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## LONGFORD COUNTY COUNCIL

# APPROPRIATE ASSESSMENT SCREENING REPORT CARTRON BIG HISTORIC LANDFILL SITE, CO. LONGFORD

NOVEMBER 2019



# APPROPRIATE ASSESSMENT SCREENING REPORT CARTRON BIG HISTORIC LANDFILL SITE, CO. LONGFORD

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**Abstract:** This document comprises the Stage One Screening Report for the proposed Cartron Historic Landfill in the townland of Cartron Big, Co. Longford. 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 site.

## TABLE OF CONTENTS

	<u>Page</u>
<b>1 INTRODUCTION</b> .....	<b>1</b>
1.1 LEGISLATIVE REQUIREMENTS .....	4
1.1.1 <i>Regulatory Context</i> .....	4
1.2 PLANNING HISTORY .....	5
1.3 PROPOSED WORKS.....	5
<b>2 METHODOLOGY</b> .....	<b>7</b>
2.1 APPROPRIATE ASSESSMENT METHODOLOGY .....	7
2.1.1 <i>Impact Assessment</i> .....	7
2.2 DESKTOP STUDY .....	8
<b>3 STAGE ONE - SCREENING REPORT</b> .....	<b>9</b>
3.1 DESCRIPTION OF THE EXISTING SITE.....	9
3.1.1 <i>Findings of the Tier 3 Assessment</i> .....	9
3.1.2 <i>Habitats within the Existing Environment</i> .....	9
3.2 DESCRIPTION OF THE EUROPEAN SITES WITHIN 15 KM OF THE DEVELOPMENT .....	10
3.3 CONSERVATION OBJECTIVES .....	16
3.4 PERMITTED PROJECTS IN THE VICINITY OF THE PROPOSED DEVELOPMENT SITE.....	16
3.5 SUMMARY OF THE MAIN CHARACTERISTICS OF THE PROPOSED DEVELOPMENT .....	17
3.6 SCREENING ASSESSMENT CRITERIA .....	19
3.7 STAGE ONE SCREENING CONCLUSION.....	24
<b>4 REFERENCES</b> .....	<b>25</b>

## LIST OF APPENDICES

- Appendix 1: Site Walkover Photos
- Appendix 2: NPWS Site Synopses for the European Sites within 15 km of the Proposed Development and Conservation Objectives References
- Appendix 3: Leachate Generation Rates
- Appendix 4: Finding of No Significant Effects Report
- Appendix 5: Tier Assessment Reports

## LIST OF FIGURES

### Page

FIGURE 1-1: SITE LOCATION MAP .....	3
FIGURE 3-1: LOCATION OF EUROPEAN SITES IN RELATION TO PROPOSED PROJECT.....	11

## LIST OF TABLES

TABLE 3-1: THE CHARACTERISTICS OF THE EUROPEAN SITES .....	12
TABLE 3-2: SUMMARY OF MAIN CHARACTERISTICS OF THE PROJECT.....	17
TABLE 3-3: ASSESSMENT OF THE POTENTIAL EFFECT OF THE PROPOSED PROJECT EITHER ALONE OR IN COMBINATION WITH OTHER PLANS OR PROJECTS ON EUROPEAN (NATURA 2000) SITES.....	20

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# 1 INTRODUCTION

Fehily Timoney & Company (FT) were commissioned by Longford County Council (LCC) to prepare an Environmental Risk Assessment (ERA) and an outline remediation plan for Cartron Big Historic landfill site, Cartron Big, Co. Longford. An Appropriate Assessment Screening Report has been prepared in respect of the proposed project, as required by Article 6 of Council Directive 92/43/EEC (Habitats Directive).

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<sup>1</sup>) 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 effect of a project or plan on the integrity of a European site and on its conservation objectives, and where necessary, draws up mitigation measures to avoid/minimise negative effects.

The competent authority, in 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 effect(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 buffer is recommended for plans, there is no hard and fast rule for buffer size (DoEHLG, 2009). A 15km buffer 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 proposed project is not located within any European site. Seven European sites were found to be present within 15km of the proposed development. The closest European site to the historic landfill is Mount Jessop Bog SAC (Site Code: 002202), located 6.7km south east. There are hydrological linkages between the proposed site and Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101). These sites are located 11.9km instream distance, downstream of the historic landfill site at Cartron Big.

LCC is required to complete a tiered risk assessment of historic waste disposal sites in accordance with the Environmental Protection Agency (EPA) 'Code of practice: Environmental Risk Assessment for Unregulated Waste Disposal Sites', under the Section 76 of the EPA act 1992 (as amended). A data gap analysis and a Tier 1 Assessment completed by AECOM in 2017 determined the site had a risk classification of High (Class A) based on a risk of leachate runoff entering the nearby Clooncoose stream, the risk of leachate migration to groundwater and the risk of impacting a nearby public water supply.

The results, conclusions of the previous Tier 2 (FTC, 2018) and 3 (FTC, 2019) ERA reports states:

## **Tier 2:**

"Groundwater analysis also indicates the presence of elevated ammonia and coliform concentrations in all monitoring wells. This may be evidence of local impact from agricultural land spreading or poorly functioning septic tanks in the area.

---

<sup>1</sup> At present many SACs in Ireland are currently 'candidate' SACs (cSACs). The relevant Statutory Instruments for the cSACs in Ireland have not yet been made, 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.

Notwithstanding the range of groundwater threshold exceedances recorded, the low infiltration results from the in-situ permeability testing of the limestone bedrock suggest that rapid vertical leachate migration into the bedrock aquifer may be minimised by the dense nature of the rock mass. Therefore, the low permeability limestone bedrock underlying the waste body is potentially confining the contaminated leachate at the bedrock surface. Despite the risk to the County Council's public water supply borehole (ID: 2027SEW013) located 1km east of the site boundary as identified in the Tier 1 assessment, the determined groundwater flow direction is north-north-east of the site which suggests that any leachate plume migrating north from the landfill will not impact on abstracted water quality. Surface water results recorded at SW1 and SW2 would appear to concur with the Good Status chemical surface water quality at Cartron Bridge as indicated from available EPA water quality data up to 2008. However, water quality monitoring 150m downstream of Cartron Bridge (RS26C200300) at SW4 has detected ammonia concentrations above guideline threshold levels. The detection of ammonia at this location indicates the presence of a pathway, possibly a man-made drainage channel flowing north / north-west, from the landfill, as depicted in historical mapping for the area.

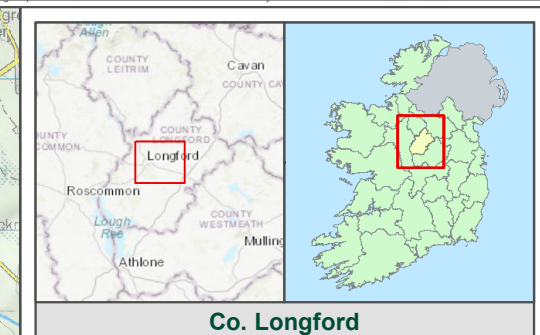
The next EPA monitoring station downstream is located at the R194 Road Bridge (RS26C200500) which is approximately 2.5 km downstream of monitoring location SW4. The water quality status at this location is classified as Good. The elevated ammonia concentrations detected at SW4 is therefore considered to have a localised impact on the Clooncoose Stream.

The results of this Tier 2 assessment and risk model indicates that the site is a **High-Risk Classification (Class A)**. The principal risks identified on the site are the migration of leachate from the site to the groundwater aquifer and the associated risk posed to the Clooncoose Stream from the migration of landfill leachate from the waste material encountered at the site".

### **Tier 3:**

The Tier 3 assessment concludes, that to mitigate the impact of leachate generated on site would have on the underlying aquifer and receptors downgradient, that a landfill cap layer should be constructed across the site. The proposed landfill cap will be constructed in accordance with the EPA recommendations/requirements for landfill site design. This will mitigate the contribution of rainfall infiltration towards leachate generation from the site. Modelling of downstream concentrations demonstrated that even at elevated concentrations, above those observed in downgradient monitoring wells it is expected that the impact on groundwater is limited to a relatively small area downstream of the site.

It is also recommended that the feasibility of the application of utilisation or flaring technologies for landfill gas management at the site be assessed. This can be done through the implementation of a programme of pumping trials on wells to determine the quantity and characteristics of landfill gas. Any form of utilisation or flaring technology will require relatively consistent supply of gas and methane to operate effectively. No specific recommendations on landfill gas treatment can be made without investigating the likely yields from the site and assessing potentially suitable technologies.



**Legend**  
[Red Box] Site Boundary



0 0.5 1 2 Kilometers

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<b>Figure Title</b>	Site Location Plan and Aerial View	
<b>Figure No.</b>	1.1	
<b>Project</b>	Historical Landfills: Cartron Big	
<b>Client</b>	Longford County Council	
<b>Scale</b>	1:50,000	<b>Page Size</b> A3
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## 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 (European 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 sites 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 2000, 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.

LCC is required to complete a tiered risk assessment of historic waste disposal sites in accordance with the Environmental Protection Agency (EPA) Code of Practice for Unregulated Waste Disposal Sites. Once the risk assessments and, if necessary, remediation plan has been prepared to the satisfaction of the EPA, an application can be made for the granting of a Certification of Authorisation.

### 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.



## 1.2 Planning History

No records for planning applications have been found for this site. Several applications have been made for one off rural dwelling houses on land in the vicinity of the site and housing development with a golf course and hotel.

## 1.3 Proposed Works

The works will involve the construction of a fully engineered landfill cap for the site. The landfill cap shall be designed in accordance with the EPA Landfill design manual for non-inert, non-hazardous landfills. The capping shall typically consist of the following:

- 200mm Topsoil Layer
- 800mm Sub Soil
- Sub-Surface Drainage Geocomposite
- 1mm LLDPE Barrier Layer
- Sub-Surface Landfill GAS Collection Geocomposite

The capping design shall be consistent with the future uses of the site for agricultural grazing purposes. The sub soil layer shall be therefore be adequately specified to ensure it is free draining to support grazing.

### Leachate Interception Trench – North West Boundary

The landfill cap shall also include vertical cut off and leachate interception trench along the stream boundary of the site (North west Boundary).

The leachate interception trench shall be constructed to break the pathway linkage between the landfill waste and the boundary stream. The leachate interception trench shall be drained to a controlled collection sump located in the North West corner of the site where the Clooncoose streams exits the site. The leachate sump will be set to a control level 0.25m below (or greater) that of the stream bed level at the point it exits the site ensuring no hydraulic connectivity between the site and the stream. The leachate will be tankered to a WWTP for treatment.

A vertical cut-off constructed using LLPDE liner shall also be constructed to further limit the potential for leachate to enter the stream flow. The barrier will provide an impermeable pathway between the source (waste body) and stream receptor. The barrier shall also ensure that leachate pumping from the interceptor trench does not inadvertently affect the base flow of the stream.

### Leachate Interception Trench – Northern Boundary

The landfill cap shall also include leachate interception trench along the down gradient boundary of the site (Northern Boundary).

The leachate interception trench shall be constructed to intercept the pathway linkage between the landfill waste and down gradient groundwater. The leachate interception trench shall be drained to a controlled collection sump located in the North West corner of the site where the Clooncoose streams exits the site. The interception trench shall be constructed to the maximum achievable depth of excavation achievable (estimated 3-4.0m) and backfilled with rounded non-calcareous drainage stone.

### Vertical and Lateral Gas Generation (SPR10 & SPR11)

There are currently eight landfill gas vents installed across the site. These gas vents provide a preferential pathway for landfill gas to escape the site in a semi-controlled fashion.

It is recommended that landfill gas control measures shall be installed at the site. Suitable control measures should be selected following landfill gas pumping trials at the site.

It is proposed that Landfill gas pumping trials be designed and conducted at the site to accurately quantify the nature and quality of landfill gas being produced at the site. Landfill gas pumping trials should be designed and undertaken by an appropriately qualified person, the results of which should also be supported with a suitably calibrated landfill gas generation model.

It is recommended that dependant on the results of these trials an appropriate remediation design shall be adopted. Appropriate control measures shall be selected in accordance with the EPA Guidance document: Management of Low Levels of Landfill Gas.

Potential options are discussed in brief detail below.

#### *Active Gas Abstraction to LFG Flare*

Active landfill gas abstraction to a flare would involve the installation of a network of landfill gas wells across the site. The wells would be drilled into the waste body to 80-90% of the total waste depth and be connected via a network of gas collection pipework to the landfill gas flare.

The landfill gas flare would treat all abstracted landfill gas by oxidation (burning), it is assumed based on the age of the landfill that a Low Calorific landfill gas flare may be utilised.

#### *Active Gas Abstraction to Bio Oxidation*

Active landfill gas abstraction to a bio-oxidation may be utilised if landfill gas with methane concentrations in the range of 0-15% are expected at the site following completion of pumping trials. This would also involve the installation of a network of landfill gas wells across the site. The wells would be drilled into the waste body to 80-90% of the total waste depth and be connected via a network of gas collection pipework to the bio oxidation unit.

The proposed bio-oxidation unit would treat abstracted landfill gas by bio-oxidation. Bio oxidation is the conversion of methane to carbon dioxide by bacteria typically grown or cultured within an organic (wood chip, mussel shells) or proprietary inorganic media.

#### *Passive Ventilation*

If pumping trials indicate insufficient landfill gas volumes are present to warrant active abstraction, passive ventilation may be utilised. Typically, landfill gas wells will be installed within the waste body and directly connected to a series of vertical stand pipes venting to atmosphere at 2-3m above the final ground level. Alternatively stand pipes may be connected contiguously with the installed landfill gas migration layer in the absence of drilled wells.

The vent pipes provide a preferential pathway for LFG to escape to atmosphere mitigating risks associated with migration to offsite receptors.

Installed ventilation stand pipes may include a carbon filtration pack to "scrub" odour and methane from the landfill gas prior to venting. Rotating cowls may also be used to induce a negative pressure within the stand pipe improving the LFG flow.

## 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 effects on European sites by identifying possible effects early in the project and should design the project in order to avoid such effects.

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

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

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

- *Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*, European Commission 2001.
- *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin 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 effects refer to habitat loss or fragmentation arising from land-take requirements for development or agricultural purposes. Direct effects can be as a result of a change in land use or management, such as the removal of agricultural practices that prevent scrub encroachment.

- Indirect and secondary effects do not have a straight-line route between cause and effect, and it is potentially more challenging to ensure that all the possible indirect effects of the plan (or project) – in combination with other plans and projects - have been established.

These can arise when a development alters the hydrology of a catchment area, which in turn affects the movement of groundwater to a site, and the qualifying interests that rely on the maintenance of water levels. Deterioration in water quality can occur as both an indirect or direct consequence of development, which in turn changes the aquatic environment and reduces its capacity to support certain plants and animals. The introduction of invasive species can also be defined as an indirect effect, which results in increased movement of vectors (humans, fauna, surface water), and consequently the transfer of alien species from one area to another.

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

## 2.2 Desktop Study

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

- Longford County Development Plan 2015-2021
- Longford County Council Planning Enquiry System
- National Parks and Wildlife Service (NPWS) website and metadata available ([www.npws.ie](http://www.npws.ie))
- OSI Aerial photography and 1:50,000 mapping
- National Biodiversity Data Centre (NBDC) (on-line map-viewer)
- Environmental Protection Agency (EPA) water quality data
- Review of Tier 1, 2 and 3 reports.

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## 3 STAGE ONE - SCREENING REPORT

### 3.1 Description of the Existing Site

The site is located within the Cartron Big townland approximately 3km east of Longford Town, at the intersection of the L1071 and L3538 tertiary roads. The site was operated under the ownership of Longford County Council (LCC) for the disposal of municipal and industrial waste. It was previously reported by LCC that the landfill accepted waste throughout the 1970s and 1980s, ceasing in 1989. Waste accepted is understood to have included municipal and industrial waste. Anecdotal evidence suggests that the site was a former quarry excavated to 18 m below ground level when active. Waste was backfilled into the quarry to 1m above ground level. The findings of the intrusive works suggest the waste material is deposited in a single infill area tending north-west to south-east and between 210m in length and 140m in width. Based on this interpretation, the maximum waste footprint is calculated to be 5.80 acres or 2.35 hectares.

The historic landfill is located in a low-lying valley within a predominantly rural setting. The historic landfill is generally flat with heights of 66m above sea level towards the south-easterly section declining towards the north-east. Analysis of waste samples from the trial pits excavated indicate that the waste material encountered within the site is typically non-hazardous. Based on the 5 No. waste acceptance criteria (WAC) tests completed and the representative spread across the Cartron Big site, the site investigation suggests that approximately 80% of the interred waste material tested may be classified as non-hazardous.

The Quaternary Map provided by GSI Online identifies the quaternary sediments at the site as a mixture between 'Till derived from cherts' and 'Bedrock outcrop or subcrop'. The Groundwater Vulnerability provided by GSI details that the historic landfill site is primarily dominated by areas of class 'E', indicating extreme vulnerability of the groundwaters. The remaining areas within the site are classified under this detail as 'X' indicating high vulnerability due to exposed bedrock. The bedrock geology of the site is detailed by the GSI as 'Marine basinal facies Dark-grey argillaceous & cherty limestone & shale'. An assessment of the groundwater bodies by GSI Online details that the area encompassing the site is classed as 'Historic Waste Facility (S22-02489)' the flow regime of this area is classed as 'Poorly productive bedrock'.

#### 3.1.1 Findings of the Tier 3 Assessment

The conceptual site model and site investigation report suggest that the Clooncoose stream is hydrologically linked to the groundwater underlying the site and elevated levels of ammonia detected in the Clooncoose stream downstream of the site indicate a potential effect.

The Tier 3 assessment concludes, that to mitigate the effect of leachate generated on site on the underlying aquifer and receptors downgradient, that a landfill cap layer should be constructed across the site. The proposed landfill cap will be constructed in accordance with the EPA recommendations/requirements for landfill site design. This will mitigate the contribution of rainfall infiltration towards leachate generation from the site. Modelling of downstream concentrations demonstrated that even at elevated concentrations, above those observed in downgradient monitoring wells, it is expected that the effect on groundwater is limited to a relatively small area downstream of the site.

#### 3.1.2 Habitats within the Existing Environment

From aerial maps it is clear that the main habitat types (according to the Fossitt, 2000 classification system), within the general area of the historic landfill site, Improved agricultural grassland (GA1), Hedgerow (WL1), Treelines (WL2), Depositing low-land rivers (FW2), Drainage ditches (FW4) and Wet grassland (GS4). The site is largely surrounded by Improved agricultural grassland (GA1) with areas of semi-natural woodland. The nearest stream, Clooncoose stream, runs in a northerly direction adjacent to the north-easterly boundary of the historic landfill site. Refer to Appendix 1 for site photographs.

### 3.2 Description of the European sites within 15 km of the Development

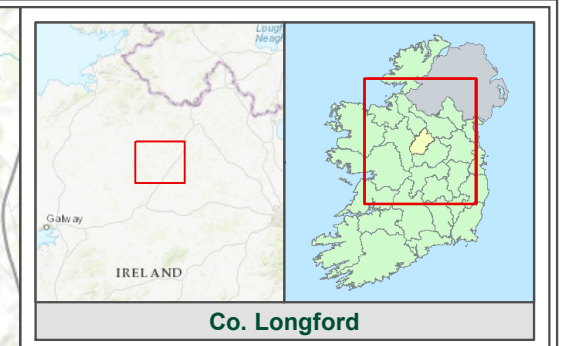
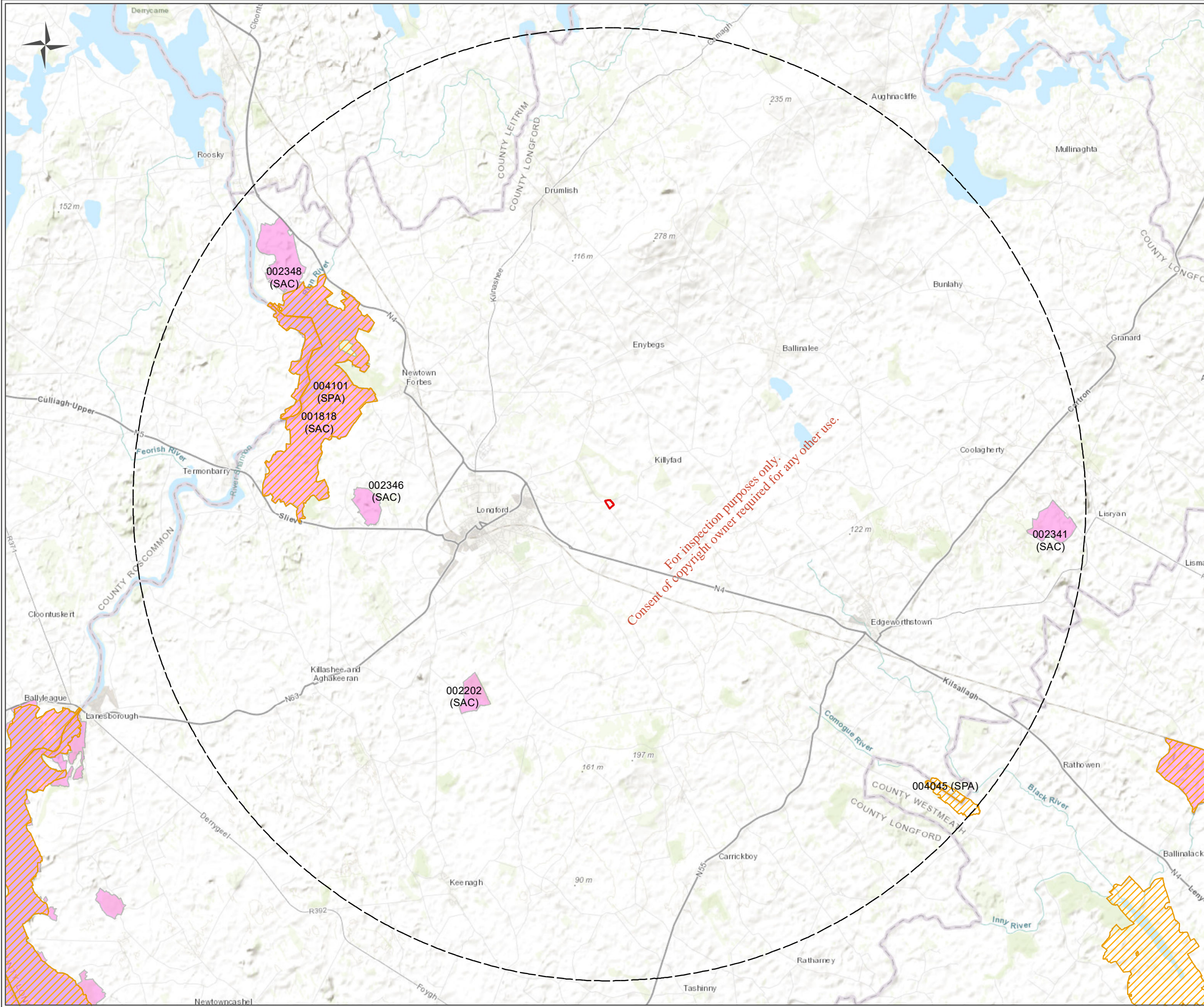
There are seven European sites within 15km of the proposed development. This includes two SPAs (Special Protection Areas) and five SACs (Special Areas of Conservation). The closest European site is Mount Jessop Bog SAC (Site Code: 002202), located 6.7km south from the proposed site. There are hydrological linkages between the proposed site and Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101). These sites are located 11.9km instream distance from the site.

The seven European sites within 15km of the proposed development include:

- Ardagullion Bog SAC (Site Code: 002341)
- Glen Lough SPA (Site Code: 004045)
- Mount Jessop Bog SAC (Site Code: 002202)
- Brown Bog SAC (Site Code: 002346)
- Lough Forbes Complex SAC (Site Code: 001818)
- Ballykenny-Fisherstown Bog SPA (Site Code: 004101)
- Clooneen Bog SAC (Site Code: 002348)

The conceptual site model and site investigation report suggest that the Clooncoose stream (EPA Code: 26C20) is hydrologically linked to the groundwater underlying the site. This stream flows in a north-easterly direction for approximately 500m. The Clooncoose Stream then flows for 4.8km before joining the Calin River (EPA Code: 26C01). The Calin River flows for 8km before entering the Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101), at this point the Fisherstown river (EPA Code: 26F51) diverges westward from the Calin. Both rivers (the Fisherman and the Calin) enter the River Shannon (EPA Code: 26S02) within approximately 5km.

There are hydrological linkages between the proposed site and Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101). The locations of European sites in relation to the historic landfill site are detailed in Figure 3-1, site characteristics can be found in Table 3-1.



**Legend**

- Site Boundary
- 15km Distance from Site Boundary
- Special Protection Area (SPA)

*Site Code, Site Name, Distance (km)*

- 004045, Glen Lough SPA, 13.2
- 004101, Ballykenny-Fisherstown Bog, 7.9

- Special Area of Conservation (SAC)

*Site Code, Site Name, Distance (km)*

- 001818, Lough Forbes Complex SAC, 7.9
- 002202, Mount Jessop Bog SAC, 6.7
- 002341, Ardagullion Bog SAC, 13.1
- 002346, Brown Bog SAC, 7.1
- 002348, Clooneen Bog SAC, 11.9

**Figure Title**  
European Sites in Relation to Site

**Figure No.** 3.1

**Project**  
Historical Landfills: Carton Big

**Client**  
Longford County Council

**Scale** 1:120,000 **Page Size** A3

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Table 3-1: The Characteristics of the European Sites

Designated Site	Qualifying Interests	Conservation Objectives	Threats	Distance from Proposed Development
Ardagullion Bog SAC (Site Code: 002341)	<ul style="list-style-type: none"> <li>Active raised bogs [7110]</li> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> <li>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</li> </ul>	The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.	No threats or pressures inside of the site	13.15km E
Glen Lough SPA (Site Code: 004045)	<ul style="list-style-type: none"> <li>Whooper Swan (<i>Cygnus cygnus</i>) [A038]</li> </ul>	The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.	<p>High impact threats listed outside the site: A08 Fertilisation.</p> <p>Medium impact threats listed outside the site: B01 Forest planting on open ground.</p>	13.2km SE



Designated Site	Qualifying Interests	Conservation Objectives	Threats	Distance from Proposed Development
Brown Bog SAC (Site Code: 002346)	<ul style="list-style-type: none"> <li>Active raised bogs [7110]</li> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> <li>Depressions on peat substrates of the Rhynchosporion [7150]</li> </ul>	The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.	<p>Medium impact threats listed both inside and outside the site: K01.03 Drying out.</p> <p>Low impact threats listed outside the site: J02.15 Other human induced changes in hydraulic conditions</p>	7.1km W
Mount Jessop Bog SAC (Site Code: 002202)	<ul style="list-style-type: none"> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> <li>Bog woodland [91D0]</li> </ul>	The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.	<p>High impact threats listed both inside and outside the site: J02.15 Other human induced changes in hydraulic conditions,</p> <p>Medium impact threats listed inside the site: I01 Invasive non-native species,</p> <p>Medium impact threats listed outside the site: J01.01 Burning down,</p> <p>Low impact threats listed inside the site: I02 Problematic native species,</p>	6.7km SW
Lough Forbes Complex SAC (Site Code: 001818)	<ul style="list-style-type: none"> <li>Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]</li> </ul>	The maintenance of habitats and species within Natura 2000 sites at favourable	High impact threats listed both inside the site: A04.03 Abandonment of pastoral systems, lack of grazing,	8km W (11.9km instream distance)

Designated Site	Qualifying Interests	Conservation Objectives	Threats	Distance from Proposed Development
	<ul style="list-style-type: none"> <li>Active raised bogs [7110]</li> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> <li>Depressions on peat substrates of the Rhynchosporion [7150]</li> <li>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</li> </ul>	conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.	<p>Medium impact threats listed inside the site: A03.03 Abandonment / lack of mowing,</p> <p>Low impact threats listed inside the site: J02.07.02 Groundwater abstractions for public water supply</p> <p>Low impact threats listed both inside and outside the site: I01 Invasive non-native species, F03.01 Hunting, H02.03 Groundwater pollution associated with oil industry infrastructure, H02.06 Diffuse groundwater pollution due to agricultural and forestry activities,</p>	
Ballykenny-Fisherstown Bog SPA (Site Code: 004101)	<ul style="list-style-type: none"> <li>Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]</li> </ul>	The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.	<p>Medium impact threats listed inside the site: B Sylviculture, forestry, G01.01 Nautical sports, A04 Grazing,</p> <p>Medium impact threats listed outside the site: A04 Grazing,</p> <p>Low impact threats listed inside the site: F03.01 Hunting, F02.03 Leisure fishing,</p>	8km W (11.9km instream distance)
Clooneen Bog SAC (Site Code: 002348)	<ul style="list-style-type: none"> <li>Degraded raised bogs still capable of natural regeneration [7120]</li> </ul>	The maintenance of habitats and species within	<p>Medium impact threats listed inside the site: C01.03.02 Mechanical removal of peat</p> <p>Low impact threats listed inside the site:</p>	11.8km NW

Designated Site	Qualifying Interests	Conservation Objectives	Threats	Distance from Proposed Development
	<ul style="list-style-type: none"> <li>Depressions on peat substrates of the Rhynchosporion [7150]</li> <li>Bog woodland [91D0]</li> </ul>	Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.	A04.02.01 Non-intensive cattle grazing, A09 Irrigation,	

\* indicates a priority habitat under the Habitats Directive

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### 3.3 Conservation Objectives

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

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

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

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

The specific conservation objectives for each site are available on [www.npws.ie](http://www.npws.ie). These have been accessed for the sites listed in Table 3-1 on the 20th of June 2019. Appendix 2 details the site synopses and conservation objectives references for these sites.

### 3.4 Permitted Projects in the Vicinity of the Proposed Development Site

A planning search for planning application lodged within the past five years was undertaken for townlands in the vicinity of the site namely Carton Big, Lissavaddy, Carrickglass Demesne, Ballymacwilliam, Corraabaun, Whiterock, Allenagh and Cartron Little. Planning application identified were:

#### Cartron Big

One application for planning permission was identified. This was an application for a dwelling with garage, stables and sewage treatment system.

#### Lissavaddy

One application for planning permission was identified. This application was for the development of a residential garage.

#### Carrickglass Demesne

An application for the extension of duration of a large development consisting of no. 331 residential units, a Golf Course and Clubhouse, Hotel, change of use and alterations to existing protected structures within the site.

### 3.5 Summary of the Main Characteristics of the Proposed Development

Tier 2 and Tier 3 assessments were conducted for this historic landfill and a mitigation strategy is proposed. Table 3.2 summarises the main characteristics and proposed remediation works at the historic Cartron Big landfill.

**Table 3-2: Summary of Main Characteristics of the Project**

<i>Size, scale, area, land-take</i>	
<p><i>Details of physical changes that will take place during the various stages of implementing the proposal</i></p>	<p>The development is not located within any European site.</p> <p><u>Proposed development</u></p> <p>A fully engineered landfill cap is proposed for the site. The landfill cap shall be designed in accordance with the EPA Landfill design manual for non-inert, non-hazardous landfills. the cap will be placed on top of the existing soil covering. The cap will incorporate a topsoil and subsoil layer, sub-surface drainage geocomposite, LLDPE barrier and sub-surface landfill gas collection geocomposite. 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 sub-surface drainage feeding into the French drain network around the cap. A separate drainage system will collect leachate. The landfill gas barrier and associated collection pipework will be located on the inner side of the cut off trench.</p> <p>The capping shall typically consist of the following;</p> <ul style="list-style-type: none"> <li>• 200mm Topsoil Layer</li> <li>• 800mm Sub Soil</li> <li>• Sub-Surface Drainage Geocomposite</li> <li>• 1mm LLDPE Barrier Layer</li> <li>• Sub-Surface Landfill GAS Collection Geocomposite</li> </ul>
<p><i>Description of resource requirements for the construction/operation and decommissioning of the proposal (water resources, construction material, human presence etc.)</i></p>	<p><u>Construction period</u></p> <p>The construction phase of the remediation works is expected to take between 20-24 weeks in duration. Construction will involve site clearance, excavation of existing cover for reuse/filling; preparation of excavated surfaces, installation of protection layer, installation of landfill gas collection layer, installation of surface water collection layer, installation of subsoil capping layer, installation of topsoil capping layer. For the interception trench, existing waste materials will be excavated and disposed of offsite, lining of interception trench, backfill with stone, installation of drainage pipe, installation of leachate collection sump and installation of intermediate inspection chambers. Gas wells are to be installed in addition to a leachate storage tank and handling yard.</p>

<b>Size, scale, area, land-take</b>	
	<p><u>Operational period</u></p> <p>After capping of the historic landfill site is completed, operational works will only consist of environmental monitoring only. Environmental monitoring should be undertaken on a quarterly basis up until the recommendations of the Certificate of Authorisation are known.</p> <p><i>Environmental Monitoring</i></p> <p>It is recommended that groundwater and surface water monitoring continue at all existing monitoring locations at the site specifically</p> <ul style="list-style-type: none"> <li>• Groundwater (Groundwater Quality and Landfill Gas Migration)             <ul style="list-style-type: none"> <li>○ GW1</li> <li>○ GW2</li> <li>○ GW3</li> </ul> </li> <li>• Surface Water (Surface Water Quality)             <ul style="list-style-type: none"> <li>○ SW1</li> <li>○ SW2</li> <li>○ SW3</li> <li>○ SW4</li> </ul> </li> <li>• Leachate (Leachate Quality and Landfill Gas)             <ul style="list-style-type: none"> <li>○ LH1</li> <li>○ LH2</li> </ul> </li> </ul> <p>It is proposed that additional groundwater monitoring points be installed up and down gradient of the site.</p> <p>The following locations are recommended</p> <ul style="list-style-type: none"> <li>• GW0 Upgradient of Site 25-50m Upgradient of Waste Body</li> <li>• GW4 Down Gradient 25-50m Down Gradient of Waste Body</li> <li>• GW5 Down Gradient 75-100m Down Gradient of Waste Body</li> </ul> <p>GW0 is recommended as a new monitoring location to establish an upgradient groundwater baseline remote from the waste body.</p> <p>GW4 and 5 are proposed as new monitoring locations as act as a future check on the migration or establishment of a localised leachate plume remote from the site.</p> <p>Future installed leachate/ landfill gas management infrastructure should be incorporated within any future environmental monitoring schedule.</p>
<p><i>Description of timescale for the various activities that will take place as a result of implementation (including likely start and finish date)</i></p>	<p>The construction phase of the remediation works is expected to take between 20-24 weeks in duration.</p>
<p><i>Identification of wastes arising and other residues (including quantities) that may be of particular concern in the context of the Natura 2000 network</i></p>	<p>Wastes removed from the site during preparation works and installation of capping, will be removed offsite for treatment.</p> <p>A leachate cut off trench will be constructed, and leachate collected will be tankered off site to a WWTP for treatment. Leachate, produced as a result of the waste body of the historic landfill site, has the potential to effect ecological receptors and Natura 2000 sites downstream of the proposed site.</p>

<b>Size, scale, area, land-take</b>	
<i>Description of any additional services required to implement the project or plan, their location and means of construction</i>	Monitoring will be conducted on a monthly / quarterly basis, depending on EPA requirements.

### 3.6 Screening Assessment Criteria

Throughout this section the line items in *italics* refer to suggested instructions for information to be contained in a screening assessment, and in an appropriate assessment from the guidance document '*Assessment of Plans and Projects significantly affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*', (European Commission, 2001). The standard 'Screening Matrix' and 'Finding of No Significant Effects Report Matrix' in Annex 2 of this guidance document are also followed.

As set out in NPWS guidance (DoEHLG, 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) on 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.

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

- Longford County Development Plan 2015-2021
- Projects outlined in Section 3.5

**Table 3-3: Assessment of the Potential Effect of the Proposed Project either Alone or in Combination with Other Plans or Projects on European (Natura 2000) Sites**

Assessment criteria	
<p><i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 sites.</i></p>	<p>A fully engineered landfill cap is proposed for the site. The landfill cap shall be designed in accordance with the EPA Landfill design manual for non-inert, non-hazardous landfills. the cap will be placed on top of the existing soil covering. The cap will incorporate a topsoil and subsoil layer, sub-surface drainage geocomposite, LLDPE barrier and sub-surface landfill gas collection geocomposite. 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. A separate drainage system will collect leachate. The landfill gas barrier and associated collection pipework will be located on the inner side of the cut off trench.</p> <p>The capping shall typically consist of the following;</p> <ul style="list-style-type: none"> <li>• 200mm Topsoil Layer</li> <li>• 800mm Sub Soil</li> <li>• Sub-Surface Drainage Geocomposite</li> <li>• 1mm LLDPE Barrier Layer</li> <li>• Sub-Surface Landfill GAS Collection Geocomposite</li> </ul> <p>The proposed development is not located within or adjacent to any European site.</p> <p>Seven European sites were found to be present within 15km of the proposed development. The closest European site to the historic landfill is Mount Jessop Bog SAC (Site Code: 002202), located 6.7km south east. There are hydrological linkages between the proposed site and Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101). These sites are located 11.9km (instream distance) from the historic landfill site at Cartron Big.</p> <p>The historic landfill site drains into the adjacent Clooncoose Stream (EPA Code: 26C20). This stream travels in a north-easterly direction for approximately 500m. The Clooncoose Stream then travels for approximately 4.8km before joining the Calin River (EPA Code: 26C01). The Calin River then flows for 8km before entering the Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101), at this point the Fisherstown river (EPA Code: 26F51) diverges westward from the Calin. Both rivers (the Fisherman and the Calin) enter the River Shannon (EPA Code: 26S02) approximately 5km further downstream.</p> <p>During construction of the cap there is a very low potential for silt and pollutants to affect enter the Clooncoose stream and affect downstream hydrologically linked sites, however the risk is low.</p>



Assessment criteria	
	<p>There is also a risk of leachate movement during the development of the historic landfill cap, however this is likely to be low.</p> <p>The laying of the 1mm LLDPE Barrier Layer will prevent precipitation from entering the landfill waste body, therefore reducing the rate of leachate generation. The leachate interception trench shall be constructed to break the pathway linkage between the landfill waste and the boundary stream. The leachate interception trench shall be drained to a controlled collection sump located in the North West corner of the site where the Clooncoose streams exits the site. The leachate sump to the north-west of the site will be set to a control level 0.25m below (or greater) that of the stream bed level at the point it exits the site ensuring no hydraulic connectivity between the site and the stream. The leachate produced will be tankered to a licenced WWTP.</p> <p>The landfill cap shall also include leachate interception trenches along the down gradient boundary of the site (Northern Boundary). The interception trench to the north of the site shall be constructed to the maximum achievable depth of excavation achievable (estimated 3-4.0m) and backfilled with rounded non-calcareous drainage stone.</p> <p>The Clooncoose Stream is located along the north-eastern boundary of the proposed site development. The Clooncoose stream is within the same groundwater body as the site. The Clooncoose stream is located immediately adjacent to proposed capping works within the historic landfill site.</p> <p>During the removal of soil, laying of gas piping, movement of transport, etc., within and surrounding the historic landfill site, there is a low potential for sediment pollution of the Clooncoose Stream. Increased sediment can impact fish and cause a decline in water quality due to eutrophication caused by nutrients contained in the soil. Due to the large distance between the works site and the European Sites (11.9km), there is no potential for significant effects to these two European Site.</p> <p>As observed in Appendix 3, the proposed landfill capping works will aid in the prevention of leachate generation over the years following its installation. This in turn will reduce the amount of leachate entering the Clooncoose stream and therefore into the downstream European sites, Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101). This is a positive effect for the European sites.</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 European 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> </ul>	<p><b>Predicted Effects:</b> No direct, indirect or cumulative effects have been identified.</p> <p><u>Silt and Pollutants</u>                  There is a hydrological link between the proposed development and two European sites. However, due to the distance (c.11.9km) downstream and the scale of the proposed works, no effects are envisaged to the European sites downstream of the proposed development i.e. Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101).</p> <p><u>Cumulative Effects</u>                  Planning history was examined (see Section 3.5 for further details). Permitted residential developments within the townlands of Cartron Big, Lissavaddy, Ballymacwilliam, Corradaun, Whiterock, Allenagh and Cartron Little are small in scale with no potential for significant emissions to the</p>

Assessment criteria	
<ul style="list-style-type: none"> <li>▪ <i>Transportation requirements;</i></li> <li>▪ <i>Duration of construction, operation etc.;</i></li> <li>▪ <i>Other.</i></li> </ul>	<p>Clooncoose stream and so are not likely to result cumulatively in significant effects on downstream European sites.</p> <p>The application for an extension of duration of a no. 331 residential development with golf course, hotel and estate village in the townland of Carrickglass Demesne was granted with conditions in 2014. This development is not within proximity to the Clooncoose stream in order to have a cumulative effect with the proposed landfill works upon downstream ecological receptors.</p> <p>No cumulative effect is envisaged in relation to the proposed development due to the distance from the downstream European sites and the relative lack of surrounding plans or projects with the ability to cumulatively effect such ecological receptors.</p> <p>The proposed capping works will have a positive effect upon ecological receptors and European sites downstream as they will reduce the leachate produced by the waste body.</p> <p><b>Size and scale, land-take and distance from European sites</b></p> <p><b>Predicted Effects:</b> <i>No significant effect envisaged.</i></p> <p>There is a hydrological link between the proposed development and Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101). However, due to the instream distance (c.11.9km) and the small scale of the proposed works, no effects are envisaged.</p> <p>Water quality monitoring 150m downstream of Cartron Bridge (RS26C200300) at SW4 detected ammonia concentrations above guideline threshold levels. The detection of ammonia at this location indicates the presence of a pathway, possibly a man-made drainage channel flowing north / north-west, from the landfill, as depicted in historical mapping for the area. The next EPA monitoring station downstream is located at the R194 Road Bridge (RS26C200500) which is approximately 2.5 km downstream of monitoring location SW4. The water quality status at this location is classified as Good. The elevated ammonia concentrations detected at SW4 is therefore considered to have a localised effect on the Clooncoose Stream.</p> <p>The proposed works will have a positive effect upon European sites downstream. As observed in Appendix 3, the proposed landfill capping works will aid in the prevention of leachate generation over the years following its installation. This in turn will reduce the amount of leachate entering the Clooncoose stream and therefore into the downstream European sites: Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101).</p> <p><b>Resource requirements and Excavation requirements</b></p> <p><b>Predicted Effects:</b> <i>None</i></p> <p>There will be no resource requirements or excavation requirements from any European site as a result of the proposed development.</p> <p><b>Emissions</b></p> <p><b>Predicted Effects:</b> <i>None.</i></p>

Assessment criteria	
	<p>There will be no emissions from the proposed site to any European site. The proposed works will aid in reducing the effect of the current landfill site on the above European sites. The development of an adequately engineered landfill cap will have a positive effect. As observed in Appendix 3, the proposed landfill capping works will aid in the prevention of leachate generation over the years following its installation. This in turn will reduce the amount of leachate entering the Clooncoose stream and therefore into the downstream European sites, Lough Forbes Complex SAC (Site Code: 001818) and Ballykenny-Fisherstown Bog SPA (Site Code: 004101).</p> <p><b>Transportation requirements</b>  <b>Predicted Effects:</b> None.</p> <p>While modifications to the existing access point are required for the proposed development, the works are minor and due to distance as well as the scale of the proposed works, no effect is envisaged on any European sites. There are no transportation requirements within any European Site.</p> <p><b>Duration of Construction and Operation</b>  <b>Predicted Effects:</b> None.</p> <p>The Construction phase of this historic landfill development is expected to take between 20-24 weeks in duration. The proposed works are hydrologically linked to European sites downstream, however due to the small scale of the works and the distance downstream to the nearest European site, no effect is envisaged on any European site. The operation of the capped historical landfill will result in a positive effect on downstream European Sites.</p>
<p>Describe any likely changes to the site arising as a result of:</p> <ul style="list-style-type: none"> <li>▪ Reduction of habitat area;</li> <li>▪ Disturbance of key species;</li> <li>▪ Habitat or species fragmentation;</li> <li>▪ Reduction in species density;</li> <li>▪ Changes in key indicators of conservation value;</li> <li>▪ Climate change.</li> </ul>	<p><b>Predicted Effects:</b> No significant effects identified</p> <p>There will be no direct or indirect reduction in habitat area or habitat fragmentation within any European site as a result of the project.</p> <p>There is no potential effect via disturbance of key species or reduction of key species as a result of the proposed development.</p> <p>There is no potential for changes in key indicators of conservation value due to the proposed project.</p> <p>This development will result in a landfill cap at Cartron Big historic landfill site which will decrease the risk of waste leaching into the surrounding environment. As per the leachate generation rates, detailed within Appendix 3 of this report, the proposed cap will reduce the volume of leachate.</p>
<p>Describe any likely impacts on the Natura 2000 (European) site as a whole in terms of:</p> <ul style="list-style-type: none"> <li>▪ Interference with the key relationships that define the structure of the site;</li> <li>▪ Interference with key relationships that define the function of the site.</li> </ul>	<p>There will be no interference with the structure and function of any European site as a result of the proposed development.</p>
<p>Provide indicators of significance as a result of the</p>	<p>As already discussed, a significant effect is not envisaged to European sites as a result of the proposed development during any phase of the development, therefore no indicators of significance are required.</p>

Assessment criteria	
<p><i>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><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 significant effects will occur to European sites as a result of the proposed development either alone or in combination with other plans of projects.</p>

### 3.7 Stage One Screening Conclusion

In view of best scientific knowledge, it is concluded beyond reasonable doubt that the proposed works in relation to Cartron historic landfill site have/are not likely to result in significant effects (direct, indirect, in-combination or cumulative significant effects) to any European site. The following seven European sites have been 'screened out' within the Stage 1: Appropriate Assessment Screening Report and do not require further study within a Stage 2: Natura Impact Statement:

- Ardagullion Bog SAC (Site Code: 002344)
- Glen Lough SPA (Site Code: 004045)
- Mount Jessop Bog SAC (Site Code: 002202)
- Brown Bog SAC (Site Code: 002346)
- Lough Forbes Complex SAC (Site Code: 001818)
- Ballykenny-Fisherstown Bog SPA (Site Code: 004101)
- Clooneen Bog SAC (Site Code: 002348)

Appendix 4 contains the Findings of No Significant Effects Matrix.

## 4 REFERENCES

- 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.*
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