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## MONAGHAN COUNTY COUNCIL

# APPROPRIATE ASSESSMENT SCREENING REPORT FOR HISTORIC LANDFILL REMEDIATION AT KILLYCRONAGHAN, CO. MONAGHAN

SEPTEMBER 2019



Monaghan  
County Council



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**Abstract:** This document comprises the Stage One: Appropriate Assessment Screening Report for remediation of Killycronaghan historic landfill site in the townland of Killycronaghan, Co. Monaghan. Appropriate Assessment is required under Article 6 (3) and (4) of the Habitats Directive for any project or plan that may give rise to significant effects on a Natura 2000 site.

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## 1 INTRODUCTION

Fehily Timoney and Company (FT) were commissioned by Monaghan County Council to prepare an Appropriate Assessment Screening Report, as required by Article 6 of Council Directive 92/43/EEC (Habitats Directive) with regard to proposed remedial works to Killycronaghan historic landfill site in the townland of Killycronaghan, Co. Monaghan as recommended following Tier 3 Risk Assessment (see Figure 1 for location).

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

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

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

The competent authority, in this case the Environmental Protection Agency (EPA), in carrying out an AA, is required to make an examination, analysis, evaluation, findings, conclusions and a final determination as to whether or not the proposed development would adversely affect the integrity of the relevant European site in view of its conservation objectives. To evaluate the potential impact(s) of the proposed development on the European sites, all sites located within a 15km radius of the development or those which are ecologically linked were considered. Please note that while a 15km radius is recommended for plans, there is no hard and fast rule for buffer size (DoEHLG, 2009). A 15km radius was used in line with standard industry practice, however, the potential zone of influence was considered to extend to European sites located outside the 15km buffer where downstream hydrological links exist.

The historical landfill site is not located within any European site. Six European sites are located within 15km of the historical landfill. These sites are located within both the Republic of Ireland and Northern Ireland, as listed below:

- Magheraveely Marl Loughs SAC (site code UK0016621) (4.3 km northwest)
- Kilroosky Lough Cluster cSAC\* (site code 001786) (6.8 km west)
- Slieve Beagh SPA (site code 004167) (10.2 km north)
- Slieve Beagh-Mullaghfad-Lisnaskea SPA (site code UK9020091) (11.4 km northwest)
- Upper Lough Erne SPA (site code UK9020071) (11.7 km southwest, 16.5 km downstream)
- Slieve Beagh SAC (site code UK0016622) (13.8 km north)

*\*At present, some SACs in Ireland are currently 'candidate' SACs and are referred to as cSACs. The relevant Statutory Instruments for the cSACs in Ireland are ongoing, however, these 'candidate' sites must still be afforded the same level of protection as if they were SACs as designated in accordance with the EU Habitats Directive.*

Two additional European sites outside the 15 km buffer are hydrologically linked via the river network. These are-

- Upper Lough Erne SAC (site code UK0016614) (c. 25km downstream)
- Lough Oughter and Associated Loughs SAC (site code 000007) (shares surface water body with Upper Lough Erne SPA/SAC)

## 1.1 Legislative Requirements

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

*6(3) Any plan or project not directly connected with or necessary to the management of the site (Natura 2000 sites) but likely to have significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment of its implications for the site in view of the site's conservation objectives.*

*In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

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

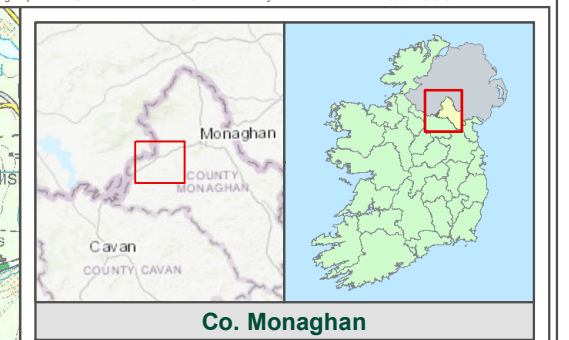
The statutory agency responsible for European sites is the National Parks and Wildlife Service (NPWS) of the Department of Arts, Heritage and the Gaeltacht (DAHG). In December 2009 'Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government' was published (DoEHLG, 2009) with a minor amendment in 2010. This guidance document was prepared jointly by the NPWS and Planning Divisions of DoEHLG (now DCHG), with input from local authorities. Previously, in 2001, the European Commission issued a guidance document. This guidance document has been updated in the recently published European Commission (2018) "*Managing Natura 2000 sites the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*" This Appropriate Assessment Screening Report has been prepared in accordance with the relevant Irish and European Commission Guidance.

### 1.1.1 Regulatory Context

In 1997, the Habitats Directive was transposed into Irish National Law by the European Communities (Natural Habitats) Regulations, SI 94/1997 (as amended by S.I. 233/1998 & S.I. 378/2005). The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477/2011) revoked the 1997 Regulations (and amendments) as well as the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010. The purpose of the 2011 Regulations was to address transposition failures identified in the Court of Justice of the European Union (CJEU) judgements. Following additional amendments in 2013 (S.I. 499/2013) and 2015 (S.I. 355/2015) the regulations are now cited as the European Communities (Birds and Natural Habitats) Regulations 2011 to 2015.

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





**Legend**

 Site Boundary


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<b>Figure Title</b>	Site Location
<b>Figure No.</b>	1
<b>Project</b>	Appropriate Assessment of Historic Landfill Remediation at Killycronaghan, Co. Monaghan
<b>Client</b>	Monaghan County Council
<b>Scale</b>	1:40,000
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## 2 METHODOLOGY

### 2.1 Appropriate Assessment Methodology

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

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

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

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

- Assessment of Plans and Projects significantly affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission 2001.
- *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin 2009.
- European Commission (2018). *Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC*. Brussels, 21.11.2018 C (2018) 7621 final.

#### 2.1.1 Impact Assessment

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

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

- Direct impacts refer to habitat loss or fragmentation arising from land-take requirements for development or agricultural purposes. Direct impacts can be as a result of a change in land use or management, such as the removal of agricultural practices that prevent scrub encroachment.



- Indirect and secondary impacts do not have a straight-line route between cause and effect, and it is potentially more challenging to ensure that all the possible indirect impacts of the plan (or project) – in combination with other plans and projects - have been established. These can arise when a development alters the hydrology of a catchment area, which in turn affects the movement of groundwater to a site, and the qualifying interests that rely on the maintenance of water levels. Deterioration in water quality can occur as both an indirect or direct consequence of development, which in turn changes the aquatic environment and reduces its capacity to support certain plants and animals. The introduction of invasive species can also be defined as an indirect impact, which results in increased movement of vectors (humans, fauna, surface water), and consequently the transfer of alien species from one area to another.
- Disturbance to fauna can arise directly through the loss of habitat (e.g. bat roosts) or indirectly through noise, vibration and increased activity associated with construction and operation.

## 2.2 Desktop Study

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

- National Parks and Wildlife Service (NPWS) website and metadata ([www.npws.ie](http://www.npws.ie))
- Joint Nature Conservation Committee (JNCC) website ([www.jnc.defra.gov.uk](http://www.jnc.defra.gov.uk))
- OSI Aerial photography and 1:50,000 mapping
- National Biodiversity Data Centre (NBDC) (on-line map-viewer)
- BirdWatch Ireland website
- Geological Survey Ireland (GSI) area maps
- River Catchment & Sub-catchment WFD datasets

## 2.3 Site Visit

Characteristics of the historical landfill and general site information recorded during engineering surveys undertaken by Fehily Timoney on 12<sup>th</sup> June 2018 have been used to describe the site of proposed works and character of the surrounding landscape.

### 3 PROPOSED WORKS

It is proposed to cap the historical landfill with an engineered barrier. The cap will be placed on top of the existing soil covering. The cap will incorporate a sub-surface drainage layer, LLDPE Barrier, and landfill gas migration layer and associated gas collection pipework. A covering of topsoil and free-draining subsoil will cover the barrier layers, with surface and sub-surface runoff draining to a network of French drains surrounding the cap.

A vertical LLDPE cut off barrier and anchor trench backfilled with cohesive compacted material will be installed around the waste body. The impermeable sub-surface drainage layer will extend outside the cut-off trench, with surface and subsurface drainage feeding into the French drain network around the cap. The landfill gas barrier and associated collection pipework will be located on the inner side of the cut off trench.

The primary components of the engineered covering proposed are listed below:

- 200mm Topsoil
- 800mm Free Draining Subsoil
- Sub Surface Drainage Layer
- LLDPE Barrier
- Landfill Gas Migration Layer
- Surface and Sub-surface Water Collection
- 160mm SDR17 Landfill Gas Migration Pipework
- Vertical Cut Off/Anchor Trench

The historical landfill boundary is within 10m of the Kilgormley river, which flows east-west past the northern corner of the landfill.

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## 4 STAGE ONE - SCREENING REPORT

### 4.1 Brief Description of the Existing Site

The historical landfill site is located in the townland of Killycronaghan approximately 8km North-East of Clones town circa 1km off the N54 national road, close to the village of Smithborough. It was previously reported by MCC that the historical landfill accepted waste throughout the 1970s and early 1980s, ceasing in 1984. The historical landfill is currently covered with topsoil which supports improved agricultural grassland.

The historical landfill is located within a predominantly rural setting in an area of rolling topography dominated by drumlins. Areas between the drumlins are often boggy, while more free-draining ground is found on the drumlins themselves. The site is generally described as flat with a hill rising on the southwestern portion of the site. The historical landfill site is at an elevation of 50-55m OD. The dominant land use in the area is pasture.

The Quaternary Map provided by GSI Online identifies the quaternary sediments at the site as tills derived from limestone, with the subsoils in the northern portion of the site mapped as sands and gravels derived from limestones. The GSI also identifies lenses of cut-over peat beyond the southern site boundary.

Localised deposits of alluvium are noted along the channel of the Kilgormly River to the east and north of the site and also to the west along the channel of the Magheramey River.

During the installation of boreholes during the site investigation, the presence of peat and sand and gravel tills to a depth of approximately 14.5m were recorded.

The northern and western sections of the site and surrounding area are underlain by the Cooldaragh formation (CH) which is generally made up of Dinantian 'Pale brown-grey flaggy, silty mudstone'. The southern and eastern sections of the site are underlain by the Feranaght formation (FT), which is generally made up of Dinantian 'Pale conglomerate & red sandstone'. A distinct bedding plane or anticline separates the Feranaght formation from the Coronea Formation located to the south of this stratigraphic line. The Coronea Formation consists of turbidite, red shale and minor volcanic properties. Limestone bedrock was encountered at 4.5m depth during the installation of borehole GW01.

The Kilgormly River is located to the north of the site and flows east-west within 10m of the northern tip of the landfill boundary. The Kilgormly joins the Magheramey River c. 120m downstream of where it flows past the landfill. The Magheramey (located c. 90m north-west of the landfill boundary) flows in a south-westerly direction, joining the Finn River which enters Upper Lough Erne c. 25km downstream of the landfill site.

The closest Natura 2000 site, Magheraveely Marl Loughs SAC (UK0016621) lies ca. 4.3 km northwest (this SAC is in fact made up of several dispersed loughs situated to the north and west of the landfill site).

Upper Lough Erne SPA (UK9020071) is located c. 16.5 km downstream; Upper Lough Erne SAC (UK0016614) is located c. 25km downstream, while Lough Oughter and Associated Loughs SAC (000007) shares a surface water body (Quivvy Lough) with Upper Lough Erne SPA and SAC.

## 4.2 European Sites within 15km of the Development

There are six European sites within the 15km buffer, and two outside this buffer which are hydrologically connected (see Figure 2). Table 1 lists these sites, including their qualifying interests, conservation objectives and known threats and pressures (according to information provided by the NPWS and the JNCC) These sites are:

- Magheraveely Marl Loughs SAC (UK0016621) (4.3 km northwest)
- Kilroosky Lough Cluster SAC (001786) (6.8 km west)
- Slieve Beagh SPA (004167) (10.2 km north)
- Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091) (11.4 km northwest)
- Upper Lough Erne SPA (UK9020071) (11.7 km southwest, c. 16.5 km downstream)
- Slieve Beagh SAC (UK0016622) (13.8 km north)
- Upper Lough Erne SAC (UK0016614) (c. 25km downstream)
- Lough Oughter and Associated Loughs SAC (000007) (c. 25km downstream; shares surface water body with Upper Lough Erne SPA/SAC)

The full NPWS and JNCC site synopses for the relevant designated sites are included in Appendix 2. Table 1 below sets out the qualifying interests and threats/pressures for each site.

Figure 2 shows the location of the European sites in relation to the proposed development; this figure also shows the downstream hydrological connections with Upper Lough Erne SPA (UK9020071), Upper Lough Erne SAC (UK0016614) (c. 25km downstream) and Lough Oughter and Associated Loughs SAC (000007).

### 4.2.1 Screening Rationale

It is possible to screen these sites out at an early stage based on the following;

Magheraveely Marl Loughs SAC (UK0016621) and Kilroosky Lough Cluster SAC (001786) which are both designated for the same suite of habitats and species do not receive waters flowing downstream from the landfill site and as such the habitats and species for which they are designated are not susceptible to potential effects from remedial works.

Slieve Beagh SPA (004167) and Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091) are contiguous and both designated for Hen Harrier, together forming an expansive upland territory for this species. SNH guidance on assessing connectivity with SPAs (Scottish Natural Heritage, 2016) cites a core and maximum range of 2 km and 10 km respectively for Hen Harrier during the breeding season, placing the historical landfill site outside the maximum foraging range for Hen Harrier associated with these SPAs. In addition, the intensively farmed lowland habitats which dominate the landscape in which the historical landfill is located are unlikely to be of value to Hen Harrier, which favour the rough semi-natural grasslands, scrub and heath found in upland areas.

While downstream of the historical landfill site, Upper Lough Erne SPA (UK9020071) is at a sufficient distance (16.5 km in-stream distance) to preclude significant effects arising from any accidental pollutant or contaminant inputs arising from remedial works. Upper Lough Erne SAC (UK0016614) and Lough Oughter and Associated Loughs SAC (000007) are also downstream of the landfill (25 km in-stream distance) and can be screened out based on the same rationale. It should also be noted that the remedial works will ultimately contribute to improved water quality by reducing leachate migration.

Slieve Beagh SAC (UK0016622) lacks any potential ecological connectivity, it is located 13.8km to the north and comprises of habitats which occur within its boundary as qualifying interests and therefore there is no potential for effects.

These factors are set out as relevant to each site in Table 1 below and detailed in Table 2 *Screening matrix* and Appendix 1 *Finding of No significant Effects Report*.



Table 1: European Sites

Designated (Site Code)	Site	Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats	Screened out?
Magheraveely Loughs (UK0016621)	Marl SAC	4.3 km	To maintain/restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	<ul style="list-style-type: none"> <li>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</li> <li>Alkaline fens [7230]</li> <li>Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae [7210]</li> <li><i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]</li> </ul>	<ul style="list-style-type: none"> <li>G01 Outdoor sports and leisure activities, recreational activities (Low, inside)</li> <li>I01 Invasive non-native species (Medium, inside)</li> <li>K02 Biocenotic evolution, succession (High, inside)</li> <li>H01 Pollution to surface waters (limnic, terrestrial, marine &amp; brackish) (High, outside)</li> <li>J02 Human induced changes in hydraulic conditions (High, inside)</li> <li>H04 Air pollution, air-borne pollutants (Low, inside)</li> </ul>	<p>Yes.</p> <p>Reasons:</p> <ul style="list-style-type: none"> <li>Lack of hydrological or other connectivity (SAC is upstream)</li> <li>Distance (4.3 km from historical landfill site)</li> </ul>

Designated (Site Code)	Site	Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats	Screened out?
					<ul style="list-style-type: none"> <li>H02 Pollution to groundwater (point sources and diffuse sources) (High, outside)</li> <li>XO Threats and pressures from outside the Member State (Medium, inside)</li> <li>A04 Grazing (High, inside)</li> </ul>	
Kilroosky Lough Cluster SAC (001786)		6.8 km	To maintain/restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	<p style="color: red; transform: rotate(-45deg); font-size: small;">Consent of copyright owner required for any other use.</p> <ul style="list-style-type: none"> <li>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]</li> <li>Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae [7210]</li> <li>Alkaline fens [7230]</li> </ul>	<ul style="list-style-type: none"> <li>E03.03 Disposal of inert materials (High, inside)</li> <li>A02.01 Agricultural intensification (Medium, inside)</li> <li>G02 Sport and leisure structures (High, inside)</li> <li>J02.06 Water abstractions from surface waters (Medium, inside)</li> </ul>	<p>Yes.</p> <p>Reasons:</p> <ul style="list-style-type: none"> <li>Lack of hydrological or other connectivity (SAC is upstream)</li> <li>Distance (6.8 km from historical landfill site)</li> </ul>



Designated (Site Code)	Site	Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats	Screened out?
				<ul style="list-style-type: none"> <li><i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]</li> </ul>	<ul style="list-style-type: none"> <li>I01 Invasive non-native species (Medium, inside)</li> <li>H01 Pollution to surface waters (limnic, terrestrial, marine &amp; brackish) (High, both)</li> <li>E01.03 Dispersed habitation (High, outside)</li> <li>F02.03 Leisure fishing (Medium, inside)</li> </ul>	
Slieve Beagh SPA (004167)		10.2 km	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for the SPA	<ul style="list-style-type: none"> <li>Hen Harrier (<i>Circus cyaneus</i>) [A082]</li> </ul>	<ul style="list-style-type: none"> <li>C01.03 Peat extraction (Medium, inside)</li> <li>D01.02 Roads, motorways (Low, inside)</li> <li>D01.01 Paths, tracks, cycling (Low, inside)</li> </ul>	Yes.  Reasons: <ul style="list-style-type: none"> <li>Distance (10.2 km from historical landfill site)</li> <li>Hen Harrier core and maximum ranges are 2km &amp; 10km during breeding season</li> </ul>

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Designated (Site Code)	Site	Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats	Screened out?
						<ul style="list-style-type: none"> <li>Hen Harrier do not favour intensively farmed lowland habitats</li> </ul>
Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091)		11.4 km	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for the SPA	<p style="color: red; transform: rotate(-45deg); font-size: small;">Document is copyright owner required for any other use.</p> <ul style="list-style-type: none"> <li>Hen Harrier (<i>Circus cyaneus</i>) [A082]</li> </ul>	<ul style="list-style-type: none"> <li>M01 Changes in abiotic conditions (High, outside)</li> <li>F03 Hunting and collection of wild animals (terrestrial) (Medium, both)</li> <li>A04 Grazing (High, inside)</li> <li>G01 Outdoor sports and leisure activities, recreational activities (Medium, inside)</li> <li>M02 Changes in biotic conditions (Low, both)</li> <li>J01 Fire and fire suppression (High, inside)</li> </ul>	<p>Yes.</p> <p>Reasons:</p> <ul style="list-style-type: none"> <li>Distance (11.4 km from historical landfill site)</li> <li>Hen Harrier core and maximum ranges are 2km &amp; 10km during breeding season</li> <li>Hen Harrier do not favour intensively farmed lowland habitats</li> </ul>

Designated (Site Code)	Site	Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats	Screened out?
				For inspection purposes only. Consent of copyright owner required for any other use.	<ul style="list-style-type: none"> <li>C01 Mining and quarrying (Medium, inside)</li> <li>C03 Renewable abiotic energy use (Medium, both)</li> <li>J03 Other ecosystem modifications (High, both)</li> <li>B02 Forest and Plantation management &amp; use (High, inside)</li> </ul>	
Upper Lough Erne SPA (UK9020071)		11.7 km (16.5 km downstream)	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for the SPA	<ul style="list-style-type: none"> <li><i>Cygnus</i> Whooper Swan [A038]</li> </ul>	<ul style="list-style-type: none"> <li>G01 Outdoor sports and leisure activities, recreational activities (Low, inside)</li> <li>H01 Pollution to surface waters (limnic, terrestrial, marine &amp; brackish) (Low, outside)</li> </ul>	Yes.  Reasons: <ul style="list-style-type: none"> <li>Distance (11.7 km from historical landfill site)</li> <li>Whooper Swan core winter foraging range &lt;5km (from night roost)</li> </ul>

Designated (Site Code)	Site	Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats	Screened out?
				Consent of copyright owner required for any other use. For inspection purposes only.	<ul style="list-style-type: none"> <li>A04 Grazing (High, both)</li> <li>A02 Modification of cultivation practices (Low, inside)</li> <li>M01 Changes in abiotic conditions (High, outside)</li> <li>M02 Changes in biotic conditions (Medium, both)</li> <li>D02 Utility and service lines (Medium, both)</li> </ul>	<ul style="list-style-type: none"> <li>Distance downstream (16.5 km) provides adequate buffering capacity</li> <li>Similar improved agricultural grassland habitats (used by foraging Whooper Swan) to those at landfill site are widely available</li> </ul>
Slieve Beagh SAC (UK0016622)		13.8 km	To maintain/restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	<ul style="list-style-type: none"> <li>Natural dystrophic lakes and ponds [3160]</li> <li>Blanket bogs (* if active bog) [7130]</li> <li>European dry heaths [4030]</li> </ul>	<ul style="list-style-type: none"> <li>H04 Air pollution, air-borne pollutants (High, inside)</li> <li>I01 Invasive non-native species (Medium, inside)</li> <li>J01 Fire and fire suppression (High, inside)</li> </ul>	<p>Yes.</p> <p>Reasons:</p> <ul style="list-style-type: none"> <li>Lack of ecological connectivity</li> <li>SAC is designated for habitats occurring within its boundary</li> </ul>



Designated (Site Code)	Site	Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats	Screened out?
					<ul style="list-style-type: none"> <li>A04 Grazing (High, inside)</li> <li>J02 Human induced changes in hydraulic conditions (High, inside)</li> <li>C01 Mining and quarrying (Medium, inside)</li> </ul>	<ul style="list-style-type: none"> <li>Distance (13.8 km from historical landfill site)</li> </ul>
Upper Lough Erne SAC (UK0016614)		(25 km downstream)	To maintain/restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	<ul style="list-style-type: none"> <li>Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]</li> <li>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</li> <li>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]</li> </ul>	<ul style="list-style-type: none"> <li>G02 Sport and leisure structures (Medium, inside)</li> <li>F03 Hunting and collection of wild animals (terrestrial) (Medium, inside)</li> <li>G01 Outdoor sports and leisure activities, recreational activities (Medium, inside)</li> </ul>	<p>Yes.</p> <p>Reasons:</p> <ul style="list-style-type: none"> <li>Distance downstream (25km) provides adequate buffering capacity</li> </ul>

Designated (Site Code)	Site	Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats	Screened out?
				<ul style="list-style-type: none"> <li><i>Lutra lutra</i> Otter [1355]</li> </ul> <p style="color: red; transform: rotate(-45deg); opacity: 0.5; font-size: small;">Consent of copyright owner required for any other use.                      For inspection purposes only.</p>	<ul style="list-style-type: none"> <li>H04 Air pollution, air-borne pollutants (High, inside)</li> <li>I01 Invasive non-native species (High, inside)</li> <li>B06 Grazing in forests/ woodland (High, inside)</li> <li>J02 Human induced changes in hydraulic conditions (High, inside)</li> <li>H01 Pollution to surface waters (limnic, terrestrial, marine &amp; brackish) (High, outside)</li> </ul>	
Lough Oughter and Associated Loughs SAC (000007)		(>25 km downstream)	To maintain/restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected	<ul style="list-style-type: none"> <li>Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]</li> </ul>	<ul style="list-style-type: none"> <li>E01.03 Dispersed habitation (Low, outside)</li> <li>I01 Invasive non-native species (High, both)</li> </ul>	Yes.  Reasons: <ul style="list-style-type: none"> <li>Distance downstream (&gt;25km) provides</li> </ul>

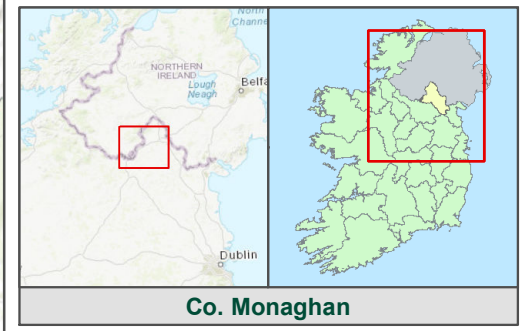
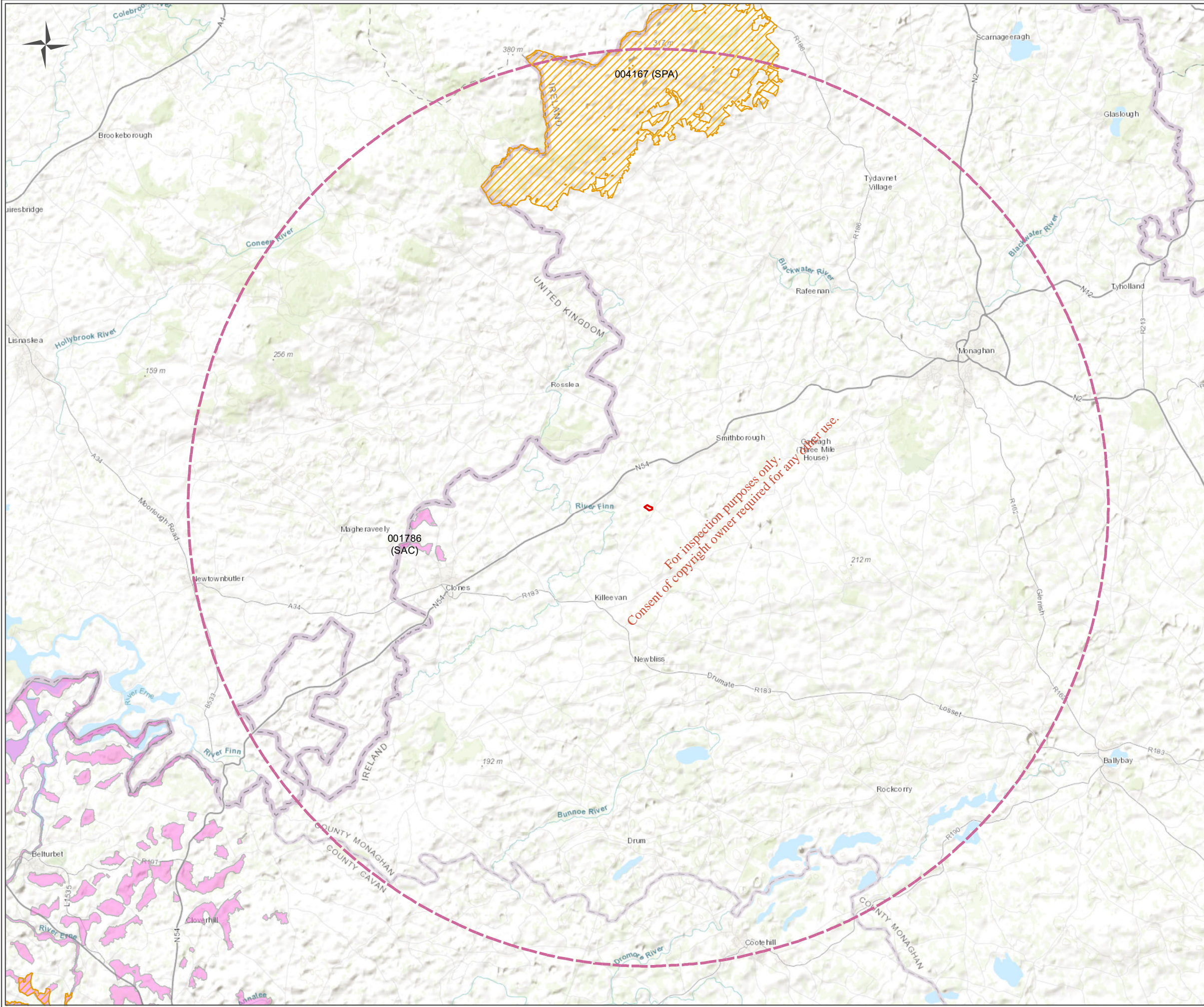
Designated (Site Code)	Site	Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats	Screened out?
				<ul style="list-style-type: none"> <li>Bog woodland [91D0]</li> <li><i>Lutra lutra</i> (Otter) [1355]</li> </ul>	<ul style="list-style-type: none"> <li>H01.05 Diffuse pollution to surface waters due to agricultural and forestry activities (High, both)</li> <li>J02.01.03 Infilling of ditches, dykes, ponds, pools, marshes or pits (Low, both)</li> <li>H01.04 Diffuse pollution to surface waters via storm overflows or urban run-off (High, outside)</li> <li>G01 Outdoor sports and leisure activities, recreational activities (Medium, inside)</li> <li>B01.02 Artificial planting on open ground (non-native trees) (Medium, outside)</li> </ul>	adequate buffering capacity

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Designated (Site Code)	Site	Distance from Proposed Development (km)	Conservation Objectives	Qualifying Interests	Threats	Screened out?
					<ul style="list-style-type: none"> <li>• M01.03 Flooding and rising precipitations (High, both)</li> <li>• A10.01 Removal of hedges and copses or scrub (High, both)</li> </ul>	

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**Co. Monaghan**

**Legend**

- Site Boundary
- 15km Distance from Site Boundary
- Special Protection Areas (SPAs)**
- Republic of Ireland
- Special Areas of Conservation (SAC)**
- Republic of Ireland

**Figure Title**  
Natura 2000 Site within 15 km

**Figure No.** 2

**Project** Appropriate Assessment of Historic Landfill Remediation at Killycronaghan, Co. Monaghan

**Client** Monaghan County Council

**Scale** 1:125,000 **Page Size** A3

**Revision** A **Date** 13/09/2019

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### 4.3 Conservation Objectives

According to the Habitats Directive, the *conservation status of a natural habitat* will be taken as 'favourable' within its biogeographic range when:

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

According to the Habitats Directive, the conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' within its biogeographic range when:

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

#### 4.3.1 Republic of Ireland

The specific conservation objectives for each site are available on [www.npws.ie](http://www.npws.ie). These have been accessed for the sites listed in table 1 above on the 13<sup>th</sup> of June 2019.

Generic conservation objectives (published 21<sup>st</sup> February, 2018) only were available for all relevant sites:

- Kilroosky Lough Cluster SAC (001786)
- Slieve Beagh SPA (004167)
- Lough Oughter and Associated Loughs SAC (000007)

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

#### 4.3.2 Northern Ireland

The specific conservation objectives for each site are available on [www.daera-ni.gov.uk](http://www.daera-ni.gov.uk) (links to conservation objectives for each site are included in section 5 References). These have been accessed for the sites listed in table 1 above on the 13<sup>th</sup> of June 2019.

Conservation objectives were available for all relevant sites:

- Magheraveely Marl Loughs SAC (UK0016621) (Version 2, published 1<sup>st</sup> April 2015)
- Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091) (Version 2, published 1<sup>st</sup> April 2015)
- Upper Lough Erne SPA (UK9020071) (Version 2, published 1<sup>st</sup> April 2015)
- Slieve Beagh SAC (UK0016622) (Version 2.1, published 10<sup>th</sup> October 2017)
- Upper Lough Erne SAC (site code UK0016614) (Version 2, published 1<sup>st</sup> April 2015)

## 4.4 Potential Impact Pathways

The potential pathways by which Natura 2000 sites could be affected are laid out in table 2 below.

**Table 2: Potential connectivity/Impact pathways**

Designated Site (Site Code)	Potential Impact Pathways
Magheraveely Marl Loughs SAC (UK0016621)	None identified
Kilroosky Lough Cluster SAC (001786)	None identified
Slieve Beagh SPA (004167)	None identified
Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091)	None identified
Upper Lough Erne SPA (UK9020071)	Reduction in water quality within SPA caused by remedial works (transport of pollutants or contaminants downstream) impacting aquatic and riparian habitats used by SCI species (Whooper Swan)
Slieve Beagh SAC (UK0016622)	None identified
Upper Lough Erne SAC (UK0016614)	Reduction in water quality within SAC caused by remedial works (transport of pollutants or contaminants downstream) impacting habitats and otter (directly or indirectly via prey) for which SAC is designated
Lough Oughter and Associated Loughs SAC (000007)	Reduction in water quality within SAC caused by remedial works (transport of pollutants or contaminants downstream) impacting habitats and otter (directly or indirectly via prey) for which SAC is designated

No potential connections exist between the historical landfill site and Magheraveely Marl Loughs SAC (UK0016621) Kilroosky Lough Cluster SAC (001786) since these sites are upstream of the historical landfill site and are not designated for mobile species. The lack of any hydrological connection and fact that Slieve Beagh SAC (UK0016622) is designated for habitats occurring within its boundaries mean that no potential links between the landfill site and this SAC exist.

Regarding Slieve Beagh SPA (004167), Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091) and Upper Lough Erne SPA (UK9020071), there is not considered to be potential for links between these European sites and the landfill site via mobile species (Hen Harrier and Whooper Swan) due to their lying outside the core foraging ranges of these species (see Table 1 above), in addition to the fact that optimal Hen Harrier foraging habitat is not present at the historical landfill site and similar agricultural grassland habitats (often used by foraging Whooper Swan) to those at the historical landfill site are widespread in the surrounding area.

Upper Lough Erne SPA (UK9020071), Upper Lough Erne SAC (UK0016614) and Lough Oughter and Associated Loughs SAC (000007) are all downstream of the historical landfill site and as such potential impact pathways between the historical landfill site and qualifying interests for these European sites exist. These would take the form of accidental inputs of pollutants/contaminants such as silt or petrochemicals to connected watercourses during remedial works. The effects of such inputs could include reductions in water and aquatic/riparian habitat quality within designated sites amounting to direct impacts on designated habitats and direct or indirect (via foraging habitat and prey population damage) impacts on designated animal species.

While the potential for sediment or contaminant inputs during remedial works exists, it should also be noted that the historical landfill cap will ultimately improve water quality by reducing leachate generation.

## 4.5 Potential Cumulative Impacts

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

- Permitted projects in the vicinity of the development
- Proposed projects in the vicinity of the development
- Monaghan County Development Plan 2019-2025
- County Monaghan Heritage Plan 2012-2017

A planning search limited to applications submitted within the townlands overlapping and surrounding the landfill site during the previous 5 years was conducted on 14<sup>th</sup> June 2019. The relevant townlands are:

- Killycronaghan
- Derryleggan
- Kilnamaddy
- Listellan
- Carnowen
- Cappagh
- Cappagh (Kilgormly)
- Kilgormly
- Nook

No projects of a scale that could act cumulatively with the proposed historical landfill remediation are proposed or permitted in the townlands listed above. Permitted developments in these townlands are limited to a free-range hen laying shed (Killycronaghan), construction of a new play area and associated landscaping (Rossmore Forest Park in Kilnamaddy), and a slatted shed with loose bedded area (Kilgormly).

## 4.6 Screening Matrix

The Screening Matrix is set out in Table 3 below. Throughout this, the line items in *italics* refer to suggested instructions for information to be contained in a screening assessment, and in an appropriate assessment from the guidance document '*Assessment of Plans and Projects significantly affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*', (European Commission, 2001). The standard 'Screening Matrix' and 'Finding of No Significant Effects Report Matrix' in Annex 1 of this guidance document are also followed.

As set out in NPWS guidance (DoEHLG, 2009), the task of establishing whether a plan or project is likely to have an effect on a European site(s) is based on an evaluation using available information and data (e.g. water quality data), supplemented as necessary by local site information and ecological surveys. This results in a determination by the competent authority as to whether there may be a significant effect on the designated site. A precautionary approach is required.

Some examples given in the NPWS guidance (DoEHLG, 2009) of effects that are likely to be significant are:

1. Any impact on an Annex I habitat,
2. A reduction in the area of a habitat of conservation interest in a European site or a reduction in the area of a European site,
3. Direct or indirect damage to the physical quality of the environment (e.g. water quality and supply, soil compaction) in the European site,
4. Serious or ongoing disturbance to species or habitats for which the European site is selected (e.g. increased noise, illumination and human activity),



5. Direct or indirect damage to the size, characteristics or reproductive ability of populations in the European site,
6. Interference with mitigation measures put in place for other plans or projects.

**Table 3: Screening Matrix**

Assessment Criteria	Discussion of Potential Impacts
<p><i>Brief description of project or plan</i></p>	<p>It is proposed to cap the historical landfill with an engineered barrier. The cap will be placed on top of the existing soil covering. The cap will incorporate a sub-surface drainage layer, LLDPE Barrier, and landfill gas migration layer and associated gas collection pipework. A covering of topsoil and free-draining subsoil will cover the barrier layers, with surface and sub-surface runoff draining to a network of French drains surrounding the cap.</p> <p>A vertical LLDPE cut off barrier and anchor trench backfilled with cohesive compacted material will be installed around the waste body; the impermeable sub-surface drainage layer will extend outside the cut-off trench, with surface and subsurface drainage feeding into the French drain network around the cap. The landfill gas barrier and associated collection pipework will be located on the inner side of the cut off trench.</p> <p>The primary components of the engineered covering proposed are listed below:</p> <ul style="list-style-type: none"> <li>• 200mm Topsoil</li> <li>• 800mm Free Draining Subsoil</li> <li>• Sub Surface Drainage Layer</li> <li>• LLDPE Barrier</li> <li>• Landfill Gas Migration Layer</li> <li>• Surface and Sub-surface Water Collection</li> <li>• 160mm SDR17 Landfill Gas Migration Pipework</li> <li>• Vertical Cut Off/Anchor Trench</li> </ul> <p>The historical landfill boundary is within 10m of the Kilgormley river, which flows east-west past the northern corner of the historical landfill.</p>
<p><i>Brief description of the Natura 2000 (European) Site</i></p>	<p>There are six European sites within the potential zone of influence (15km buffer), and two outside this zone which are hydrologically connected (see Figure 2). These sites are:</p> <ul style="list-style-type: none"> <li>• Magheraveely Marl Loughs SAC (UK0016621) (4.3 km northwest)</li> <li>• Kilroosky Lough Cluster SAC (001786) (6.8 km west)</li> <li>• Slieve Beagh SPA (004167) (10.2 km north)</li> <li>• Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091) (11.4 km northwest)</li> <li>• Upper Lough Erne SPA (UK9020071) (11.7 km southwest, c. 16.5 km downstream)</li> <li>• Slieve Beagh SAC (UK0016622) (13.8 km north)</li> <li>• Upper Lough Erne SAC (UK0016614) (c. 25km downstream)</li> <li>• Lough Oughter and Associated Loughs SAC (000007) (shares surface water body with Upper Lough Erne SPA/SAC)</li> </ul>
<p><i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise</i></p>	<p>Potential accidental pollutant or contaminant inputs resulting in downstream effects to the qualifying interests of Upper Lough Erne SPA (UK9020071), Upper Lough Erne SAC (UK0016614) or Lough Oughter and Associated Loughs SAC (000007).</p>

Assessment Criteria	Discussion of Potential Impacts
<p>to impacts on the Natura 2000 sites.</p>	<p>These would take the form of accidental inputs of pollutants/contaminants such as silt or petrochemicals to connected watercourses during remedial works; the effects of such inputs could include reductions in water and aquatic/riparian habitat quality within designated sites amounting to direct impacts on designated habitats and direct or indirect (via foraging habitat and prey population damage) impacts on designated animal species.</p> <p>There are no potential connections between the remainder of the Natura 2000 sites assessed.</p>
<p>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:</p> <ul style="list-style-type: none"> <li>▪ Size and scale;</li> <li>▪ Land-take;</li> <li>▪ Distance from Natura 2000 site or key features of the site;</li> <li>▪ Resource requirements;</li> <li>▪ Emissions;</li> <li>▪ Excavation requirements;</li> <li>▪ Transportation requirements;</li> <li>▪ Duration of construction, operation etc.;</li> <li>▪ Other.</li> </ul>	<p><b>Size and scale, land-take and distance from Natura 2000 sites</b></p> <p><b>Potential Impacts: None</b></p> <p>The remedial works proposed are not on an extensive scale and at a remove from European sites (closest is 4.3 km).</p> <p>As the landfill is not located within or adjacent to any European site, no direct impacts in terms of habitat loss or disturbance/displacement impacts are predicted as a result of the proposed works.</p> <p>There will be no land-take from any European site and no direct impact on the size and scale of any site, as a result of the proposed works.</p> <p><b>Resource requirements and Excavation requirements</b></p> <p><b>Potential Impacts: None</b></p> <p>There will be no resource requirements or excavation requirements from any European site as a result of the proposed works.</p> <p><b>Emissions</b></p> <p><b>Potential Impacts: None</b></p> <p>Any potential small-scale accidental inputs of pollutants and/or contaminants into the Kilgormley River arising from remedial works would be at a sufficient remove (16.5 km and 25 km upstream respectively) from Upper Lough Erne SPA (UK9020071) and Upper Lough Erne SAC (UK0016614)/Lough Oughter and Associated Loughs SAC (000007) to preclude adverse effects to their qualifying interests.</p> <p>While the potential for sediment or contaminant inputs during remedial works exists, it should be also noted that the landfill cap will ultimately improve water quality by reducing leachate generation</p> <p><b>Transportation requirements</b></p> <p><b>Potential Impacts: None.</b></p> <p>Site access will not traverse any European Site.</p> <p><b>Duration of Construction and Operation</b></p> <p><b>Potential Impacts: None.</b></p> <p>Duration of repair works is anticipated to be 6 months.</p> <p><b>Cumulative impacts</b></p> <p><b>Potential Impacts: None.</b></p>

Assessment Criteria	Discussion of Potential Impacts
	A planning search was conducted on 14 <sup>th</sup> June 2019. No projects of a scale that could act cumulatively with the proposed remedial works are permitted or proposed in the local area.
<p><i>Describe any likely changes to the site arising as a result of:</i></p> <ul style="list-style-type: none"> <li>▪ <i>Reduction of habitat area;</i></li> <li>▪ <i>Disturbance of key species;</i></li> <li>▪ <i>Habitat or species fragmentation;</i></li> <li>▪ <i>Reduction in species density;</i></li> <li>▪ <i>Changes in key indicators of conservation value;</i></li> <li>▪ <i>Climate change.</i></li> </ul>	<p>There will be no direct or indirect reduction in habitat area or habitat fragmentation within any European site as a result of the proposed works.</p> <p>There is no predicted impact via disturbance of key species or reduction of key species as a result of the proposed works.</p> <p>There are no predicted changes in key indicators of conservation value due to the proposed works.</p> <p>The carbon emissions generated during remedial works will be in line with those resulting from similar engineering projects; the capping and collection of landfill gas will have a positive effect on climate change by reducing methane and carbon dioxide emissions.</p>
<p><i>Describe any likely impacts on the Natura 2000 site as a whole in terms of:</i></p> <ul style="list-style-type: none"> <li>▪ <i>Interference with the key relationships that define the structure of the site;</i></li> <li>▪ <i>Interference with key relationships that define the function of the site.</i></li> </ul>	<p>There are no potential impacts on the key relationships that define the structure or function of any European site considered in this Appropriate Assessment Screening due to the proposed works.</p>
<p><i>Provide indicators of significance as a result of the identification of effects set out above in terms of:</i></p> <ul style="list-style-type: none"> <li>▪ <i>loss,</i></li> <li>▪ <i>fragmentation,</i></li> <li>▪ <i>disruption,</i></li> <li>▪ <i>disturbance,</i></li> <li>▪ <i>change to key elements of the site (e.g. water quality etc.).</i></li> </ul>	<p>No effects are predicted; therefore, an indicator of significance is not required.</p>
<p><i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale of magnitude of impacts is not known.</i></p>	<p>No adverse impacts or impacts of unknown scale or magnitude, either alone or in-combination with other projects or plans are predicted.</p>

## 4.7 Stage One Screening Conclusion

No adverse effects on any European Sites are predicted. Therefore, the following eight European sites have been 'screened out' within the Stage 1: Appropriate Assessment Screening Report:

- Magheraveely Marl Loughs SAC (UK0016621)
- Kilroosky Lough Cluster SAC (001786)
- Slieve Beagh SPA (004167)
- Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091)
- Upper Lough Erne SPA (UK9020071)
- Slieve Beagh SAC (UK0016622)
- Upper Lough Erne SAC (UK0016614)
- Lough Oughter and Associated Loughs SAC (000007)

See Appendix 1 for Findings of No Significant Effects Report.

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## 5 REFERENCES/BIBLIOGRAPHY

- Colhoun, K. and Cummins, S. 2013. *Birds of Conservation Concern in Ireland 2014-2019*. BirdWatch Ireland.
- DoEHLG, 2009. *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin 2009.
- EC, 2000. *Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats Directive' 92/43/EEC*, European Commission, 2000.
- EC, 2001. *Assessment of Plans and Projects significantly affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*, European Commission 2001.
- EC, 2018. *Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats Directive' 92/43/EEC*, European Commission, 2018.
- European Environmental Agency, 2012. *European waters — assessment of status and pressures*. Published by the EEA, 13 November 2012.
- IFI, 2016. *Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters*.
- JNCC, 2015. *Magheraveely Marl Loughs SAC (UK0016621) Conservation Objectives Version 2* [online] available at: <https://www.daera-ni.gov.uk/publications/reasons-designation-special-area-conservation-magheraveely-marl-loughs> (accessed 13/06/2019)
- JNCC, 2015. *Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091) Conservation Objectives Version 2* [online] available at: <https://www.daera-ni.gov.uk/publications/slieve-beagh-mullaghfad-lisnaskea-special-protection-area> (accessed 13/06/2019)
- JNCC, 2015. *Upper Lough Erne SPA (UK9020071) Conservation Objectives Version 2* [online] available at: <https://www.daera-ni.gov.uk/publications/upper-lough-erne-special-protection-area> (accessed 13/06/2019)
- JNCC, 2017. *Slieve Beagh SAC (UK0016622) Conservation Objectives Version 2.1* [online] available at: <https://www.daera-ni.gov.uk/publications/reasons-designation-special-area-conservation-slieve-beagh> (accessed 13/06/2019)
- JNCC, 2015. *Upper Lough Erne SAC (UK0016614) Conservation Objectives Version 2* [online] available at: <https://www.daera-ni.gov.uk/publications/reasons-designation-special-area-conservation-upper-lough-erne> (accessed 13/06/2019)
- King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011) *Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Marnell, F., Kingston, N. & Looney, D., 2009. *Ireland Red List No. 3, Terrestrial Mammals*. National parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.
- Monaghan County Council, 2019 *Monaghan County Development Plan 2019-2025* [online] available at: <https://monaghan.ie/planning/new-county-development-plan/> (accessed 14/06/2019)
- Monaghan County Council, 2012 *County Monaghan Heritage Plan 2012-2017* [online] available at: [https://monaghan.ie/heritage/wp-content/uploads/sites/13/2016/11/County\\_Monaghan\\_Heritage\\_Plan\\_2012-2017.pdf](https://monaghan.ie/heritage/wp-content/uploads/sites/13/2016/11/County_Monaghan_Heritage_Plan_2012-2017.pdf) (accessed 14/06/2019)
- NRA (2009). *Environmental Assessment and Construction Guidelines*. Published by the National Roads Authority.
- Strahler, A. N. 1957. *Quantitative analysis of watershed geomorphology*. Transactions of the American Geophysical Union, 38, 6, 913-920.
- Toner, P., Bowman J., Clabby, K., Lucey J., McGarrigle, M., Concannon, C., Clenaghan, C., Cunningham, P., Delaney, J., O'Boyle, S., MacCárthaigh, M., Craig, M. and Quinn R. (2005). *Water Quality in Ireland 2001 – 2003*. EPA.



# Appendix 1

## Finding of No Significant Effects Report

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## Finding of No Significant Effects Report

<p><i>Name and location of the Natura 2000 sites</i></p>	<p>There are six European sites within the potential zone of influence (15km radius), and two outside this zone which are hydrologically connected (see Figure 2). These sites are:</p> <ul style="list-style-type: none"> <li>• Magheraveely Marl Loughs SAC (UK0016621) (4.3 km northwest)</li> <li>• Kilroosky Lough Cluster SAC (001786) (6.8 km west)</li> <li>• Slieve Beagh SPA (004167) (10.2 km north)</li> <li>• Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091) (11.4 km northwest)</li> <li>• Upper Lough Erne SPA (UK9020071) (11.7 km southwest, c. 16.5 km downstream)</li> <li>• Slieve Beagh SAC (UK0016622) (13.8 km north)</li> <li>• Upper Lough Erne SAC (UK0016614) (c. 25km downstream)</li> <li>• Lough Oughter and Associated Loughs SAC (000007) (shares surface water body with Upper Lough Erne SPA/SAC)</li> </ul>
<p><i>Description of the project or plan</i></p>	<p>It is proposed to cap the landfill with an engineered barrier; the cap will be placed on top of the existing soil covering. The cap will incorporate a sub-surface drainage layer, LLDPE Barrier, and landfill gas migration layer and associated gas collection pipework. A covering of topsoil and free-draining subsoil will cover the barrier layers, with surface and sub-surface runoff draining to a network of French drains surrounding the cap.</p> <p>A vertical LLDPE cut off barrier and anchor trench backfilled with cohesive compacted material will be installed around the waste body; the impermeable sub-surface drainage layer will extend outside the cut-off trench, with surface and subsurface drainage feeding into the French drain network around the cap. The landfill gas barrier and associated collection pipework will be located on the inner side of the cut off trench.</p> <p>The primary components of the engineered covering proposed are listed below:</p> <ul style="list-style-type: none"> <li>• 200mm Topsoil</li> <li>• 800mm Free Draining Subsoil</li> <li>• Sub Surface Drainage Layer</li> <li>• LLDPE Barrier</li> <li>• Landfill Gas Migration Layer</li> <li>• Surface and Sub-surface Water Collection</li> <li>• 160mm SDR17 Landfill Gas Migration Pipework</li> <li>• Vertical Cut Off/Anchor Trench</li> </ul> <p>The landfill boundary is within 10m of the Kilgormley river, which flows east-west past the northern corner of the landfill.</p>
<p><i>Is the Project or Plan directly connected with or necessary to the management of the site (provide details)?</i></p>	<p>No.</p>
<p><i>Are there other projects or plans that together with the project of plan being assessed could affect the site (provide details)?</i></p>	<p>No. A planning search was conducted on 14<sup>th</sup> June 2019. No other projects of a scale that could act cumulatively with the proposed development are permitted or proposed in the local area.</p>

## Finding of No Significant Effects Report

### Assessment of Effects

<p><i>Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site</i></p>	<p>Potential accidental pollutant or contaminant inputs resulting in downstream effects to the qualifying interests of Upper Lough Erne SPA (UK9020071), Upper Lough Erne SAC (UK0016614) or Lough Oughter and Associated Loughs SAC (000007).</p> <p>These would take the form of accidental inputs of pollutants/contaminants such as silt or petrochemicals to connected watercourses during remedial works; the effects of such inputs could include reductions in water and aquatic/riparian habitat quality within designated sites amounting to direct impacts on designated habitats and direct or indirect (via foraging habitat and prey population damage) impacts on designated animal species.</p>
<p><i>Explain why these effects are not considered significant</i></p>	<p>Any potential small-scale accidental inputs of pollutants and/or contaminants into the Kilgormley River arising from remedial works would be at a sufficient remove (16.5 km and 25 km upstream respectively) from Upper Lough Erne SPA (UK9020071) and Upper Lough Erne SAC (UK0016614)/Lough Oughter and Associated Loughs SAC (000007) to preclude significant effects to their qualifying interests.</p> <p>The remedial works proposed are not on an extensive scale and at a remove from European sites (closest is 4.3 km).</p> <p>As the landfill is not located within or adjacent to any European site, no direct impacts in terms of habitat loss or disturbance/displacement impacts are predicted as a result of the proposed works.</p> <p>There will be no land-take from any European site and no direct impact on the size and scale of any site, as a result of the proposed works.</p> <p>There are no potential connections between the remainder of the Natura 2000 sites assessed.</p> <p>Magheraveely Marl Loughs SAC (UK0016621) and Kilroosky Lough Cluster SAC (001786) which are both designated for the same suite of habitats and species are at a sufficient remove from the site and do not receive waters flowing downstream from the landfill site; as such the habitats and species for which they are designated are not susceptible to effects from remedial works.</p> <p>Slieve Beagh SPA (004167) and Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091) are contiguous and both designated for Hen Harrier, together forming an expansive upland territory for this species. SNH guidance on assessing connectivity with SPAs (Scottish Natural Heritage, 2016) cites a core and maximum range of 2 km and 10 km respectively for Hen Harrier during the breeding season, placing the landfill site outside the maximum foraging range for Hen Harrier associated with these SPAs. In addition, the intensively farmed lowland habitats which dominate the landscape in which the landfill is located are unlikely to be of value to Hen Harrier, which favour the rough semi-natural grasslands, scrub and heath found in upland areas.</p> <p>Slieve Beagh SAC (UK0016622) lacks any potential ecological connectivity, being located 13.8km to the north and having habitats which occur within it's boundary as conservation interests.</p> <p>The landfill cap will ultimately improve water quality by reducing leachate runoff and groundwater transport.</p>

Data Collected to Carry out the Assessment			
Who carried out the assessment	Sources of Data	Level of assessment completed	Where can the full results of the assessment be accessed and viewed
This evaluation was completed by Fehily Timoney and Company	<ul style="list-style-type: none"> <li>Information on the ROI designated nature conservation sites within 15km of the study area was obtained from the NPWS website and metadata available online from the NPWS mapping system (<a href="http://webgis.npws.ie/npwsviewer/">http://webgis.npws.ie/npwsviewer/</a>).</li> <li>Information on the NI designated nature conservation sites within 15km of the study area was obtained from the JNCC, DAERA and OpenDataNI <a href="https://www.opendatani.gov.uk/dataset?tags=Northern+Ireland&amp;res_format=SHP">https://www.opendatani.gov.uk/dataset?tags=Northern+Ireland&amp;res_format=SHP</a></li> <li>Information on the waterbody catchments in the development area was obtained from the Water Framework Directive Water Mapping Information System <a href="http://gis.epa.ie/Envision">http://gis.epa.ie/Envision</a></li> <li>OSI Aerial photography and 1:50000 mapping.</li> <li>Monaghan Co. Council Planning Search <a href="http://www.eplanning.ie/MonaghanCC/searchtype">http://www.eplanning.ie/MonaghanCC/searchtype</a></li> </ul>	Appropriate Assessment Screening (Stage One)	Environmental Protection Agency

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# Appendix 2

## European Site Synopses

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## SITE SYNOPSIS

**SITE NAME: SLIEVE BEAGH SPA**

**SITE CODE: 004167**

The Slieve Beagh SPA comprises much of the eastern and south-eastern sectors of the Slieve Beagh upland area that extends from County Monaghan into Northern Ireland.

Mountain blanket bog is well developed at the higher altitudes and especially at Eshbrack (peak of 365 m). The vegetation is largely dominated by Deergrass (*Scirpus cespitosus*), Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Hare's-tail Cottongrass (*Eriophorum vaginatum*), Common Cottongrass (*E. angustifolium*), Crowberry (*Empetrum nigrum*) and a range of mosses such as *Sphagnum capillifolium*, *S. papillosum*, *S. tenellum* and *Hypnum cupressiforme*. Elsewhere the bog is mostly cutover and there are also wet and dry heaths present. In total, bog and heath occupies 43% of the site. The mid-slopes are afforested (40% of site), with plantations of various ages (open canopy, closed canopy, clear-fell). The remainder of the site is rough or marginal grassland (16%). Some of the old field systems support species-rich wet grassland vegetation dominated by Soft Rush (*Juncus effusus*). Several small dystrophic lakes are present within the site.

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

The site is one of the strongholds for Hen Harrier in the country. A survey in 2005 recorded four pairs, representing over 1.9% of the all-Ireland total. However, when the Northern Ireland sector of Slieve Beagh is considered, there was a total of 10 breeding pairs in 2005. The mix of forestry and open areas provides optimum habitat conditions for this rare bird, which is listed on Annex I of the E.U. Birds Directive. The early stages of new and second-rotation conifer plantations are the most frequently used nesting sites, though some pairs may still nest in tall heather of unplanted bogs and heath. Hen Harriers will forage up to c. 5 km from the nest site, utilising open bog and moorland, young conifer plantations and hill farmland that is not too rank. Birds will often forage in openings and gaps within forests. In Ireland, small birds and small mammals appear to be the most frequently taken prey.

The site also supports breeding Merlin, with two pairs recorded in 2002-03. Further survey is required to determine the exact status of this small falcon. Red Grouse is found in unplanted areas of bog and heath – this is a species that has declined in Ireland and is now Red-listed. Peregrine nest in the Northern Ireland sector of Slieve Beagh and can be seen over the site at times.

Slieve Beagh SPA is of ornithological importance because it provides excellent nesting and foraging habitat for breeding Hen Harrier and is one of the top sites in the country for the species. The presence of three species, Hen Harrier, Merlin and Peregrine, which are listed on Annex I of the E.U. Birds Directive is of note.

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**Site Name: Kilroosky Lough Cluster SAC**

**Site Code: 001786**

Kilroosky Lough Cluster straddles the border with Northern Ireland, and is located approximately 2 km north-west of Clones, Co. Monaghan. The site consists of three separate areas which contain several calcium-rich, clean water (oligo-mesotrophic) lakes and their marginal fen vegetation.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

[3140] Hard Water Lakes
[7210] <i>Cladium</i> Fens*
[7230] Alkaline Fens
[1092] White-clawed Crayfish ( <i>Austropotamobius pallipes</i> )

The lough cluster includes Kilroosky, Burdautien, Summerhill and Dummy's Loughs, which are of interest for their classic marl lake water chemistry and extensive calcicole plant communities. Marl lakes are relatively low in nutrients, high in calcium and have good water quality. These types of lakes are rare due to their sensitivity to pollution, and have been recognised as being of international importance through their listing on Annex I of the E.U. Habitats Directive. Such hard water lakes are characteristically rich in stoneworts. Stonewort species recorded from Kilroosky include *Chara hispida*, *C. pedunculata*, *Nitella flexilis* and the regionally rare *Chara rudis*.

Kilroosky Lough is a marl lake surrounded by fen and species-rich, freshwater marsh. Of particular note is the occurrence of a fringe of Great Fen-Sedge (*Cladium mariscus*) – *Cladium* fen is a habitat type listed with priority status on Annex I of the E.U. Habitats Directive. Although with a more restricted distribution at the site, and perhaps existing in transition with other habitats in some areas, the presence of areas of alkaline fen are also notable. Plant species of regional or local importance recorded from fens within the site include Cowbane (*Cicuta virosa*), Fen Bedstraw (*Galium uliginosum*), Fen Pondweed (*Potamogeton coloratus*), Few-flowered Spike-rush (*Eleocharis quinqueflora*), Tufted-sedge (*Carex elata*) and Grass-of-parnassus (*Parnassia palustris*). Eight species of orchid, including the uncommon Marsh Helleborine (*Epipactis palustris*), have also been recorded.

In a small area of Downy Birch (*Betula pubescens*) and Goat Willow (*Salix caprea*) wet woodland on the western shore, Round-leaved Wintergreen (*Pyrola rotundifolia*) has

been recorded amongst the wetland ground flora. This is a rare species in Ireland and one that is listed in the Red Data Book.

Kilroosky Lough also contains a population of White-clawed Crayfish, a species that is indicative of clean unpolluted water and one which is becoming increasingly rare throughout its geographical range. It is protected under the Wildlife Act, 1976 and is listed on Annex II of the E.U. Habitats Directive.

Burdautien Lough, just to the north of Kilroosky, is a more enriched lake with a fringe of reedswamp and fen dominated by Common Reed (*Phragmites australis*), with sedges (*Carex diandra*, *C. paniculata*, *C. flacca* and *C. disticha*), Cowbane, cottongrasses (*Eriophorum* spp.) and Quaking-grass (*Briza media*). The fen vegetation includes a fringe of Great Fen-sedge.

Dummy's Lough is another marl lake which lies just to the west of Kilroosky and is surrounded by marsh and wet woodland. The lake supports a thick band of Lesser Bulrush (*Typha angustifolia*), a regionally rare species, and is fringed by fen communities comprised of Great Fen-sedge, Common Reed, Bottle Sedge (*Carex rostrata*), Bogbean (*Menyanthes trifoliata*), Marsh Cinquefoil (*Potentilla palustris*), and occasional small sedge-rich areas.

A section of Summerhill Lough is included within the site. A large sedge-dominated fen occurs on the north-eastern side of this lake and includes such species as Marsh Arrowgrass (*Triglochin palustris*) and an abundance of stoneworts (*Chara* spp.). A zone of Great Fen-sedge also occurs at this lake. Behind the fen is a zone of wet grassland and scrub comprised of Alder (*Alnus glutinosa*) and Gorse (*Ulex europaeus*).

Ramages Lough, to the south-east of Kilroosky, supports a good example of a freshwater swamp. Over half of this lake is colonised by Bulrush (*Typha latifolia*) and Common Reed, with frequent Bottle Sedge, Water Horsetail (*Equisetum fluviatile*) and scattered willows (*Salix* spp.).

Kilroosky Lough Cluster is of ecological interest for its diversity of habitats and species. It is of particular conservation significance for its hard water lakes, areas of alkaline fen and of *Cladium mariscus* fen, all habitats that are listed on Annex I of the E.U. Habitats Directive, the last-named with priority status. Furthermore, the site supports a population of White-clawed Crayfish, a species that is listed on Annex II of this Directive.

**Site Name: Lough Oughter and Associated Loughs SAC**

**Site Code: 000007**

Lough Oughter and its associated loughs occupy much of the lowland drumlin belt in north and central Cavan between Upper Lough Erne, Killeshandra and Cavan town. The site is a maze of waterways, islands, small lakes and peninsulas including some 90 inter-drumlin lakes and 14 basins in the course of the Erne River. The area lies on Silurian and Ordovician strata with Carboniferous limestone immediately surrounding.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

[3150] Natural Eutrophic Lakes
[91D0] Bog Woodland*
[1355] Otter ( <i>Lutra lutra</i> )

As well as the habitats and species listed above, the site also contains areas of dry woodland, marsh, reedbed and wet pasture.

Drainage within the area is inefficient and the water levels are prone to natural fluctuation as a result. The regularly flooded areas still accommodate a variety of specialist plant species such as Amphibious Bistort (*Polygonum amphibium*) and Marsh Foxtail (*Alopecurus geniculatus*), as well as rarer species such as Needle Spike-rush (*Eleocharis acicularis*) and Lesser Marshwort (*Apium inundatum*).

The lakes and basins are shallow, and the water well mixed and nutrient rich (eutrophic). The aquatic flora is varied with several pondweed species such as Blunt-leaved Pondweed (*Potamogeton obtusifolius*), Shining Pondweed (*Potamogeton lucens*), Broad-leaved Pondweed (*Potamogeton natans*), Reddish Pondweed (*Potamogeton alpinus*) and Various-leaved Pondweed (*Potamogeton gramineus*). Typical in the zone of aquatic plants are Yellow Water-lily (*Nuphar lutea*), Canadian Pondweed (*Elodea canadensis*), Mare's-tail (*Hippuris vulgaris*), Water Milfoil (*Myriophyllum spicatum*), Brooklime (*Veronica beccabunga*), Water-dropwort species (*Oenanthe* spp.) and Water-starwort (*Callitriche* sp.). The aquatic community includes species of limited distribution in Ireland such as the Duckweed species *Lemna gibba* and *Spirodela polyrhiza*.

Around much of the shoreline there are well developed swamp and marsh communities, typically with a zone of Common Club-rush (*Scirpus lacustris*) in front of a zone of Common Reed (*Phragmites australis*) which is in turn backed by a more



species-rich zone of sedges, grasses and herbs, particularly Bottle Sedge (*Carex rostrata*), Common Sedge (*Carex nigra*), Creeping Bent (*Agrostis stolonifera*), Meadowsweet (*Filipendula ulmaria*), Water Plantain (*Alisma plantago-aquatica*), Rough Horsetail (*Equisetum hyemale*), Water Horsetail (*Equisetum fluviatile*) and Wild Angelica (*Angelica sylvestris*). Less widespread species also occur on the wet lake margins; species such as Marsh Helleborine (*Epipactis palustris*), Water Dock (*Rumex hydrolapathum*), Greater Water-parsnip (*Sium latifolium*), Cowbane (*Cicuta virosa*), Tufted-sedge (*Carex elata*), Water Soldier (*Stratiotes aloides*), Arrowhead (*Sagittaria sagittifolia*), Flowering Rush (*Butomus umbellatus*) and Greater Spearwort (*Ranunculus lingua*) may be locally prominent.

There are many variations on this typical zonation of sheltered shores with species such as Bulrush (*Typha* sp.), Branched Bur-reed (*Sparganium erectum*) and Reed Canary-grass (*Phalaris arundinacea*) gaining local prominence. More exposed shores lack the extensive swamp zones; here smaller species such as Common Spike-rush (*Eleocharis palustris*) can be found.

Level, wet pastures tend to be dominated by Creeping Bent and rushes (*Juncus* spp.) with a scattering of marshland and wet grassland plants such as Marsh-marigold (*Caltha palustris*), Water Forget-me-not (*Myosotis scorpioides*) and Yellow Iris (*Iris pseudacorus*). Soft Rush (*Juncus effusus*) is most abundant with frequent Hard Rush (*Juncus inflexus*) and Sharp-flowered Rush (*Juncus acutiflorus*), and less widespread Conglomerate Rush (*Juncus conglomeratus*) also occurring.

Where a general lack of grazing pressure or a particular slope has allowed it, deciduous woodland has re-established itself behind the reedbeds. Two species of Willow (*Salix caprea* and *S. cinerea*) are common constituents, along with Alder (*Alnus glutinosa*), Downy Birch (*Betula pubescens*), Hazel (*Corylus avellana*) and Hawthorn (*Crataegus monogyna*). Along submerged margins Alder and Willow are most commonly found with a flooded understorey typically containing Reed Canary-grass, Meadow Sweet, Yellow Iris and in places Tufted-sedge and Greater Tussock-sedge (*Carex paniculata*). Downy Birch occurs along lake edges and also forms stands of wet woodland on cutover bog with varying degrees of wet and dry peat. Purple Moor-grass (*Molinia caerulea*), Marsh Cinquefoil (*Potentilla palustris*) and bog mosses (*Sphagnum* spp.) occur in areas with pools and dry areas. Where there is dry peat, Bracken (*Pteridium aquilinum*), Bramble (*Rubus fruticosus* agg.) and gorse (*Ulex* sp.) occur under the birch canopy. Birch dominated wood is also found in association with Heather (*Calluna vulgaris*) bog.

In areas of wet bog with good *Sphagnum* cover, bog woodland has developed. Downy Birch characterises this habitat; other typical species include Purple Moor-grass and Bottle Sedge.

Dry broadleaved woodland is characterised by Ash (*Fraxinus excelsior*), Hazel, Holly (*Ilex aquifolium*) and Oak (*Quercus* spp.), while shrubs include Blackthorn (*Prunus spinosa*), Spindle (*Euonymus europaeus*) and Guelder-rose (*Viburnum opulus*). The Red Data Book species Bird Cherry (*Prunus padus*) has also been recorded from the site.

The clayey soils have a characteristic flora, including Wood Avens (*Geum urbanum*), Wood-sorrel (*Oxalis acetosella*), Primrose (*Primula vulgaris*), Herb-Robert (*Geranium robertianum*) and Wood-sedge (*Carex sylvatica*).

The site supports a substantial population of water birds including internationally important numbers of Whooper Swan (average peak 231) and nationally important numbers of Tufted Duck (average peak 247) and Cormorant (average peak 130), as well as important numbers of species such as Greenland White-fronted Goose, Great Crested Grebe, Wigeon, Teal and Pochard. Lapwing, Snipe and Golden Plover also utilise the wet grassland areas. Wildfowl Sanctuaries exist at Inchin Lough, Derrygid Lough, Farnham Lough, Derrybrick Lough, Derrinishbeg Lough and Annagh Lough. Part of the site is designated a Special Protection Area (SPA) under the E.U. Birds Directive.

Otter, a species listed on Annex II of the E.U. Habitats Directive, occurs at the site. Irish Hare has also been recorded. Both of these species are listed in the Irish Red Data Book and are legally protected under the Wildlife Act, 1976.

The main threats to the quality of the site are water polluting activities (such as run-off from fertiliser and slurry application, and sewage discharge) which have raised the nutrient status of some lakes to hypertrophic. Housing and boating developments are on the increase, both adjacent to and within the site. There is also significant fishing and shooting pressure on and around the lakes. Increased afforestation has resulted in some loss of wetland habitat and also loss of feeding ground for wintering birds such as Greenland White-fronted Goose.

The Lough Oughter area contains important examples of two habitats listed on Annex I of the E.U. Habitats Directive and supports a population of the Annex II species, Otter. The site as a whole is the best inland example of a flooded drumlin landscape in Ireland and has many rich and varied biological communities. Nowhere else in the country does such an intimate mixture of land and water occur over a comparable area, and many of the species of wetland plants, some considered quite commonplace in Lough Oughter and its associated loughs, are infrequent elsewhere.

### **Magheraveely Marl Loughs SAC (UK0016621)**

These six loughs are small inter-drumlin marl lakes fed by lime-rich water. They are examples of lakes on a predominantly limestone substrate. In comparison with other lakes in this part of Northern Ireland, this site is important because the water has not been influenced by nutrient enrichment and remains clear, with a high lime content and low plant nutrient content. Stoneworts are the dominant submerged vegetation and include several rare and local species, including *Chara aspera*, *C. curta*, *C. hispida* and *C. pedunculata*

Magheraveely Marl Loughs consists of a cluster of six low-lying lakes in the catchment of the River Finn in Northern Ireland. These occur over an area of Carboniferous limestone bedrock. The lakes are surrounded by an inundation zone containing significant stands of **alkaline fen** vegetation. This is generally composed of a sward that is very rich in sedges and herbs. Characteristic species include the sedges lesser tussock-sedge *Carex diandra*, long-stalked yellow sedge *C. viridula* ssp. *brachyrrhyncha* and glaucous sedge *C. flacca*. Other frequent species include marsh arrowgrass *Triglochin palustre*, quaking-grass *Briza media* and more notably, marsh helleborine *Epipactis palustris*, grass-of-Parnassus *Parnassia palustris*, knotted pearlwort *Sagina nodosa* and fen bedstraw *Galium uliginosum*. The latter are all scarce species in Northern Ireland.

These four marl loughs in Northern Ireland have strong isolated populations of **white-clawed crayfish *Austropotamobius pallipes***. This site has been selected because of its hydrological isolation and the absence of crayfish plague from Northern Ireland.

### **Slieve Beagh-Mullaghfad-Lisnaskea SPA (UK9020091)**

The Slieve Beagh – Mullaghfad - Lisnaskea SPA comprises a single land unit extending between Slatbeg in the north-east and Coolnasillagh in the south-west and incorporating the Slieve Beagh massif, Mullaghfad Forest and Lisnaskea Forest. Slightly more than half the eastern boundary is formed by the border with the Republic of Ireland.

The site is delimited principally by physical boundaries closest to merged radii extending 2.5km from nest sites used by hen harriers between 1997 and 2004. The site encompasses all lands within these boundaries, excluding wholly-improved pasture, arable land, buildings and associated lands.

It includes coniferous plantations, blanket bog, wet and dry heath, grass moor, scrub and limited semi-improved agricultural grassland. The principal interest is the breeding population of hen harrier. The site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting internationally important populations of hen harrier. It should be noted that the site adjoins a proposed SPA for hen harrier in the Republic of Ireland.

### **Upper Lough Erne SPA (UK9020071)**

Upper Lough Erne is a very large and complex freshwater system located in the south of Northern Ireland. It lies within the catchment of the River Erne, a river shared with the Irish Republic. A series of flooded drumlins in the course of the River Erne give rise to a complex of islands, bays and many lakes bordered by damp pastures, fens, reedswamp, Alder *Alnus glutinosa*-willow *Salix* sp. carr, and Oak *Quercus* sp. Woodland. The site supports a wide range of breeding and wintering waterbirds, but is especially important for wintering Whooper Swan *Cygnus cygnus*.

### **Slieve Beagh SAC (UK0016622)**

Slieve Beagh SAC in Northern Ireland is an extensive area of undulating upland Blanket bogs and heathland that extends into County Monaghan in the Republic of Ireland. Within Northern Ireland, the peatland complex contains a number of natural dystrophic lakes and ponds that range in size from 5.5 ha to less than 0.5 ha. The site contains the largest concentration of medium- to large-sized dystrophic lakes in Northern Ireland. The smaller lakes and ponds are steep-sided with banks and bed formed by layers of deep peat. The larger lakes have shallow, shelving shores and hard, stony beds. Although the base-poor waters are low in plant nutrients and tend to have a characteristically impoverished flora and fauna, some important communities are present on the site.

The most common type is characterised by the aquatic mosses *Sphagnum cuspidatum*, *S. denticulatum*, *Drepanocladus* spp. and the liverwort *Jungermannia* sp. The floating and marginal vegetation tends to be sparse and restricted and consists of a scattered swamp and acid poor-fen fringe. The lakes are also important for a range of upland invertebrates.

Slieve Beagh is one of the most extensive areas of intact blanket bog in Northern Ireland. It contains a comparatively large area of a mixture of generally *Sphagnum*-rich mire vegetation with cross-leaved heath *Erica tetralix* and *Sphagnum papillosum*, together with deergrass *Trichophorum cespitosum* and hare's-tail cottongrass *Eriophorum vaginatum* with high dwarf-shrub cover. It is less markedly oceanic than other Northern Ireland sites but has some limited areas of surface patterning

### Upper Lough Erne SAC (UK0016614)

Upper Lough Erne in Northern Ireland is a very large natural eutrophic lake situated in a drumlin landscape and has a predominantly limestone catchment. The site is an example of a northern or western eutrophic lake of glacial origin. The lake has a very long shoreline and numerous associated satellite lakes, many of which are included in the site. Aquatic vegetation of the *Magnopotamion* and *Hydrocharition* type is extensively developed. Both club-rush – common reed *Scirpo-Phragmitetum* and reed canary-grass – shoreweed – spike-rush *Phalaris – Littorella – Eleocharis* associations are well-developed on the shore. There are transitions to swamp and fen vegetation.

Upper Lough Erne represents 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 the lough. The woodlands consist of a canopy dominated by oak *Quercus petraea*, with occasional ash *Fraxinus excelsior* and birch *Betula pubescens*. Hazel *Corylus avellana* and holly *Ilex aquifolium* often form a distinct shrub layer. The ground flora is very variable and consists of a wide variety of species, including bluebell *Hyacinthoides non-scripta*, sanicle *Sanicula europaea*, goldilocks buttercup *Ranunculus auricomus*, great wood-rush *Luzula sylvatica*, and an abundance of the scarce thin-spiked wood-sedge *Carex strigosa*. Upper Lough Erne is 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 ungrazed 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. These are generally characterised by a canopy in which species such as willow *Salix* spp. and alder *Alnus glutinosa* are dominant, with more notable species such as aspen *Populus tremula*, guelder-rose *Viburnum opulus* and buckthorn *Rhamnus cathartica* scattered throughout. The ground flora is often similar to that of the swamp and fen zone, with a rich variety of sedges and herbs. In places, there are well-developed transitions to drier woodland types, including 91A0 old sessile oak woods with *Ilex* and *Blechnum*.

This site represents otter *Lutra lutra* in Northern Ireland. The province holds one of the strongest populations of otters in the UK. Upper Lough Erne consists of a large eutrophic lake with very extensive associated wetland habitats that holds a dense and large population of otters. In addition the surrounding countryside is 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.