natural eutrophic lake situated in a drumlin landscape and is of glacial origin. The lake has a very long shoreline and many satellite lakes, many of which are also included within the SAC. Aquatic vegetation of the *Magnopotamion* and *Hydrocharition* type is extensively developed in the Upper Lough Erne NI SAC. The project has a remote hydrological connection to Lough Erne, and by extension this habitat.
91A0	Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	The extend of this habitat in the Upper Lough Erne NI SAC comprises about 275.49 ha. The JNCC (see Footnote[7]) notes that Upper Lough Erne NI SAC has one of the largest areas of semi-natural woodland remaining in Northern Ireland. Drier soils support mature stands of old sessile oak woods, which are particularly well-developed to the south of Lough Erne. This habitat is terrestrial, and the hydrological link is too weak for the works to have any potential to affect this habitat type.
91E0	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	The extend of this habitat in the Upper Lough Erne NI SAC comprises about 130.56 ha. The JNCC (see Footnote[7]) notes that Upper Lough Erne NI SAC has the most extensive area of alluvial forests in Northern Ireland. The woodland occurs in scattered stands around the edges of the lough, where the shoreline is un-grazed or only very lightly grazed. Fluctuating water levels and variations in exposure, substrate and management have resulted in the formation of a wide range of wet woodland communities. The project has a remote hydrological connection to Lough Erne (ca. 26.4 km in-stream distance), and by extension this habitat, which is hydrologically dependent on and well connected to the Lough.

[7] Occurrence of species and habitats was informed by the JNCC page for the Upper Lough Erne NI SAC, and some text was taken directly from this page: Upper Lough Erne - Special Areas of Conservation (jncc.gov.uk) (accessed 29/05/23).

Having regard to Table 3-4 the qualifying interests of the SAC which may potentially be within the zone of influence of the project are:

- Otter (*Lutra lutra*) – Confirmed presence within 200 m of the site, along the banks of the Magheramey River and Kilgormly Stream Upper Lough Erne NI SAC As the SAC is ca. 26.4 km downstream of the landfill site, it is unlikely that the otter associated with the SAC are present near the landfill (otter foraging range is ca. 10 km).
- Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation - hydrological connection to the closed landfill site
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) - hydrological connection to the closed landfill site

3.2.3 Upper Lough Erne NI SPA

Upper Lough Erne NI SPA largely covers the same area as Upper Lough Erne NI SAC (See 3.2.2 above).

The Upper Lough Erne NI SAC is designated for Whooper Swan (*Cygnus cygnus*). The site is also important for other wetland and waterbirds.

The main threats and pressures that may impact the Upper Lough Erne NI SPA are set out in the Natura 2000 Data Form and are presented in Table 3-5:

Table 3-5: Threats, Pressures and Activities with Impacts on the Upper Lough Erne NI SPA as recorded in Table 4.3 of the standard data form[8]

Code	Threats & Pressures	Rank (H-high, M-medium, L-low)	Inside (i)/ outside (o)/ both(b)
A02	Modification of cultivation practices	L	i
A04	Grazing	H	b
D02	Utility and service lines	M	b
G01	Outdoor sports and leisure activities, recreational activities	L	i
H01	Pollution to surface waters (limnic, terrestrial, marine & brackish)	L	o
M01	Changes in abiotic conditions	H	o
M02	Changes in biotic conditions	M	b

[8] Standard data Form for the Upper Lough Erne NI SPA: N2K IE0000007 data forms (europa.eu) (date accessed 24/05/2023)

Table 3-6: Summary of the potential occurrence of qualifying interests in watercourses connected to the historic landfill site and the Upper Lough Erne NI SPA

Qualifying Interest Code	Item Description	Occurence[9]
A038	Whooper Swan (*Cygnus cygnus*)	Upper Lough Erne NI SPA provides about 3.4 % of the all-Ireland population of Whooper Swan (5 year peak mean, 1991/92 - 1995/96) This species could be affected by the landfill remediation works due to direct disturbance effects or indirect effects on prey. The in-stream distance between the closed landfill and the SPA is ca. 26.4 km, the core foraging range of whooper swan is ca. 8 km.

[9] Occurrence of species and habitats was informed by the Conservation Objectives of the Upper Lough Erne NI SPA, and some text was taken directly from the Conservation Objectives Report: UK9020071.pdf (jncc.gov.uk)(accessed 29/05/23).

Having regard to Table 3-6 the qualifying interests of the SPA which may potentially be within the zone of influence of the project are:

- Whooper Swan (*Cygnus cygnus*) – the site is outside the core foraging range of Whooper Swan (< 5 km) but indirect impacts on water quality could have an effect on this species.

3.3 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 adverse effects of the proposed landfill remediation works are considered in-combination with any other plans or projects within the zone of influence.

3.3.1 Projects with Potential for In-Combination Effects with the Landfill Remediation Works

The projects outlined below have potential for in-combination effects with the proposed remediation works due to the size, scale and/or potential connectivity (pathway) to the landfill site.

The following sources were examined:

- Monaghan County Council planning viewer[10];

A planning search for the past five years was conducted for consented planning applications within a 2 km radius of the landfill site.

There were no projects within a 2 km radius of the landfill site due to the rural context of the site. However, within 5 km of the site a number of projects were approved. The largest is a housing development within a residential area in Smithborough to construct 11 three bedroomed housing units (Planning Reference: 1928, Grant date: 21/11/19). Other developments concern the construction or demolition of farm buildings such as poultry houses or slatted sheds. Construction or demolition of dwelling houses and similar (e.g. school buildings) and extensions were also among the consented developments within 5 km of the closed landfill.

Due to the size and scale of the above projects and distance to the closed landfill, it is concluded that there are no likely significant in-combination effects arising.

3.3.2 Plans

3.3.2.1 Monaghan County development plan

The Monaghan County Development Plan became effective on the 4th of March 2019.

[10] Select Search Type (eplanning.ie) Accessed 29/05/2023

The plan includes several policies for the protection of wildlife and European sites, encouraging the appropriate assessment of potential effects from future development. The implementation of the policies and objectives of the County Development Plan in-combination with the design of the proposed landfill remediation works would have a positive effect for biodiversity in the local area.

The closest town to the closed landfill is Clones. Clones is one of only five towns in Co. Monaghan and targeted for increased employment and retail services for the County along with Ballybay. Clones has experienced a population decline of 5% between 2006 and 2016.

Future developments in the area of Clones which are set out in the Monaghan County Development plan include:

- Target to grow the population of Clones by 20% by 2025
- Development of the town centre for community vibrancy including choice retail and services
- The preparation of a detailed plan for a green infrastructure network

One of the challenges listed in the County Development Plan is that population growth in rural areas exceeded the population growth in towns, a trend the plan endeavours to reverse.

Without mitigation the construction phase of the proposed landfill remediation works could result in an adverse effect to biodiversity, therefore, it would be contrary to the policies and objectives of the aforementioned plans in the absence of mitigation. However, operational phase of the proposed project will have a positive effect on water quality locally in the long term.

3.3.3 Existing practices in the surrounding area

The project site is located within agricultural land in a rural setting. The main threats and pressures which may adversely affect the integrity of the Lough Oughter and associated Loughs SAC, as well as the Upper Lough Erne NI SAC and SPA, set out in the Natura 2000 Data Forms include forestry and agricultural activities as well as pollution to surface water as. In-combination 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 to the Erne River and further effecting the qualifying interests and special conservation interests of the above European sites.

3.4 Potential for Adverse Effects on Site Integrity

The conservation objectives of the Lough Oughter and associated Loughs SAC, as well as the Upper Lough Erne NI SAC and SPA are identified in Section 3.2.

The conservation conditions required by these species/habitats are defined by attributes and targets set out in the Conservation Objectives Reports. No other qualifying interests of the above discussed Natura 2000 sites were determined to be within the zone of influence of the landfill site having regard to the potential for the affected areas to support the special conservation interests and qualifying interests.

NPWS, in their Article 17 reporting (NPWS, 2019) define the favourable conservation status of an Annex I habitat or Annex II species 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 (Habitats Directive) and Annex I species (Birds Directive) is achieved through the maintenance or restoration of conservation status according to the Conservation Objectives of the site.

3.4.1 Potential Adverse Effects

The elements of the proposed landfill remediation works that were identified as posing pressure on the special conservation interests/qualifying interests of the Lough Oughter and associated Loughs SAC, the Upper Lough Erne NI SAC and the Upper Lough Erne NI SPA within the ZoI stated above are identified as:

- Emissions to Water

Sedimentation may result from excavation. Hydrocarbons spilled from machinery could enter the waterways. Concrete washout from the potential insitu casting could enter waterways.

- In-combination effects with other Projects and Plans.

Targets of the Monaghan County Development plan in terms of rural and urban development as well as existing practices in the surrounding area, such as agricultural and forestry activities could lead to in-combination effects on the discussed European sites. These would be connected to water quality impacts.

Assessment of the potential for the proposed works to adversely affect the integrity of the Lough Oughter and associated Loughs SAC are presented hereunder in Table 3-7 and with respect to the qualifying interests which have been identified to be within the likely zone of influence of the project.

Table 3-7: Conservation Objectives and Targets for Relevant Qualifying Interests with Potential for adverse Effects on the Site Integrity of the Lough Oughter and associated Loughs SAC[11]

Species/ Habitat	Conservation Objective	Attribute	Measure	Target	Potential for Adverse Effects on Site Integrity from the Landfill Remediation Works	Potential effect in-combination with other plans or projects	Duration of Effect in the Absence of Mitigation	Conclusion
Otter (*Lutra lutra*)	To maintain the favourable conservation condition of Otter in the Lough Oughter and associated Loughs SAC	Couching sites and holts	Number	No significant decline	These targets do not have the potential to be influenced by the proposed remedial works.	N/A	N/A	No potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 364.4 ha along river banks/lake shoreline/around ponds				
		Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 1,730.6 ha.				
		Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 71.3 km.				
		Barriers to connectivity	Number	No significant increase				
		Distribution	% positive survey sites	No significant decline	Sediment or pollutant emissions arising from proposed remediation works could potentially result in negative effects on fish spawning habitat, thereby reducing fish biomass in otter foraging territories. This in turn could affect the distribution of otter.	Yes Potential to affect these targets by contributing to a cumulative deterioration in water quality exists.	Temporary due to 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.
		Fish biomass available	Kilograms	No significant decline				
Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type Vegetation	To restore the favourable conservation condition of this habitat in the Lough Oughter and associated Loughs SAC	Habitat area	Kilometres	Area stable or increasing, subject to natural processes	This project has no potential to change the habitat area or hydrological regime of the Lough Oughter and associated Loughs SAC.	N/A	N/A	No potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Hydrological regime: water level fluctuations	Metres	Maintain appropriate hydrological regime necessary to support the habitat				
		Habitat distribution	Occurrence	Restore, subject to natural processes	Based on the precautionary principal it has to be assumed that this Annex 1 habitat could occur within the zone of influence of the project. Sediment or pollutant emissions arising from proposed remediation works could potentially result in negative effects on these attributes.	Yes	Temporary - restricted to works period.	There is potential for the project to affect these targets either alone or in combination with other plans and projects.
		Vegetation composition: typical species	Occurrence	Typical species present, in good condition, and demonstration typical abundances and distribution				
		Vegetation composition: characteristic zonation	Occurrence	All characteristic zones should be present, correctly distributed and in good condition				
		Vegetation distribution: maximum depth	Metres	Maintain maximum depth of vegetation, subject to natural processes				
		Lake substratum quality	Various	Maintain appropriate substratum type, extent and chemistry to support the vegetation				
		Transparency	Metres	Maintain/restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency				

[11] The Conservation objectives for the Lough Oughter and associated Loughs SAC: CO000007.pdf (npws.ie)

Species/ Habitat	Conservation Objective	Attribute	Measure	Target	Potential for Adverse Effects on Site Integrity from the Landfill Remediation Works	Potential effect in-combination with other plans or projects	Duration of Effect in the Absence of Mitigation	Conclusion
		Nutrients	µg/l P; mg/l N	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species				
		Phytoplankton biomass	µg/l chlorophyll a	Restore appropriate water quality to support the habitat, including good chlorophyll a status				
		Phytoplankton composition	EPA phytoplankton composition metric	Restore appropriate water quality to support the habitat, including good phytoplankton composition status				
		Attached algal biomass	Algal cover	Maintain/restore trace/absent attached algal biomass (<5% cover)				
		Water quality: macrophyte status	EPA macrophyte metric (The Free Index)	Restore good macrophyte status				
		Acidification status	pH units, mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes				
		Water colour	mg/l PtCo	Maintain/restore appropriate water colour to support the habitat				
		Dissolved organic carbon (DOC)	mg/l	Maintain/restore appropriate organic carbon levels to support the habitat				
		Turbidity	Nephelometric turbidity units/ mg/l SS/ other appropriate units	Maintain/restore appropriate turbidity to support the habitat				
		Fringing habitat: area and condition	Hectares	Maintain/restore the area and condition of fringing habitats necessary to support the natural structure and functioning of lake habitat 3150				

Table 3-8: Conservation Objectives and Targets for Relevant Qualifying Interests with Potential for adverse Effects on the Site Integrity of the Upper Lough Erne NI SAC[12]

Species/ Habitat	Conservation Objective	Attribute	Measure	Target	Potential for Adverse Effects on Site Integrity from the Landfill Remediation Works	Potential effect in-combination with other plans or projects	Duration of Effect in the Absence of Mitigation	Conclusion
Otter (*Lutra lutra*)	To maintain (or restore where appropriate) the favourable conservation condition of otter in the Upper Lough Erne NI SAC	Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant development	These targets do not have the potential to be influenced by proposed remedial works.	N/A	N/A	No potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction				
		Site integrity	Total area	No reduction or fragmentation of area				
		Bankside/Waterside cover	Presence of cover: Mature trees, woodland, scrub, other tall bankside vegetation, reed and sedge beds.	No overall permanent decrease (some change is acceptable as long as it is appropriately mitigated)	Sediment or pollutant emissions arising from proposed remediation works could potentially result in negative effects on fish spawning habitat, thereby reducing fish biomass in otter foraging territories. This would lead to a reduction of presence of otter and otter numbers.	Yes Potential to affect these targets by contributing to a cumulative deterioration in water quality exists.	Temporary due to 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.
		Water quality	EP water quality scale	Water quality should be at least category A or B, according to EP guidelines, with no pollution incidents (refer to Environmental Protection for data)				
		Food Sources	Assessment of fish stocks and other food sources (e.g. amphibians)	Fish stocks appropriate to the nutrient status of the river, with no significant decline in fish biomass or species diversity				
		Presence of otters	Presence of one or more of the following signs within the site: • Positive identification of otter spraint, footprints, tracks, paths, lying-up sites or feeding signs. Signs of otters found at least once per year Use data from other surveys or Ulster Museum, if available • Sightings of otters Positive identification of holt(s)	Signs of otters found at least once per year				
Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type Vegetation	To maintain (or restore where appropriate) the favourable conservation condition of this habitat in the Upper	Hydrology	Cm (staff gauge) Belleisle, Portora and Rosscor viaduct (Belleek) are measured daily (Rivers Agency)	A stable regime to include high winter water levels	This project has no potential to change the hydrological regime, the level of environmental disturbance or the status of zebra mussel in the Upper Lough Erne NI SAC.	N/A	N/A	No potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Environmental disturbance	Number of pleasure cruiser trips. The number of boat movements through the Shannon Erne water way and the numbers of boat licences on the Erne are recorded by Rivers Agency (Jeffrey Irwin)	Acceptable levels of usage / acceptable distribution of intensive boat movements i.e. leaving some parts relatively undisturbed (to be determined)				

[12] The Conservation objectives for the Upper Lough Erne NI SAC: Upper Lough Erne SAC Conservation Objectives 2015 (daera-ni.gov.uk)

Species/ Habitat	Conservation Objective	Attribute	Measure	Target	Potential for Adverse Effects on Site Integrity from the Landfill Remediation Works	Potential effect in-combination with other plans or projects	Duration of Effect in the Absence of Mitigation	Conclusion
	Lough Erne NI SAC	Invasive alien species	Status of Zebra mussel *Dreissena polymorpha*	Continued monitoring and evaluation of effects.				
		Water quality	TP load of the significant inflowing rivers in Northern Ireland.	No increasing trend in TP concentration	Based on the precautionary principal it has to be assumed that this Annex 1 habitat could occur within the zone of influence of the project. Sediment or pollutant emissions arising from proposed remediation works could potentially result in negative effects on these attributes.	Yes	Temporary - restricted to works period.	There is potential for the project to affect these targets either alone or in combination with other plans and projects.
			TP as measured in the lake outflow	<65µgl				
			TP load of water inflowing from the Republic of Ireland	No increasing trend in TP concentration				
			Abundance weighted Trophic Ranking Score in any of the sample areas	No increase in the mean of all sample areas of > 5%, and no increase in any individual sample area of > 10%				
			Pollutant levels: Heavy metals, pesticides, hydrocarbons, phenols, detergents	No increasing trend in pollutant levels				
		Siltation	Depth measurements in selected bays	Stable or natural accretion rates				
		Aquatic flora	Blanketweed abundance in any of the sample areas (PIV value)	No more than 3 (frequent)				
			Broad-leaved *Potamogeton* (Section *Potamogeton,* plus *P. obtusifolius*) presence and abundance	No decline in species presence, or overall decrease in the abundance ratio between broad and fine-leaved species				
			Depth penetration of broadleaved *Potamogeton* species (cm)	No decrease				
		Swamp extent	Distance from a fixed point to a) the edge of the dominant emergent zone and b) to the furthest pioneer emergent (m) at least one point on each subsample	Mean increase over the reporting cycle of < 5cm per year				
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion alvae*)	To maintain (or restore where appropriate) the favourable conservation condition of this habitat in the Upper Lough Erne NI SAC	Grazing	DAFOR	Grazing should be recorded as no more than occasional over 80% of plots	The project has no potential to influence these measures.	N/A	N/A	No potential for the project to affect these targets either alone or in-combination with other plans or projects exists.
		Poaching by cattle	DAFOR	Poaching should be absent, or recorded in less than 20% of plots and frequent or more in less than 10 % of plots				
		Frequency of recent goat damage (1-2 years)	DAFOR	Recent goat damage should be absent, or recorded in less than 20% of plots				
		Frequency of damage to seedlings/saplings	DAFOR	Damage to seedling/saplings should be absent or recorded in less than 20% of plots				
		Presence of standing and fallen dead wood	DAFOR	Standing dead wood at least occasional in 50% of plots. Fallen dead wood at least occasional in 50% of plots				

Species/ Habitat	Conservation Objective	Attribute	Measure	Target	Potential for Adverse Effects on Site Integrity from the Landfill Remediation Works	Potential effect in-combination with other plans or projects	Duration of Effect in the Absence of Mitigation	Conclusion
		Frequency of felling/coppicing (within 6 year monitoring cycle)	DAFOR	There should be no felling or coppicing of native trees or shrubs				
		Cover of non-native species (all layers) (presence/absence)	DAFOR	Non–native invasive canopy species should be present in less than 20% of plots, but never frequent				
				Non–native invasive shrub species should be present in less than 20% of plots, but never frequent				
				Non-native invasive canopy species seedlings/saplings should be present in less than 20% of plots, but never frequent				
				Non–native invasive ground flora species should be present in less than 20% of plots, but never frequent				
				Non–native invasive canopy species should be present in less than 20% of plots, but never frequent				
		Area of Wet woodland	Hectares	Maintain the extent Wet woodland at 130 ha	Based on the precautionary principal it has to be assumed that this Annex 1 habitat could occur within the zone of influence of the project. Sediment or pollutant emissions arising from proposed remediation works could potentially result in negative effects on these attributes.	Yes	Temporary - restricted to works period.	There is potential for the project to affect these targets either alone or in combination with other plans and projects.
		Alder woodland community diversity	DAFOR	Maintain presence of the woodland community, W5 as established at base line survey				
		Presence of associated features and semi-natural habitats	DAFOR	Maintain existing associated features and semi-natural habitats				
		Structural variation	(% cover)	Mean canopy cover greater than 50%				
				Mean shrub cover should be maintained between 15-50%				
				Maintain current levels of standard variation within reasonable limits for field, herb and moss cover				
				Water-filled pools and ditches (or mud) should be at least present in 50% of plots.				
		Age-class variation	DAFOR	Young trees (5- 20cm diameter) at least occasional in 25% of plots				
				Mature trees (20 - 75cm diameter) at least frequent in 75% of plots				
				Over-mature trees (>75cm diameter) at least present in 10% of plots				

Species/ Habitat	Conservation Objective	Attribute	Measure	Target	Potential for Adverse Effects on Site Integrity from the Landfill Remediation Works	Potential effect in-combination with other plans or projects	Duration of Effect in the Absence of Mitigation	Conclusion
		Presence of epiphytes and climbers	DAFOR	Epiphytes and climbers at least occasional in 50% of plots and at least frequent in 10% of plots				
		Presence of Epiphytic bryophytes and lichens	DAFOR	Epiphytic bryophytes and lichens at least occasional in 70% of plots and frequent in 30% of plots				
		Regeneration potential	DAFOR	Regeneration of native saplings - Maintain current levels of native tree regeneration within reasonable limits for the current structure of the Wet Woodland				
		Frequency and cover of eutrophication indicators	DAFOR	No one negative species no more than occasional throughout the wood and/or singly or together comprising more than 5% cover. *Galium aparine, Urtica dioica, Heracleum spp, Epilobium spp. Rumex obtusifolius*				
		Cover of grasses (non-woodland species)	(% cover)	The mean cover of grass for the wood should be less than 10%				
		Wet woodland indicators	Occurrence	Maintain the diversity of woodland species throughout the wood (W5 community): *Filipendula ulmaria, Galium palustris, Caltha palustris, Cardamine pratensis, Lysimachia. nummularia, Ranunculus repens, Mentha aquatica, Angelica sylvestris, Potentilla palustris, Lythrum salicaria, Myosotis scorpioides, Oenanthe crocata, Lycopus europaeus, Angelica sylvestris, Scutellata, Solanum dulcamara, Valeriana officinalis Iris pseudacorus, Equisetum fluviatile, Phragmites australis, Carex rostrata, C. paniculata, C. remota, C. vesicaria*				
		Indicators of Local Distinctiveness	Occurrence	Maintain current levels of standard variation within reasonable limits for rare and notable species. If these species are not recorded on any one visit, it does not automatically make the site unfavourable				

Table 3-9: Conservation Objectives and Targets for Relevant Qualifying Interests with Potential for adverse Effects on the Site Integrity of the Upper Lough Erne NI SPA[13]

Species/ Habitat	Conservation Objective	Attribute	Measure	Target	Potential for Adverse Effects on Site Integrity from the Landfill Remediation Works	Potential effect in-combination with other plans or projects	Duration of Effect in the Absence of Mitigation	Conclusion
Whooper Swan (*Cygnus cygnus*)	To maintain each feature in favourable condition.	Wintering population	Number (Five year running averages will be used to monitor population trends through WeBs data. A lower limit of 50% decline over a five year period may indicate unfavourable condition of the site.)	No significant decrease in population against national trends and maintain the population of the species as a viable component of the site.	Based on the precautionary principal it has to be assumed that this Annex 1 species could occur within the zone of influence of the project. Sediment or pollutant emissions arising from proposed remediation works could potentially result in negative effects on these attributes.	Yes	Temporary - restricted to works period.	There is potential for the project to affect these targets either alone or in combination with other plans and projects.
		Habitats	Area of natural and semi-natural habitat	Maintain the extent of main habitat components used by or potentially usable by the feature species subject to natural processes				

[13] The Conservation objectives for the Upper Lough Erne NI SPA: Upper Lough Erne SPA conservation objectives 2015 (daera-ni.gov.uk)

The potential for adverse effects due to the proposed works have been identified on the following species/habitats of the Lough Oughter and associated Loughs SAC:

- Otter;
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type.

The potential for adverse effects due to the proposed works have been identified on the following species/habitats of the Upper Lough Erne NI SAC:

- Otter;
- Natural eutrophic lakes with Magnopotamion or Hydrocharition – type;
- Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion alvae).

The potential for adverse effects due to the proposed works have been identified on the following species/habitats of the Upper Lough Erne NI SPA:

- Whooper swan.

3.5 Mitigation

Mitigation measures prescribed to reduce and/or avoid the potential for the proposed landfill remediation works to have an adverse effect on the integrity of the European sites with identified pathways to the proposed remediation works are prescribed hereunder.

Table 3-10: Details of Mitigation Measures to be Implemented for the proposed Landfill Remediation Works

No.	Mitigation Measure	How Measure Will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Level of Success	Monitoring Scheme to Prevent Mitigation Failure
MITIGATION MEASURES TO BE IMPLEMENTED PRIOR TO CONSTRUCTION				
1	Site Supervision by suitably qualified Environmental Manager (EM) assisted when required by an ecologist.	A suitably qualified Senior EM with appropriate experience and expertise in landfill remediation will be appointed for the duration of the project to ensure the effective supervision of all works including operation and maintenance of drainage and other mitigation measures associated with water control and management during the remediation process. When required, the Environmental Management will be assisted by an Ecologist to ensure that all the mitigation measures outlined in relation to biodiversity management (including the NIS) are implemented.	A suitably Environmental Manager (EM) will be appointed for the duration of the project to supervise the remediation. All mitigation will be implemented in full. High probability of success.	The EM will monitor the implementation of the mitigation measures detailed below ensuring successful implementation. Regular reporting to council and contractor.
2	Toolbox Talk Toolbox talks will be undertaken with construction staff on the implementation and maintenance of mitigation measures	Toolbox talks will ensure all staff working on site are aware of mitigation procedures and potential hazards and will be able to comply with measures.	Toolbox talks will be provided to all staff upon induction and at site meetings thereafter. High probability of success.	The Project Manager will deliver talks as required.
MITIGATION MEASURES TO BE IMPLEMENTED DURING CONSTRUCTION				
3	Compact surface of stored soils during reprofiling and capping works	This measure will minimise the generation of suspended solids, dust and any other contaminant	Mitigation measures will be implemented by the Client through the Contractor awarded the contract to carry out remedial	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation

No.	Mitigation Measure	How Measure Will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Level of Success	Monitoring Scheme to Prevent Mitigation Failure
		mobilisation which may enter the nearby open watercourse.	works in combination with competent supervisory staff overseeing the works. High probability of success.	measures during the construction process.
4	Weather forecasts will be reviewed daily, and earthworks will not be undertaken during periods of heavy rainfall (>10mm/hour). A regular review of weather forecasts of heavy rainfall is required 48 hours in advance of works.	This measure will minimise the generation of suspended solids, dust and any other contaminant mobilisation which may enter the nearby open watercourse.	Mitigation measures will be implemented by the Client through the Contractor awarded the contract to carry out remedial works in combination with competent supervisory staff overseeing the works. High probability of success.	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.
5	Minimise disturbance of the waste body and cover any exposed waste at the end of each working day.	This measure will minimise the risk of materials and substances from the waste body entering into adjacent waterbodies.	Mitigation measures will be implemented by the Client through the Contractor awarded the contract to carry out remedial works in combination with competent supervisory staff overseeing the works. High probability of success.	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.
6	Temporary silt fences will be installed along the site perimeter and around soil stockpiles. A twin layer of silt fencing will be installed at all locations. Additional silt fencing will be kept on site in case of an emergency break out of silt laden run-off and for repairs.	This measure will minimise ingress of suspended solids into adjacent waterbodies	Mitigation measures will be implemented by the Client through the Contractor awarded the contract to carry out remedial works in combination with competent supervisory staff overseeing the works. High probability of success.	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.

No.	Mitigation Measure	How Measure Will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Level of Success	Monitoring Scheme to Prevent Mitigation Failure
7	The access track will be resurfaced with Clause 804 with minimal fines.	This measure will minimise the generation of suspended solids	Mitigation measures will be implemented by the Client through the Contractor awarded the contract to carry out remedial works in combination with competent supervisory staff overseeing the works. High probability of success.	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.
8	All concrete will be delivered to site via ready-mix trucks from a local supplier. Concrete pours onsite will be timed to occur outside periods where heavy rainfall (>10mm/hour) would be expected. A regular review of weather forecasts (weather forecasts will be checked at least 24 hours in advance of works) of heavy rainfall is required. Every concrete truck delivering concrete to the site must use the wheel wash facilities prior to leaving the site. Washout of the chutes only will be carried out onsite at this location. The wheel wash units will be self-contained and will filter the concrete from the waste for ease of disposal. Concrete will be kept out of all watercourses and drains.	This measure will minimise ingress of concrete washout into adjacent waterbodies.	All required mitigation measures will be included as a contractual obligation on the contractor and will be implemented in full. High probability of success.	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.

No.	Mitigation Measure	How Measure Will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Level of Success	Monitoring Scheme to Prevent Mitigation Failure
9	Refuelling of plant will be carried out at the refuelling station which will be located in the temporary site compound. The station will be fully equipped for a spill response and a specially trained and dedicated environmental and emergency spill response team will be appointed before commencement on site. On demand refuelling of plant during construction will only be carried out by trained personnel. In addition to the above, onsite refuelling of machinery/ plant within excavations will be carried out using a mobile double skinned fuel bowser. The fuel bowser, a double-axel custom-built refuelling trailer will be re-filled off site and will be towed by a 4x4 jeep to designated refuelling zone. Drip trays and spill kits will be kept available on site, to ensure that any spills from vehicles are contained and removed off site.	This measure will minimise ingress of suspended solids into adjacent waterbodies.	All required mitigation measures will be included as a contractual obligation on the contractor and will be implemented in full. High probability of success.	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.
10	Any 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.	This measure will reduce the risk of hydrocarbons reaching the waterways within the catchment of the proposed remediation works.	Mitigation measures will be implemented by the Client through the Contractor awarded the contract to carry out remedial works in combination with competent supervisory staff overseeing the works. High probability of success.	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.

No.	Mitigation Measure	How Measure Will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Level of Success	Monitoring Scheme to Prevent Mitigation Failure
11	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.	This measure will reduce the risk of hydrocarbons reaching the waterways within the catchment of the proposed remediation works.	Mitigation measures will be implemented by the Client through the Contractor awarded the contract to carry out remedial works in combination with competent supervisory staff overseeing the works. High probability of success.	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.
12	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.	This measure will ensure that no sanitary waste enters the waterways within the catchment of the proposed remediation works.	Mitigation measures will be implemented by the Client through the Contractor awarded the contract to carry out remedial works in combination with competent supervisory staff overseeing the works. High probability of success.	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.
13	Daily road sweeping and maintenance will prevent soil from earthworks being deposited to the L2151.	This measure will minimise generation of suspended solids.	Mitigation measures will be implemented by the Client through the Contractor awarded the contract to carry out remedial works in combination with competent supervisory staff overseeing the works. High probability of success.	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.
14	Wheel cleaning will prevent soil from earthworks being deposited to the L2151.	This measure will minimise generation of suspended solids and dust.	Mitigation measures will be implemented by the Client through the Contractor awarded the contract to carry out remedial works in combination with	A suitably qualified person will be appointed to ensure the effective operation and maintenance of mitigation measures during the construction process.

No.	Mitigation Measure	How Measure Will Avoid/Reduce Adverse Effects	Implementation of Mitigation Measure and Level of Success	Monitoring Scheme to Prevent Mitigation Failure
			competent supervisory staff overseeing the works. High probability of success.	
OPERATIONAL PHASE MITIGATION MEASURES				
15	The capped surface will be vegetated post-construction to prevent the generation of silted runoff.	This measure will minimise generation of suspended solids	Mitigation measures will be inspected by a suitably qualified person appointed by the client. High probability of success	Inspection by a suitably qualified person appointed by the client.
16	The constructed surface drainage system will filter surface water before it enters the receiving watercourses.	This measure will minimise generation of leachate	Mitigation measures will be inspected by a suitably qualified person appointed by the client. High probability of success	Inspection by a suitably qualified person appointed by the client.
17	The water used for the jetting of pipes to clear the sub surface drainage system of roots or silt will be fed back into the surface drainage system.	This will prevent any root or silt material from entering the receiving watercourses.	Mitigation measures will be inspected by a suitably qualified person appointed by the client. High probability of success	Inspection by a suitably qualified person appointed by the client.

3.6 Residual Effects on the Integrity of the Sites within the Potential Zone of Influence of the Proposed Landfill Remediation Works

Taking cognisance of measures incorporated into the project design and mitigation measures to avoid effects that are considered in the preceding section, the proposed landfill remediation works will not adversely affect the integrity of the following European sites:

- Lough Oughter and associated Loughs SAC;
- Upper Lough Erne NI SAC;
- Upper Lough Erne NI SPA.

3.7 Conclusion

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 landfill remediation works 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 landfill remediation works 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 landfill remediation works will not adversely affect the integrity of any European site.

4. REFERENCES

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FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE
& PLANNING

APPENDIX 1

EPA AA-Screening Determination

Headquarters
P.O. Box 3000
Johnstown Castle Estate
County Wexford
Ireland

Closed Landfill
Certificate of Authorisation

Certificate of Authorisation Number:	H0366-01
Certification of Authorisation Holder:	Monaghan County Council
Location of Facility:	Killycronaghan Historic Landfill Killycronaghan Smithborough County Monaghan

Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

HEADQUARTERS
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WASTE MANAGEMENT (CERTIFICATION OF HISTORIC UNLICENSED WASTE DISPOSAL AND RECOVERY ACTIVITY) REGULATIONS 2008

HISTORIC LANDFILL

CERTIFICATE OF AUTHORISATION

Decision of Agency, under Regulation 7(6) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008

Reference Number: H0366-01

In pursuance of the powers conferred on it by the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008, the Environmental Protection Agency (the Agency) grants, under Regulation 7(6) of the said Regulations, this Certificate of Authorisation to Monaghan County Council, County Offices, The Glen, Monaghan, in respect of the closed landfill at Killycronaghan, Smithborough, County Monaghan, subject to conditions set out in the Certificate of Authorisation.

A copy of the Decision is attached.

Sealed by the Seal of the Agency on this the 19th day of March 2021

PRESENT when the seal of the Agency
was affixed hereto:

Tara Gillen

Tara Gillen, Authorised Person

Glossary of Terms

All terms in this Certificate of Authorisation should be interpreted in accordance with the definitions in the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008) unless otherwise defined in the Certificate of Authorisation.

Agency	Environmental Protection Agency.
Agreement	Agreement in writing.
Annually	At approximately twelve-monthly intervals.
Application	The application by the local authority for this Certificate of Authorisation including the risk assessment, any amendments to the risk assessment, additional information received from the local authority and other documents provided by the local authority.
Certificate of Authorisation	Includes this document and the application.
Closed Landfill	As defined in the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations 2008.
Code of Practice	As defined in the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations 2008.
Biannually	All or part of a period of six consecutive months.
Documentation	Any report, record, results, data, drawing, proposal, interpretation or other document in written or electronic form which is required by this Certificate of Authorisation.
Drawing	Any reference to a drawing or drawing number means a drawing or drawing number contained in the application, unless otherwise specified in this Certificate of Authorisation.
Environmental Pollution	As defined in the Waste Management Act 1996 as amended.
Heavy Metals	This term is to be interpreted as set out in "Parameters of Water Quality, Interpretation and Standards" published by the Agency in 2001. ISBN 1-84095-015-3.

Incident	The following shall constitute an incident for the purposes of this Certificate of Authorisation: (i) an emergency; (ii) any emission which does not comply with the requirements of this Certificate of Authorisation; (iii) any trigger level specified in this Certificate of Authorisation which is attained or exceeded; and (iv) any indication that environmental pollution has, or may have, taken place.
Inert Waste	Waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater.
Maintain	Keep in a fit state, including such regular inspection, servicing, calibration and repair as may be necessary to perform its function adequately.
Necessary Measures	As defined in the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations 2008.
Relevant Heavy Metals	Heavy metals for analysis shall include, as a minimum, those metals identified as relevant, having regard to the risk assessment and surface water and groundwater monitoring results as required by this Certificate of Authorisation.
Risk Assessment	As defined in the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations 2008.
Sample	Unless the context of this document indicates to the contrary, the term sample or samples shall include measurements taken by electronic instruments.
Status	As defined in the Water Framework Directive, in relation to surface water and groundwater.
The Local Authority	Monaghan County Council, County Offices, The Glen, Monaghan.
Trigger Level	A parameter value the achievement or exceedance of which requires certain actions to be taken by the local authority.

Part I Authorisation of a Closed Landfill

The Environmental Protection Agency (the Agency) grants, under Regulation 7(6) of the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations 2008 (the Regulations), this Certificate of Authorisation to Monaghan County Council, County Offices, The Glen, Monaghan, in respect of the closed landfill at Killycronaghan, Smithborough, County Monaghan, subject to Conditions set out in Part II and the Reasons for the Decision in Part III.

Part II Conditions

Condition 1. Scope

1.1 For the purposes of this Certificate of Authorisation, the closed landfill authorised by this Certificate of Authorisation is the area of land outlined in red on Figure No. 2.7 Revision A (Figure date: 15/06/2018) submitted with the application. Any reference in this Certificate of Authorisation to "closed landfill" shall mean the area thus outlined in red.

1.2 No waste shall be accepted at the closed landfill.

1.3 No waste shall be burned at the closed landfill.

1.4 The facility shall be controlled, operated and maintained, and emissions shall take place as authorised by this Certificate of Authorisation. No material change that will result in an increase in the actual or potential nature or quantity of any emission shall be carried out or commenced without the agreement of the Agency.

1.5 Nothing in this Certificate of Authorisation shall prohibit authorised beneficial uses of the site of the closed landfill provided that such uses do not interfere with the integrity of the remediation measures adopted.

Reason:	*To clarify the scope of this Certificate of Authorisation.*

Condition 2. Notifications, Records and Reports

2.1 The local authority shall notify the Agency, in a format as may be specified by the Agency, two months in advance of the intended date of commencement of the remediation works.

2.2 The local authority shall notify the Agency as soon as practicable after the occurrence of any incident. The incident notification shall be provided in a format as may be specified in relevant guidance issued by the Agency.

2.3 The local authority shall keep the following documents available for inspection by the Agency at all reasonable times and to members of the public by request:

(a) Records of all sampling, analyses, measurements, examinations, calibrations and maintenance;

(b) Records of incidents;

(c) Records of all complaints of an environmental nature;

(d) The validation report prepared on completion of the remediation; and

(e) Other documentation required by this Certificate of Authorisation or as may be otherwise directed by the Agency.

2.4 The local authority shall assign the necessary resources, including financial, to complete the remediation measures specified in this Certificate of Authorisation and risk assessment and to respond to any incident.

2.5 The local authority shall annually pay to the Agency €1,083, or such sum as the Agency from time to time determines in accordance with charges policy, for the performance of its functions under the Waste Management (Certification of Historic Unlicenced Waste Disposal and Recovery Activity) Regulations 2008 in relation to the closed landfill regulated by this Certificate of Authorisation.

Reason:	*To provide for the collection and reporting of adequate information on the activity. To provide for adequate resources for monitoring and measures to protect the environment.*

Condition 3. Management and Monitoring

3.1 The local authority shall implement the following measures within 24 months of the date of grant of this Certificate of Authorisation, or as otherwise agreed by the Agency:

(a) Remove waste detected by trial pit TP15 investigation;

(b) Minimise the disturbance of deposited waste to the extent possible;

(c) Install a low permeability landfill cap, minimum 1m, with 1mm thick low permeability geomembrane having a hydraulic conductivity of less than or equal to $1x10^{-9}$m/s;

(d) Install a vertical cut-off barrier;

(e) Install surface water run-off drainage system;

(f) Install passive gas venting system. The gas venting system shall meet the following requirements:

(i) A landfill gas drainage layer;

(ii) Vertical stand pipes with carbon filtration packs and wind driven rotating cowls;

(iii) The stand pipes shall not be perforated above the ground level;

(iv) Gravel filled gas interception trenches (if recommended by a gas pumping trial);

(v) The base of the interception trenches shall be constructed at the depth of the maximum depth of the waste body;

(vi) Gas vent pipes with fans shall be installed within the interception trenches every 20m and at other locations, as appropriate, such that the increased back-pressure caused by the cap does not result in increased lateral movement of gas; and

(vii) The interception trenches shall be connected to the gas boreholes.

(g) Install three leachate monitoring boreholes within the waste body;

(h) Install at least three additional groundwater monitoring boreholes, of which one shall be upgradient of the waste body and two of which shall be downgradient of the waste body;

(i) Reseed grass within the site;

(j) Install gas vents and gas alarms in the on-site farm buildings;

(k) Ensure that recommendations in the guidance given in the Department of Environment 1994 publication "Protection of New Buildings and Occupants from Landfill Gas" and any subsequent revisions have been considered and applied to all buildings constructed on the facility;

(l) The local authority shall, within twelve months of the date of grant of this Certificate of Authorisation, following gas monitoring, as required under Condition 3.9(c), seek agreement of the Agency regarding whether to carry out a gas pumping trial for the purpose of gas utilisation; and

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(m) Upon any agreement obtained in accordance with Condition 3.1(l), the local authority shall submit details of the proposed gas pumping trial for agreement by the Agency, and implement any recommendations arising therefrom.

3.2 Site Notice Board

(a) The local authority shall, within one month of the date of grant of this Certificate of Authorisation and for the duration of the remediation works, provide a Site Notice Board on the closed landfill site so that it is legible to persons outside the main entrance to the closed landfill site. The minimum dimensions of the board shall be 1200 mm by 750 mm.

(b) The board shall clearly show:

(i) The name of the Certificate of Authorisation holder;

(ii) The name of the closed landfill site;

(iii) The Certificate of Authorisation reference number;

(iv) The contact telephone in relation to the closed landfill site; and

(v) Where information relating to the closed landfill site can be obtained.

3.3 The local authority shall manage the closed landfill to ensure that discharges and emissions from the closed landfill do not cause environmental pollution or deterioration in the status of the receiving surface water body or groundwater body.

3.4 The local authority shall carry out appropriate monitoring on a biannual basis to identify any impact on the quality of water abstracted at wells downgradient of the landfill. The monitoring shall, as a minimum, include the following parameters: Heavy Metals, Ammonium, E.coli and Enterococci.

3.5 The local authority shall, within 6 months of the date of grant of this Certificate of Authorisation, undertake additional surveys to further refine the information from investigations previously undertaken and establish the full extent of the area to be capped. A report on the findings shall be submitted to the Agency for agreement prior to commencement of any capping works.

3.6 The local authority shall compile a validation report in accordance with the requirements of the Code of Practice. Unless otherwise agreed, the validation report shall be submitted to the Agency within 36 months of the date of grant of this Certificate of Authorisation.

3.7 The local authority shall assess the results of all monitoring carried out to confirm whether the closed landfill continues to achieve the objectives set for it in the risk assessment or this Certificate of Authorisation.

3.8 The local authority shall submit to the Agency, by the 31st March of each year, an annual update covering the previous calendar year. This update, which shall be to the satisfaction of the Agency, shall include as a minimum the information specified in Condition 3.9 of this Certificate of Authorisation.

3.9 The local authority shall annually, or as otherwise prescribed by the Agency, conduct and record:

(a) A visual inspection of the landfill to ensure that the condition of the site has not deteriorated;

(b) Monitoring (sample, analyse, characterise, and measure the level) on a quarterly basis of leachate in all leachate monitoring boreholes. The monitoring shall, as a minimum, include the following parameters: Biochemical Oxygen Demand (BOD) (mg O_2/l), Ammonia (mg N/l), Molybdate Reactive Phosphorus (MRP) (mg P/l), relevant Heavy Metals and Coliforms.

(c) Monitoring on a quarterly basis to detect the presence and concentration of landfill gas from the existing boreholes GW01, GW02 and GW03 and the additional boreholes as required under Condition 3.1(h);

(d) Monitoring (sample, analyse and characterise) on a quarterly basis of the Kilgormly river and Magheramey river at locations upstream and downstream of the closed landfill. The monitoring shall, as a minimum, include the following parameters: Total Ammonia (mg N/l) and Molybdate Reactive Phosphorus (MRP) (mg P/l);

(e) Monitoring (sample, analyse and characterise) on a quarterly basis of groundwater from the existing boreholes GW01, GW02 and GW03 and the additional upgradient and downgradient groundwater monitoring boreholes. The monitoring shall, as a minimum, include the following parameters: Ammonia, Lead, Phosphorous, Potassium, Barium, Iron, Manganese, Alkalinity and Coliforms;

(f) The assessment of monitoring results against trigger levels and/or standard reference values or parametric values for relevant pollutants including environmental quality standards in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended, European Communities Environmental Objectives (Groundwater) Regulations 2010, as amended, Interim Guideline Values (IGV) and European Union (Drinking Water) Regulations 2014, as amended.

3.10 The location, frequency, methods and scope of monitoring, sampling and analyses, as set out in this Certificate of Authorisation, may be amended with the agreement of the Agency.

3.11 Soil and Stone Acceptance

3.11.1 Soil and stone imported for use in remedial, corrective or other engineering works at the closed landfill shall be greenfield soil and stone or soil and stone of equivalent nature and character in terms of chemical and physical contamination.

3.11.2 Documented acceptance, storage/stockpiling and utilisation procedures shall be operational in advance of receipt of such materials. Records shall be maintained showing the site of origin of the soil and stone and its nature.

3.12 No emissions, including odours and noise, from works carried on at the site shall result in an impairment of, or an interference with amenities or the environment beyond the facility boundary or any other legitimate uses of the environment beyond the facility boundary.

3.13 The local authority shall ensure that the closed landfill does not result in an impairment of, or an interference with, amenities or the environment at the facility or beyond the facility boundary (including those arising from emissions (including odours, noise, dust, litter and mud), vermin and birds).

3.14 The local authority shall ensure, at all times after the grant of this Certificate of Authorisation, that all infrastructure and all equipment required under this Certificate of Authorisation has been and is:

(i) Installed;

(ii) Commissioned;

(iii) Present on site; and

(iv) Maintained in full working order.

3.15 Wells and boreholes

3.15.1 Groundwater monitoring wells shall be constructed having regard to the guidance given in the Agency's landfill manual "Landfill Monitoring".

3.15.2 All wellheads shall be adequately protected to prevent contamination or physical damage.

3.15.3 All wells and boreholes shall be adequately sealed to prevent surface contamination and, as may be appropriate, decommissioned according to the UK Environment Agency guidelines "Decommissioning Redundant Boreholes and Wells", unless otherwise agreed by the Agency.

3.16 The local authority shall clearly label and provide safe and permanent access to all on-site sampling and monitoring points and to off-site points as required by the risk assessment or this Certificate of Authorisation. The requirement with regard to off-site points is subject to the prior agreement of the landowners concerned.

3.17 Incidents

In the event of an incident the local authority shall immediately:

(a) If necessary, contact the emergency services;

(b) Carry out an investigation to identify the nature, source and cause of the incident and any emission arising therefrom;

(c) Isolate the source of any such emission;

(d) Evaluate the environmental pollution, if any, caused by the incident;

(e) Identify and execute measures to minimise the emissions/malfunction and the effects thereof;

(f) Identify the date, time and place of the incident; and

(g) Notify the Agency (in accordance with Condition 2.2) and all other relevant authorities including, where relevant, the Water Services Authority and Inland Fisheries Ireland.

3.18 Communications Programme

3.18.1 The Certificate of Authorisation holder shall establish, maintain and implement a Communications Programme to ensure that members of the public can obtain information from the local authority concerning the closed landfill.

3.18.2 The Communications Programme shall inform members of the public what they can and should do to protect their property and health.

3.18.3 The local authority shall, as part of the Communications Programme, publish landfill gas and groundwater monitoring data quarterly and landfill leachate monitoring data biannually in a manner accessible by the public.

Reason: *To make provision for the proper closure of the activity ensuring protection of the environment.*

Part III: Schedules

Schedule 1: Reasons for the Decision

In granting this Certificate of Authorisation, the Agency determines that the risk assessment submitted by the local authority as part of the application for a Certificate of Authorisation is adequate. To ensure appropriate protection for human health and the environment and to ensure conformity with the provisions of Council Directive 2008/98/EC and Council Directive 2006/118/EC, the Conditions set out in Part II of this Certificate of Authorisation are specified as further necessary measures in addition to those identified by the risk assessment.

The Agency also considers that the activity will not adversely affect the integrity of any European Site, and has decided to impose Conditions for the purposes of ensuring it does not do so. It has determined that the activity, if managed, operated and controlled in accordance with the Certificate of Authorisation, will not have any adverse effect on the integrity of any of those sites.

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the activity, individually or in combination with other plans or projects is likely to have a significant effect on any European Site. In this context, particular attention was paid to the European Sites at Upper Lough Erne NI SPA (Site Code: UK9020071), Upper Lough Erne NI SAC (Site Code: UK0016614), Lough Oughter and Associated Loughs SAC (Site Code: 000007), Kilroosky Lough Cluster SAC (Site Code: 001786), Magheraveely Marl Loughs NI SAC. (Site Code: UK0016621), Slieve Beagh SPA (Site code: 004167), Slieve Beagh NI SAC (Site Code: UK0016622) and Slieve Beagh-Mullaghfad-Lisnaskea NI SPA (Site Code: UK9020302).

The activity is not directly connected with or necessary to the management of any European Site and the Agency considered, for the reasons set out below, that it cannot be excluded, on the basis of objective information, that the activity, individually or in combination with other plans or projects, will have a significant effect on any European Site and accordingly determined that an Appropriate Assessment of the activity was required.

The reason for this determination is as follows:

- There is a hydrological connection between the closed landfill and Upper Lough Erne NI SPA (Site Code: UK9020071), Upper Lough Erne NI SAC (Site Code: UK0016614) and Lough Oughter and Associated Loughs SAC (Site Code: 000007).

The Agency has completed the Appropriate Assessment of potential impacts on these sites and has made certain, based on best scientific knowledge in the field and in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, pursuant to Article 6(3) of the Habitats Directive, that the activity, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site, in particular Upper Lough Erne NI SPA (Site Code: UK9020071), Upper Lough Erne NI SAC (Site Code: UK0016614), Lough Oughter and

Associated Loughs SAC (Site Code: 000007), Kilroosky Lough Cluster SAC (Site Code: 001786), Magheraveely Marl Loughs NI SAC. (Site Code: UK0016621), Slieve Beagh SPA (Site code: 004167), Slieve Beagh NI SAC (Site Code: UK0016622) and Slieve Beagh-Mullaghfad-Lisnaskea NI SPA (Site Code: UK9020302), having regard to their conservation objectives and will not affect the preservation of these sites at favourable conservation status if carried out in accordance with the application, risk assessment and this Certificate of Authorisation and the Conditions attached hereto for the following reasons:

- specifically, the remedial works will be undertaken to minimise the potential for water pollution in Upper Lough Erne NI SPA (Site Code: UK9020071), Upper Lough Erne NI SAC (Site Code: UK0016614) and Lough Oughter and Associated Loughs SAC (Site Code: 000007) and will ensure that there will be no significant impact on these European Sites;
- the project alone, which consists of the remediation of the closed landfill, or in-combination with other projects, will not adversely affect the integrity, and conservation status of any of the qualifying interests of Upper Lough Erne NI SPA (Site Code: UK9020071), Upper Lough Erne NI SAC (Site Code: UK0016614) and Lough Oughter and Associated Loughs SAC (Site Code: 000007);
- there are no significant emissions to air from the landfill which could affect the bird species that the Upper Lough Erne NI SPA (Site Code: UK9020071), Slieve Beagh SPA (Site code: 004167) and Slieve Beagh-Mullaghfad-Lisnaskea NI SPA (Site Code: UK9020302) are designated for; and
- Kilroosky Lough Cluster SAC (Site Code: 001786), Magheraveely Marl Loughs NI SAC (Site Code: UK0016621), Slieve Beagh NI SAC (Site Code: UK0016622), Slieve Beagh SPA (Site code: 004167) and Slieve Beagh-Mullaghfad-Lisnaskea NI SPA (Site Code: UK9020302) do not receive water from the waterbodies located at the closed landfill.

The Agency is satisfied that no reasonable scientific doubt remains as to the absence of adverse effects on the integrity of those European Sites: Upper Lough Erne NI SPA (Site Code: UK9020071), Upper Lough Erne NI SAC (Site Code: UK0016614), Lough Oughter and Associated Loughs SAC (Site Code: 000007), Kilroosky Lough Cluster SAC (Site Code: 001786), Magheraveely Marl Loughs NI SAC. (Site Code: UK0016621), Slieve Beagh SPA (Site code: 004167), Slieve Beagh NI SAC (Site Code: UK0016622) and Slieve Beagh-Mullaghfad-Lisnaskea NI SPA (Site Code: UK9020302).

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Part IV: SIGNATURE

Sealed by the Seal of the Agency on this the 19th day of March 2021

PRESENT when the Seal of the Agency was affixed hereto:

Tara Gillen

Tara Gillen, Authorised Person

FEHILY TIMONEY

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