DROGHEDA LANDFILL

NATURA IMPACT STATEMENT

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1 INTRODUCTION

This Natura Impact Statement (NIS) has been prepared by RPS on behalf of Louth County Council. The EPA have directed Louth County Council to prepare this Natura Impact Statement, as defined in Regulation 2(1) of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended following their own screening for Appropriate Assessment undertaken on 15th December 2021. This was communicated to Louth County Council and is required in respect to the proposed capping restoration works at the existing Drogheda discontinued landfill site.

This NIS has been prepared to assist the EPA in its role as a Competent Authority, fulfilling its duties in accordance with European Communities (Natural Habitats) Regulations (S.I. No. 94 of 1997) under Regulation 31 (Annex 1.2). An appropriate assessment is required under the Habitats Directive for any plan or project likely to have significant effect on a Natura 2000 site.

This NIS documents the evaluation and analysis, undertaken on behalf of Louth County Council, seeking to establish whether the capping works proposed at the Drogheda Landfill site, hereafter referred to as the proposed works, is likely to have a significant effect on any European site, and if so whether those Likely Significant Effects (LSEs) will adversely affect the integrity of any European site. As an initial exercise Louth County Council undertook its own screening assessment of the potential impact of the development.

The exercise considers the proposed site by itself has been undertaken in view of best scientific knowledge and in view of the conservation objectives of the site concerned. Measures intended to avoid or reduce the harmful effects of the proposed works on European sites have not been taken into account at screening stage, in accordance with the judgment of the Court of Justice of the European Union (CJEU) in case C-323/17 (People Over Wind).

2 APPROACH

2.1 Guidance Documents

This NIS supporting the licence review at the Drogheda Landfill has been carried out using the following guidance:

- Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on *Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities* March 2010.
- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government 2009; http://www.npws.ie/en/media/NPWS/Publications/CodesofPractice/AA%20Guidance.pdf
- Managing Natura 2000 Sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC, European Commission 2000; http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/provision_of_art6_en.pdf
- 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; http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art6_4_en.pdf
- Guidance document on the implementation of the birds and habitats directive in estuaries and coastal zones with particular attention to port development and dredging. http://ec.europa.eu/environment/nature/natura2000/management/docs/guidance_doc.pdf

2.2 Likely Significant Effect

The threshold for a Likely Significant Effect (LSE) is treated as being above a *de minimis* level. A *de minimis* effect is a level of risk that is too small to be concerned with when considering ecological requirements of an Annex I habitat or a population of Annex II species present on a European site necessary to ensure their favourable conservation condition. If low level effects on habitats or individuals of species are judged to be in this order of magnitude and that judgment has been made in the absence of reasonable scientific doubt, then those effects are not considered to be likely significant effects.

"…the requirement that the effect in question be 'significant' exists in order to lay down a de minimis threshold. Plans or projects that have no appreciable effect on a European site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill".

[Paragraphs 46-50 of the Opinion of the Advocate General in the Court of Justice of the European Union case (CJEU) *C-258/11*]

2.3 Mitigation Measures

In relation to mitigation measures, EC (2001) states that *"project and plan proponents are often encouraged to design mitigation measures into their proposals at the outset"*. However, it is important to recognise that the screening assessment should be carried out in the absence of any consideration of mitigation measures that form part of a project or plan and are designed to avoid or reduce the impact of a project or plan on a Natura 2000 site". This direction in the European Commission's guidance document is unambiguous in that it does not promote the inclusion of mitigation at screening stage.

In April 2018, the CJEU issued a ruling in case C-323/17 (People Over Wind) that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.

3 SITE DESCRIPTION

3.1 Site location

The site is located approximately 600m north of the Boyne Estuary on the north-western edge of Drogheda town. The site is adjacent to Leonards Cross at the junction of the R168 to Collon and the Cement Road, a minor road which links the Slane Road and the N1 Primary road northwards from Drogheda to Dundalk. Louth County Council wishes to undertake restoration works at the Drogheda discontinued landfill site to continue the remediation works at the closed facility.

3.2 Site History

Louth County Council wishes to undertake restoration works at the Drogheda discontinued landfill site to continue the remediation works at the closed facility.

The site is approximately 32 hectares in extent and was formally a limestone quarry. The site was developed on the benches of the redundant limestone quarry in 1983. The site historically operated on a dilute and disperse principle.

The site ceased accepting waste for disposal since the waste licence (Registration number W0033-01) was granted on the 30th of December 1999, however, inert waste was used for the restoration and capping works following this.

3.3 Proposed site works

Louth County Council wishes to undertake restoration works at the Drogheda discontinued landfill site to continue the remediation works at the closed facility.

The area to the northeast of the site has been acquired by Louth County Council and Specified Engineering Works have been developed for the proposed works. The capping of this area will deal with all areas of waste deposited outside the boundary to the northern part of the landfill site. LCC proposed to undertake a further restoration works on these lands and include the area within the waste licence boundary.

The proposed works will include the following:

- Final capping of the waste following reprofiling of the site. An area of approximately 15,000m^2 is proposed to be capped (Appendix 1). Prior to capping works taking place, a permanent perimeter bund shall be constructed. This perimeter bund will act as containment for capping works and will remain insitu on completion of restoration works at the site.
- The capping will consist of a geonet gas collection layer, a linear low density polyethylene (LLDPE) layer, surface water drainage layer (geonet), 850mm subsoil layer and a 150mm deep topsoil layer as undertaken in restoration works 2005-2007 and 2016. The soils used for soil layers are currently located at stockpiles A and B on site (Appendix 2).
- Reinforcement of capping layer on slopes greater than 1 in 4.
- Installation of gas wells, horizontal gas extraction pipework and connection to the existing landfill gas extraction system.
- Installation of a surface water drainage channel to the edge of the proposed capping area on its northern and eastern fringe, approximately 1.4 km upstream of the SAC (Appendix 3).
- The hydrogeological report also recommended the decommissioning of ground water monitoring boreholes, BH4A and BH5A as they are potentially impacted by their close proximity to the waste body. New boreholes will be installed in suitable locations to replace these.

3.4 Restoration Works Completed to date

Restoration works were undertaken at the site during a period in 2005-2007 and 2016-2017. The following works were undertaken in between 2005 and 2007:

- Installation of 55 No. gas extraction wells
- Installation and commissioning of an active gas extraction flare and methane stripper
- Installation of capping layers consisting of gas drainage layer, LLDPE capping and surface water drainage layer (a total area of approximately 101,650m^2).
- Reinforcement of the capping system using geogrid on slopes greater than 1 in 2.5.
- Surface water drainage system.
- Construction of 1.0m high safety bund along cliff edges on the site to improve safety.
- Subsoil and topsoil have been placed above the capping layer to a depth of 850mm and 150mm respectively across the site.

Investigations were undertaken in 2007 within an area north and northeast of the site boundary with regards to disposal of waste outside of the licensed boundary. The area to the north was acquired by Louth County Council from a third party and subsequently included within the landfill licence boundary as a technical amendment on the 18th of June 2013. Restoration works was then undertaken between September 2016 and March 2017 in an area to the north/northwest of the landfill site. The following works were undertaken:

- Installation of 4 No. gas extraction wells and horizontal gas extraction pipework.
- Installation of capping layers consisting of gas drainage layer, LLDPE capping and surface water drainage layer (a total area of approximately 14,60m^2).
- Reinforcement of the capping system using geogrid on slopes greater than 1 in 3.
- Surface water drainage system.
- Subsoil and topsoil have been placed above the capping layer to a depth of 850mm and 150mm respectively across the site.

Figure 3-1: Site Location

4 SCREENING FOR APPROPRIATE ASSESSMENT

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

This screening exercise principally considers European sites (Special Areas of Conservation or SACs and Special Protection Areas or SPAs designated under the Habitats Directive 92/43/EEC.

The proposed works must be screened against those sites for which a pathway of effect can be reasonably established between a receptor and the proposed works.

4.1 Establishing an Impact Pathway

Current guidance (DEHLG, 2010) on the Zone of Influence to be considered during the Screening for AA states the following:

"A distance of 15km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et al., 2006). For projects, the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in-combination effects".

As stated above, a buffer of 15km is typically taken as the initial Zone of Influence extending beyond the reach of the footprint of a plan or project, although there may be scientifically appropriate reasons for extending this Zone of Influence further depending on pathways for potential impacts.

The possibility of significant effects is considered in this report using the source-pathway-receptor model. 'Source' is defined as the individual elements of the proposed works that have the potential to affect the identified ecological receptors. 'Pathway' is defined as the means or route by which a source can affect the ecological receptor. 'Ecological receptor' is defined as the qualifying feature of European sites (and for which conservation objectives have been set in the case of SACs or SPAs) being assessed. Each element can exist independently however an effect is created when there is a linkage between the source, pathway and receptor.

This source pathway receptor model has been used to screen the potential for impact on those Natura 2000 sites. This is primarily due to the need to consider the potential for likely significant effects on European Sites with regard to aquatic and water dependent receptors that are hydrologically linked to the sub catchment and reach of the River Boyne that the Drogheda landfill site dranis to. Therefore, the Zone of Influence for this project includes all of the hydrologically connected surface water sub catchments which have the potential to impact on a downstream Natura 2000 site.

Figure 4-1 includes illustrates the Natura Network within the Zone of Influence. The relevant sites are:

- River Boyne and River Blackwater SAC (002299)
- Boyne Coast and Estuary SAC (001957)
- Clogher Head SAC (001459)
- Boyne Estuary SPA (004080)
- River Nanny Estuary and Shore SPA (004158)
- River Boyne and River Blackwater SPA (004232)

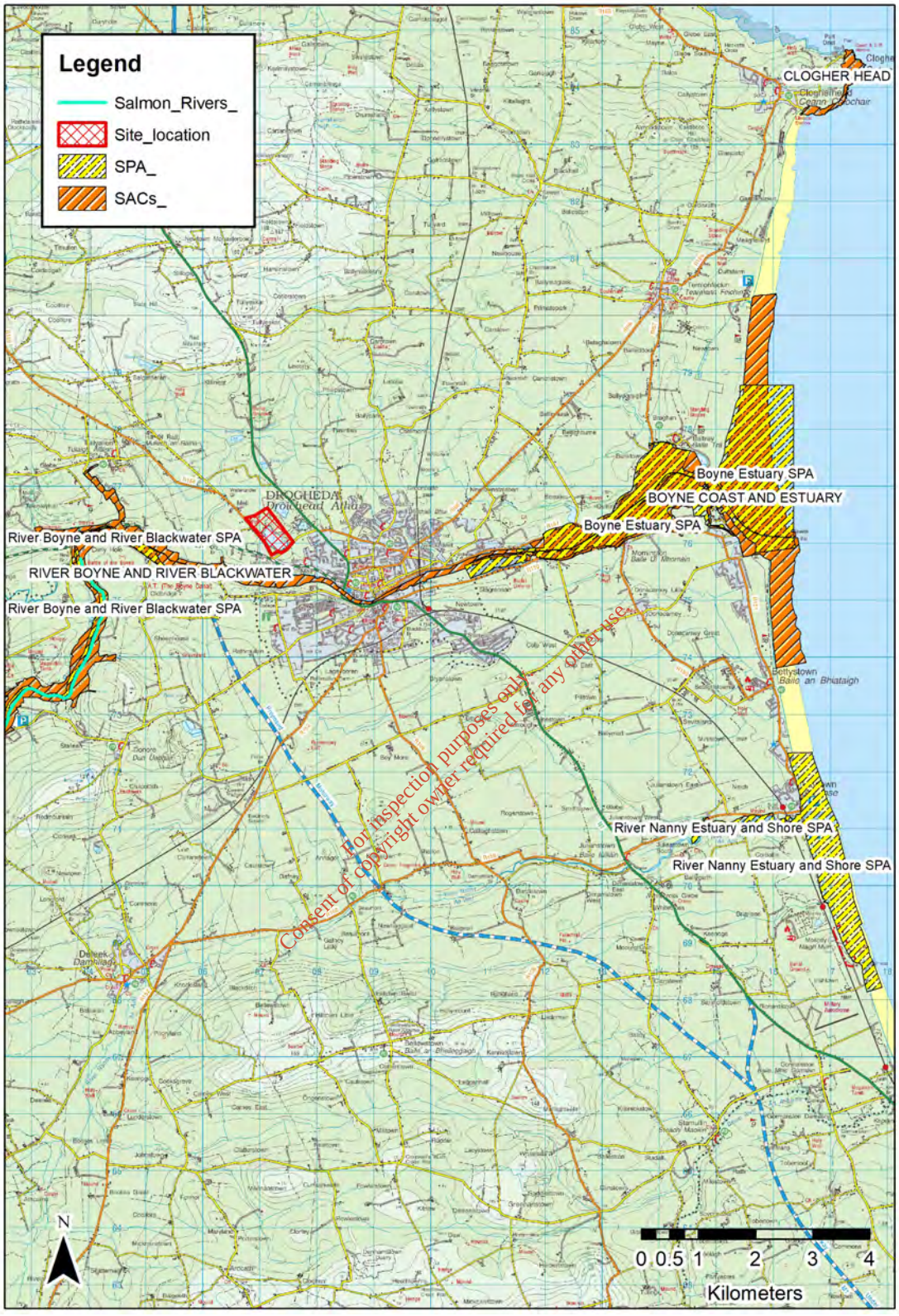

Figure 4-1: SAC and SPA location within the vicinity of the Drogheda Landfill

Table 4.1: Downstream European sites, their qualifying features and relative distances from the proposed works

European Site	Downstream distance	Qualifying features
River Boyne and River Blackwater SAC	Approximately 700m from the closest part of the SAC to the site (See Figure 4-1)	Alkaline fens [7230] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]
Boyne Coast and Estuary SAC	Approximately 4.5 km from the closest part of the SAC to the site (See Figure 4-1)	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
Clogher Head SAC	Approximately 12.5 km from the closest part of the SAC to the site (See Figure 4-1)	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]
Boyne Estuary SPA	Approximately 3.5 km from the closest part of the SPA to the site (See Figure 4-1)	Shelduck (*Tadorna tadorna*) [A048] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Black-tailed Godwit (*Limosa limosa*) [A156] Redshank (*Tringa totanus*) [A162] Turnstone *(Arenaria interpres*) [A169] Little Tern (*Sterna albifrons*) [A195]

European Site	Downstream distance	Qualifying features
		Wetland and Waterbirds [A999]
River Nanny Estuary and Shore SPA	Approximately 10.0 km from the closest part of the SPA to the site (See Figure 4-1)	Oystercatcher (*Haematopus ostralegus*) [A130] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Herring Gull (*Larus argentatus*) [A184] Wetland and Waterbirds [A999]
River Boyne and River Blackwater SPA	Approximately 1.3 km from the closest part of the SPA to the site (See Figure 4-1)	Kingfisher (*Alcedo atthis*) [A229]

4.2 Initial Screening of European Sites within the Zone of Influence

4.2.1.1 River Boyne and Blackwater SAC

4.2.1.1.1 Alkaline fens

This qualifying feature is sensitive to water quality issues, particularly nutrient levels, which can affect natural structure and function of qualifying feature habitat.

A review of the SSCOs (NPWS, 2021) for this habitat has found that this habitat is located mainly in the vicinity of Lough Shesk, Freekan Lough, Newtown Lough in the upper reaches of the Stonyford River. At Lough Shesk, the habitat is particularly well-represented and there is a good example of succession from open water to fen-type habitat.

There is no potential for this feature to be impacted as although there is a hydrological link to this habitat, the closest Lake (Freekan Lough) is 73km upstream of the proposed works.

4.2.1.1.2 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)

Qualifying feature is not water quality dependent.

Therefore, there is no potential for this feature to be impacted by the proposed works.

4.2.1.1.3 Lampetra fluviatilis (River Lamprey)

To support these qualifying features, the water bodies should be compliant with the ecological conditions for ‘good’ WFD status. Any water quality issues that hamper a water body from improving to ‘good’ status or deteriorate will impact on the conservation objectives.

There is potential for this feature to be impacted as there is a hydrological link.

4.2.1.1.4 Salmo salar (Salmon)

Atlantic Salmon are a qualifying feature of the River Boyne and River Blackwater SAC. They are present throughout the system. The water bodies are classified salmonid rivers under the Freshwater Fish Directive (FFD) (2006/454/EC).

This species is particularly sensitive to various aquatic pressures, with water quality posing a high threat on the qualifying feature. It is necessary to ensure these waters are achieving a water quality standard that ensures they achieve the conservation objectives for these protected areas. There are numerous threats to the freshwater habitat and vigilance is required to ensure the maintenance of good quality habitat which salmon require to thrive. Furthermore, another qualifying feature, the otter, depends on salmon as a source of food so impact of water quality issues on fish stock will in turn impact on otter communities.

There is potential for this qualifying feature to be impacted.

4.2.1.1.5 Lutra lutra (Otter)

Otters (*Lutra lutra*) are an Annex II species present as a qualifying feature in the River Boyne and River Blackwater SAC. It is widespread throughout the system. Otters are a European Protected Species protected under the Habitats Directive. Under the Regulations, it is illegal to deliberately capture, injure or kill a European Protected Species or deliberately disturb a European Protected Species in such a way as is likely to affect its local distribution or abundance; impair its ability to survive, breed, reproduce or care for its young; impair its ability to hibernate or migrate; or deliberately obstruct access to or damage or destroy a resting or breeding site.

The main threats to the otter include habitat destruction (including river drainage and the clearance of bank-side vegetation); pollution, particularly organic pollution resulting in fish kills; and accidental deaths (road traffic and fishing gear).

Although no works are to take place that may impact the physical habitat of the otter, there is a possibility that the water quality may be impacted. This will directly affect the salmon and trout communities, on which the otter primarily depends on as a food supply. Negative affects to these fish communities will thus consequently negatively affect the otter population.

4.2.1.2 Boyne Coast and Estuary SAC

4.2.1.2.1 Estuaries

A review of the SSCOs (NPWS, 2012) for this habitat show the conservation objectives for this qualifying feature is reliant on community distribution, which may be negatively affected by deterioration in water quality. This feature is located approximately 5.0km downstream of the proposed works.

There is potential for this qualifying feature to be impacted.

4.2.1.2.2 Mudflats and sandflats not covered by seawater at low tide

As above, deterioration in water quality may reduce community distribution, which is a conservation objective for this qualifying feature. Similarly, the qualifying feature is approximately 5.0km downstream of the proposed works.

There is potential for this qualifying feature to be impacted.

4.2.1.2.3 Annual vegetation of drift lines

This qualifying feature is reliant on habitat distribution and vegetative composition. Both of which have the potential to be affected by water quality deterioration. The qualifying feature is located approximately 10.0km downstream of the proposed works.

There is potential for the qualifying feature to be impacted.

4.2.1.2.4 Salicornia and other annuals colonising mud and sand

A review of the SSCOs (NPWS, 2012) for this habitat show the conservation objectives for this qualifying feature is reliant on community distribution, vegetation cover and composition. Some of which may be negatively affected by deterioration in water quality. This feature is located approximately 5.0km downstream of the proposed works.

There is potential for this qualifying feature to be impacted.

4.2.1.2.5 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

A review of the SSCOs (NPWS, 2012) for this habitat show the conservation objectives for this qualifying feature is reliant on community distribution and vegetative composition. Both of which may be negatively affected by deterioration in water quality. This feature is located approximately 5.0km downstream of the proposed works.

There is potential for this qualifying feature to be impacted.

4.2.1.2.6 Embryonic shifting dunes

This qualifying feature is reliant on habitat distribution and vegetative composition. All of which have the potential to be affected by water quality deterioration. The qualifying feature is located approximately 10.0km downstream of the proposed works.

There is potential for the qualifying feature to be impacted.

4.2.1.2.7 Shifting dunes along the shoreline with Ammophila arenaria (white dunes)

As above.

4.2.1.2.8 Fixed coastal dunes with herbaceous vegetation (grey dunes)

As above.

4.2.1.3 Clogher Head SAC

4.2.1.3.1 Vegetated sea cliffs of the Atlantic and Baltic coasts

A review of the SSCOs (NPWS, 2017) for this habitat show the conservation objectives for this qualifying feature is reliant on community distribution and vegetative composition. Both of which may be negatively affected by deterioration in water quality. This feature is located over 18.0 km downstream of the proposed works.

There is an unlikely potential for this qualifying feature to be impacted by the proposed works due to proximity and the dilution of the inputting coastal waterbody.

4.2.1.3.2 European dry heaths

As above.

4.2.1.4 Boyne Estuary SPA

The bird species that are regarded as qualifying interests of the Boyne Estuary SPA are listed above (table 4.1). The SPA habitat has the potential to be impacted by deterioration in water quality and pollutants. The closest part of the SPA is located approximately 3.5km downstream of the proposed works.

There is potential for impact on these qualifying features.

4.2.1.5 River Nanny Estuary and Shore SPA

The bird species that are regarded as qualifying interests of the River Nanny Estuary and Shore SPA are listed above (table 4.1). The SPA habitat has the potential to be impacted by deterioration in water quality and pollutants. The closest part of the SPA is located approximately 15.0km downstream of the proposed works.

There is an unlikely potential for this qualifying feature to be impacted by the proposed works due to proximity and the dilution of the inputting coastal waterbody.

4.2.1.6 River Boyne and River Blackwater SPA

The bird species that are regarded as qualifying interests of the River Boyne and River Blackwater SPA are listed above (table 4.1). The SPA habitat has the potential to be impacted by deterioration in water quality and pollutants. The closest part of the SPA is located approximately 1.3km downstream of the proposed works.

There is potential for impact on these qualifying features.

4.3 Habitat Loss

The Drogheda site is not located or directly connected with any European site.

Therefore, there will be no direct impact on the footprint of the SAC or SPA listed and thus no habitat loss from any of the European sites listed in Section 4.1 above.

4.4 Water Quality and Habitat Deterioration

4.4.1 Hydrological Setting

The site of the proposed works is not directly linked to any European site listed above but may be indirectly linked through hydrological pathways. As a result, the European sites listed above must be taken into consideration due to their hydrological connection to the development. However, only the qualifying features within these European Sites that are water dependent and have the potential to be impacted through a hydrological link to the Drogheda landfill site, will be considered.

A key requirement of the Water Framework Directive is that surface water bodies attain at least 'good' surface water status, requiring both ecological status and chemical status to be at least 'good', and that there should be no deterioration in existing status. The surface water bodies and underlying groundwater body are:

- Tullyeskar_010 (IE_EA_07T270880)
- Boyne Estuary (IE)EA_010_0100)
- Drogheda Groundwater (IE_EA_G_025)

The area of proposed works is situated within 1 km from the Boyne Estuary and approximately 700m east of the main channel of Tullyeskar_010 water body which lies within the Boyne catchment. The Tullyeskar_010 then flows into the Boyne Estuary downstream of Yellow Island.

The Tullyeskar_010 is currently unassigned a WFD ecological status and under review in terms of WFD risk status. The Boyne Estuary has a WFD ecological status of 'moderate' and is currently 'At Risk'. The water body has been deemed moderate as a result of phytoplankton, macroalgae, hydromorphological conditions and other determinand for nutrient conditions. The Drogheda ground water body has an overall status of 'good' and is 'Not at Risk' in terms of risk status. A hydrogeological risk assessment is unable to determine whether the site in its present condition appears to be impacting on surface waters immediately downstream from the landfill as there currently is no status assigned. Figure 4-2, shows the WFD status currently assigned to the water bodies within the vicinity of the site.

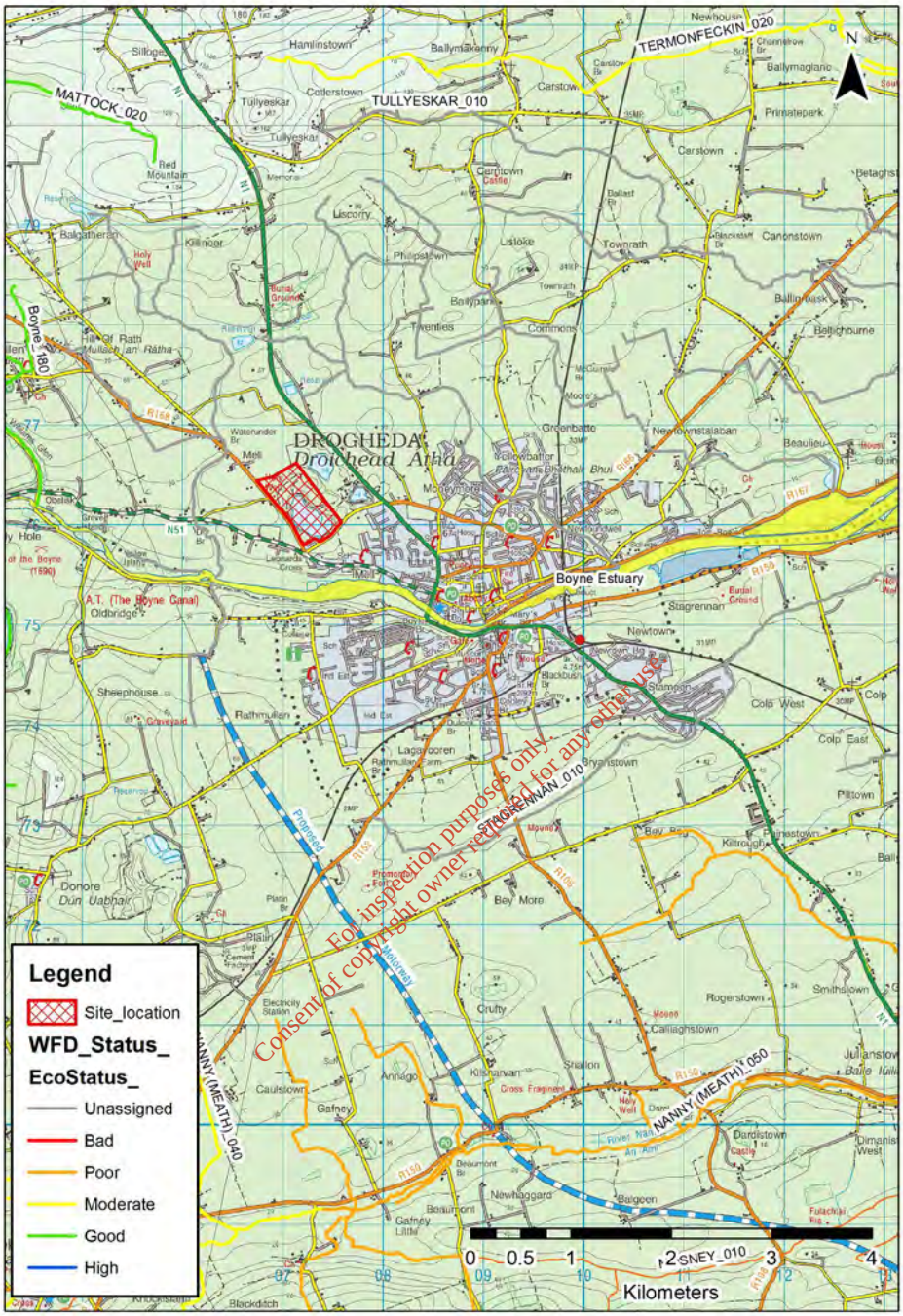

Figure 4-2: WFD status of water bodies surrounding the Drogheda site.

4.5 Summary of the Screening Assessment

4.5.1 Habitat Loss

Likely significant effects have been discounted for all European sites.

4.5.2 Water Quality and Habitat Deterioration

The possibility of likely significant water quality and habitat deterioration effects can be discounted for the Clogher Head SAC and River Nanny Estuary and Shore SPA, during both the construction and

operational phase of the proposed works. This is due to the proximity of the proposed works to these protected areas, which are in different catchments and the large dilution available from the connecting coastal waterbodies.

The possibility of likely significant water quality and habitat deterioration effects cannot be discounted for the River Boyne and River Blackwater SAC, the Boyne Coast and Estuary SAC, the Boyne Estuary SPA, the River Boyne and River Blackwater SPA during the construction phase and operational phase of the restoration works due to the hydrological connectivity of the site to the protected sites.

4.6 Likely Significant Effects (LSE)

The possibility of likely significant water quality and habitat deterioration effects cannot be discounted for the River Boyne and River Blackwater SAC, the Boyne Coast and Estuary SAC, the Boyne Estuary SPA and the River Boyne and River Blackwater SPA in the absence of mitigation measures.

Having regard to the methodology employed and the findings of the screening stage exercise, it is concluded that an appropriate assessment of the implications of the proposed works is required.

Likely significant effects can be discounted for a number of significant features of the SACs as they are upstream and not hydrologically connected to the site. These include alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) and alkaline fens. The screening assessment concluded that the remaining qualifying features which cannot be discounted from the Stage 2 Appropriate Assessment are Atlantic Salmon, Otter, Lamprey, estuaries, mudflats and sandflats not covered by seawater at low tide, annual vegetation of drift lines, Salicornia and other annuals colonising mud and sand, Atlantic salt meadows, embryonic shifting dunes, shifting dunes along the shoreline with Ammophia arenaria, fixed coastal dunes with herbaceous vegetation and the bird species that represent the qualifying interests within the Boyne Estuary SPA and the River Boyne and River Blackwater SPA, due to potential impact on water quality and aquatic habitat.

The focus of the remainder of this report shall be on the likely significant water quality and aquatic habitat deterioration effects of the proposed works.

5 STAGE 2 APPROPRIATE ASSESSMENT

The possibility of likely significant water quality and habitat deterioration effects cannot be discounted for River Boyne and River Blackwater SAC, the Boyne Coast and Estuary SAC, the Boyne Estuary SPA and the River Boyne and River Blackwater SPA in the absence of mitigation measures. Therefore, it is necessary to conduct a Stage 2 Appropriate Assessment.

5.1 River Boyne and River Blackwater SAC

The conservation objectives for this site are to maintain (or restore where appropriate) each feature in favourable condition. This is achieved by meeting the component objectives (NPWS, 2021) for each feature:

- Alkaline fens
- Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)
- River Lamprey (*Lampetra fluviatilis)*
- Atlantic Salmon *(Salmo salar)*
- Otter (*Lutra lutra)*

As outlined in Section 4 the key habitats listed above have been screened out of the assessment with only Atlantic Salmon, River Lamprey and Otter taken forward to appropriate assessment due to their sensitivity to aquatic pressures and the pathway from the source of the pressure to these receptors.

For these qualifying features the main measures featured within the conservation objective requirements relevant to the proposed works are to maintain water quality and aquatic habitat at conditions capable of sustaining good ecological status, i.e. an EPA Q Value of 4. In particular, the condition of river channel and substrate and both chemical and biological quality of the water should be maintained or improved to support the composition of communities, existing populations and distribution of populations. It is therefore essential that the proposed works do not compromise water quality and the ability of the rivers to sustain Atlantic Salmon, River Lamprey and Otter at favourable conservation status. The Tullyeskar_010 water body does not currently have a Q-value assigned under the EPA ranking system.

Atlantic Salmon are surface and marine water dependent and are sensitive to hydrological change and pollution, particularly for juveniles and smolts. While the otter population is dependent on fish stocks, primarily salmon and trout, as a food source.

5.2 Boyne Coast and Estuary SAC

The conservation objectives for this site are to maintain (or restore where appropriate) each feature in favourable condition. This is achieved by meeting the component objectives (NPWS, 2012) for each feature:

- Estuaries
- Mudflats and sandflats not covered by seawater at low tide
- Annual vegetation of drift lines
- Salicornia and other annuals colonising mud and sand
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- Embryonic shifting dunes
- Shifting dunes along the shoreline with Ammophila arenaria (white dunes)
- Fixed coastal dunes with herbaceous vegetation (grey dunes)

For these qualifying features the main measures featured within the conservation objective requirements relevant to the proposed works are to maintain water quality and aquatic habitat at conditions capable of sustaining good ecological status. Both chemical and biological quality of the water should be maintained or improved to support the composition of communities, existing populations and distribution of populations.

5.3 Boyne Estuary SPA

The conservation objectives for this site are to maintain (or restore where appropriate) each feature in favourable condition. This is achieved by meeting the component objectives (NPWS, 2013) for each feature. The included qualifying interests can be seen in Table 4.1.

The conservation objectives for these qualifying features are population trend and distribution. Both of which have the potential to be impacted by water quality issues.

It is therefore imperative that the proposed works do not result in a deterioration in the water quality that would represent conditions that were not adequate to sustain good ecological status of the relevant water bodies in the River Boyne and River Blackwater SAC and ultimately the Boyne Estuary SPA.

5.4 River Boyne and River Blackwater SPA

The conservation objectives for this site are to maintain (or restore where appropriate) each feature in favourable condition. This is achieved by meeting the generic component objectives (NPWS, 2021) for each feature. The included qualifying interests can be seen in Table 4.1.

Maintaining or restoring the favourable conservation condition of the bird species has the potential to be impacted by water quality issues.

It is therefore imperative that the proposed works do not result in a deterioration in the water quality that would represent conditions that were not adequate to sustain good ecological status of the relevant water bodies in the River Boyne and River Blackwater SAC and ultimately the River Boyne and River Blackwater SPA.

5.5 Mitigation Measures

The proposed works have potential to impact on water quality and hence the conservation objectives for the SACs and SPAs. This is due to the location of the proposed works within 700m of the River Boyne and River Blackwater SAC and the additional protected areas further downstream; River Boyne and River Blackwater SPA (1.3km), Boyne Estuary SPA (3.5km) and Boyne Coast and Estuary SAC (4.5km).

This appropriate assessment relates to the construction and operational phases of the proposed works and their potential impact on water quality and the surrounding Natura 2000 sites. Mitigation measures are proposed to prevent any potential impact to the waterbodies and protected sites.

5.5.1 Perimeter bund

During the construction stage, a perimeter bund will be constructed prior to all other works at the site. This is necessary to provide containment for the capping works both during the construction phase and operational phase of the development. The purpose of the bund is to contain the capping works and it will remain in-situ on completion of works. Following this, movement of soils and vehicle operation during the construction of subsoil and topsoil layers will be limited, as stockpiled soils for capping are currently located on the site. Therefore, the movement of machinery and stockpiled soils within the bunded area will be minimised during construction and the potential for surface water run-off will not be significant ensuring suspended solids and other contaminants will not find a pathway to the downstream European sites.

5.5.2 Decommissioning of boreholes

Furthermore, during the construction works, two groundwater monitoring boreholes, BH4A and BH5A, will be decommissioned and relocated, as recommended by the Hydrological Report undertaken by Bluerock Environmental Ltd in November 2015.

The hydrogeological assessment indicated that both of these boreholes were potentially influenced by the close proximity of emplaced wastes and contamination as a consequence of infiltration to these wastes (rainfall).

The scale of the works proposed will involve some site clearance and excavation trial pits approximately 10m north of the vicinity of the existing boreholes under hydrogeologist supervision. The works will be undertaken under the direct supervision of the hydrogeologist commissioned for the Hydrogeological Report in 2015. Decommissioning of the boreholes will be undertaken in accordance with the UK Environmental Agency methodology for the decommissioning of boreholes. The decommissioning shall minimise the risk of contamination to the underlying aquifer. The measures employed under the above methodology will ensure that the works will not result in significant impacts on water quality and therefore the downstream protected sites.

5.5.3 Capping and surface water drainage

During the operational stage, the site will benefit from the restoration works as surface water generated within the capping area will be prevented from penetrating through the waste body. The proposed design will see surface water generated within the capped area of the site collected by surface water drainage pipes and ultimately discharged to the drainage channel. The drawing illustrating the capping system layout is provided in Appendix 3, shows the measures taken to direct surface waters to the drainage channels and prevent penetration through the waste mass.

This will ensure that surface waters from rainfall events will not be subject to potential contamination from exposure to the waste body itself. This measure will result in an improvement in water quality, which in combination with the distance to the qualifying features of the downstream European sites means that there will not be a significant adverse impact caused during the operational phase. Indeed the drainage generated at this part of the site will be improved as a result of the capping works and surface water drainage. The installation of the capping layer will be supervised in accordance with normal Civil Engineering good practice

and, in addition, full Construction Quality Assurance (CQA) will be applied to ensure that the materials and workmanship meet the design specification.

The assessment indicates that there is limited potential for an impact on the integrity of the River Boyne and River Blackwater SAC and therefore the downstream Boyne Coast and Estuary SAC, Boyne Estuary SPA and River Boyne and Blackwater SPA, to arise as a result of the proposed works from the disused Drogheda Landfill site, based on the proposed mitigation measures and due to the lack hydrological connectivity of the surface water network to the site as a result of the perimeter bund. Additionally, the operational phase of the restoration works will improve the current water quality conditions and thus have an overall positive impact on the European sites and their qualifying features.

Therefore, the proposed works represent no risk to the achievement of the conservation objectives of the River Boyne and River Blackwater SAC, the downstream Boyne Coast and Estuary SAC, Boyne Estuary SPA and River Boyne and River Blackwater SPA where hydrological connectivity exists.

6 CONCLUSION

This NIS has been prepared by RPS on behalf of Louth County Council in support of the licence review for Drogheda Landfill. The purpose of the report is to document the evaluation and analysis of the potential impact on the conservation objectives of connected Natura 2000 sites and to inform the Appropriate Assessment that the EPA will undertake in reviewing the Licence.

The report was prepared with regards to relevant legislation outlined in Section 1 of this report and methodological guidance outlined in Section 2 of this report.

A screening exercise was completed in Section 4 of this report to determine whether or not Likely Significant Effects on any European site could be discounted as a result of the proposed works.

From the findings of the screening stage exercise, the possibility of likely significant water quality and habitat deterioration effects could not be discounted for the River Boyne and River Blackwater SAC, the Boyne Coast and Estuary SAC, the Boyne Estuary SPA and the River Boyne and River Blackwater SPA in the absence of the mitigation measures.

The conservation objectives of the sites concerned were therefore evaluated and analysed as part of the assessment and production of the NIS. Mitigation measures intended to avoid or reduce the harmful effects of the project on the European sites were assessed.

The assessment concludes that no adverse effect upon the integrity of any European site will occur in the presence of the mitigation measures.

The likely impacts that will arise from the proposed works have been examined in the context of a number of factors that could potentially affect the integrity of the Natura 2000 network. The main risk is associated with the water quality in the Boyne Estuary, which has two designated SACs (River Boyne and River Blackwater SAC IE0002299 and Boyne Coast and Estuary SAC IE0001957). Water quality is considered as one of the key indicators of the conservation status of these sites. The mitigation measures will ensure the water quality in the Tullyeskar_010 and subsequently the downstream Boyne Estuary will not be compromised and therefore will not prevent the achievement of the conditions required to maintain the key qualifying features of the SACs/SPAs at favourable conservation status. The mitigation measures will also ensure the proposed works will not prevent the achievement of the assigned WFD objectives for the downstream waterbodies, i.e. good ecological status.

Based on these findings, it is concluded that the proposed works:

(i) is not directly connected with or necessary to the management of a Natura 2000 site

and

(ii) will not have significant effects on the conservation objectives of the qualifying habitats and species of the River Boyne and River Blackwater SAC nor further downstream protected areas provided mitigation measures are adhered to.

REFERENCES

Council Directive 79/409 EEC on the Conservation of Wild Birds

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora

Department of the Environment, Heritage and Local Government (2009). Appropriate Assessment of Plans and Projects in Ireland, Guide for Planning Authorities, Dublin.

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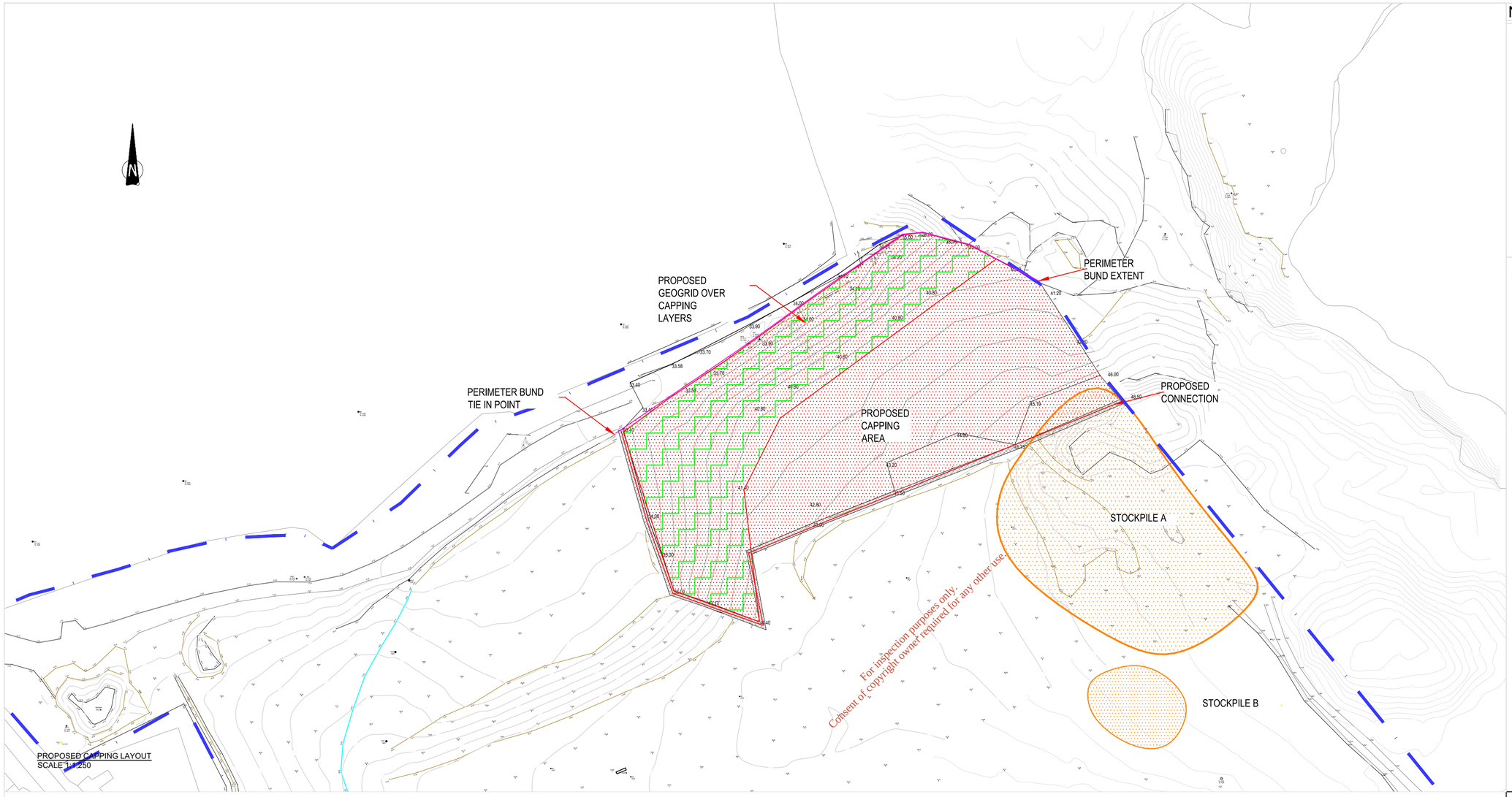
NPWS (2012) *Conservation Objectives: Boyne Coast and Estuary SAC 001957.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

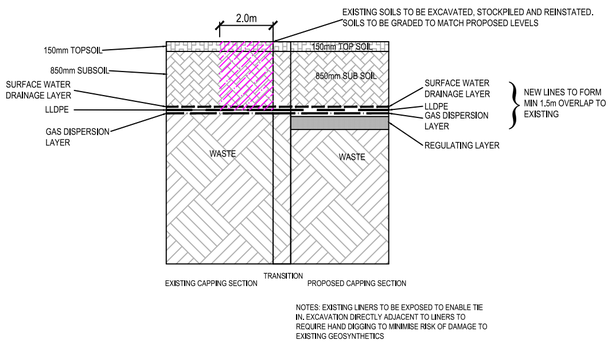
NPWS (2017) *Conservation Objectives: Clogher Head SAC 001459.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2018) *Conservation Objectives: River Boyne and River Blackwater SAC 002299.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Appendix 1
Proposed capping area

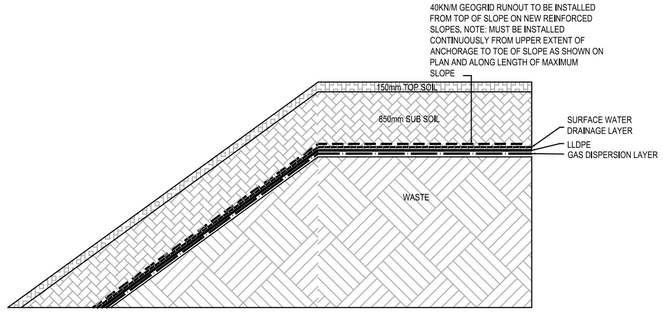


PROPOSED CAPPING LAYOUT
SCALE 1:1,250

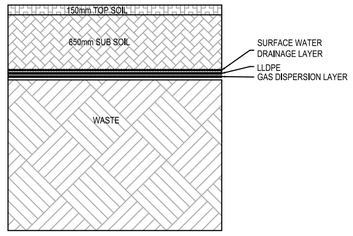


NOTES: EXISTING LINERS TO BE EXPOSED TO ENABLE TIE IN, EXCAVATION DIRECTLY ADJACENT TO LINERS TO REQUIRE HAND DIGGING TO MINIMISE RISK OF DAMAGE TO EXISTING GEOSYNTHETICS

TRANSITION CONNECTION DETAIL TO EXISTING CAPPING (NTS)



ANCHOR TRENCH RUNOUT ON NEW CAP (NTS)



TYPICAL CAPPING SECTION (NTS)

NOTES

1. Verifying Dimensions.
   The contractor shall verify dimensions against such other drawings or site conditions as pertain to this part of the work.
2. Existing Services.
   Any information concerning the location of existing services indicated on this drawing is intended for general guidance only. It shall be the responsibility of the contractor to determine and verify the exact horizontal and vertical alignment of all cables, pipes, etc. (both underground and overhead) before work commences.
3. Issue of Drawings.
   Hard copies, dwf and pdf will form a controlled issue of the drawing. All other formats (dwg, dxf etc.) are deemed to be an uncontrolled issue and any work carried out based on these files is at the recipients own risk. RPS will not accept any responsibility for any errors arising from the use of these files, either by human error by the recipient, listing of un-dimensioned measurements, compatibility issues with the recipient's software, and any errors arising when these files are used to aid the recipients drawing production, or setting out on site.
4. Datum.
5. Key:
   - Proposed Capping Layers
   - Stockpile
   - Proposed Connection
6. This drawing to be read in conjunction with Drawing IBR1092/107

Note: 100mm depth of topsoil to be filled under Stockpile A on site after subsoils are ustilised in the capping system.

rev	amendments	drawn	date

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Project
Drogheda Phase 3 Capping

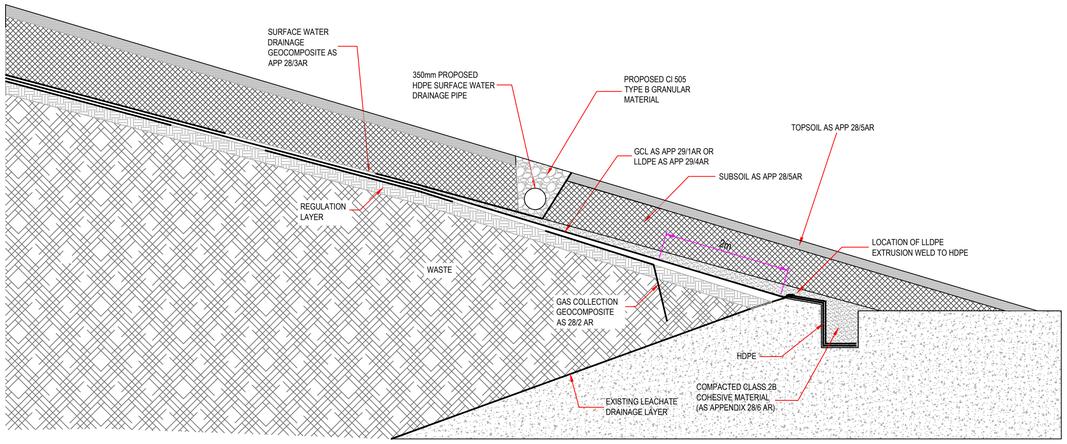
Title
Proposed Capping Layout

Drawing Status	Sheet Size	Drawing Scale
Tender	A2	As Shown

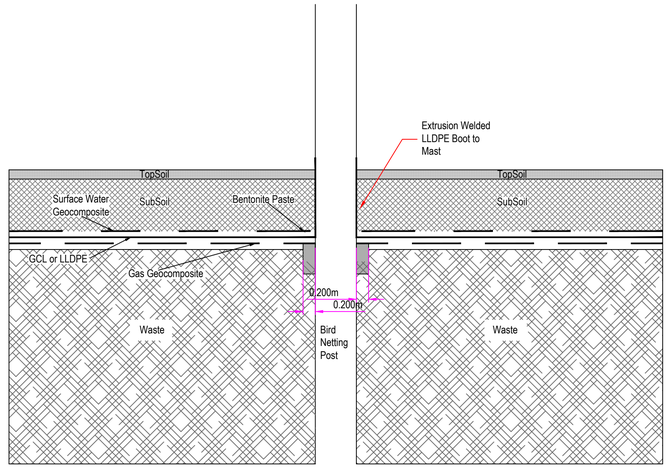
Drawing Number	Rev
IBR1092/102	-

Project Leader	Drawn By	Date	Initial Review
J Byrne	J Close	10-05-19	J Byrne

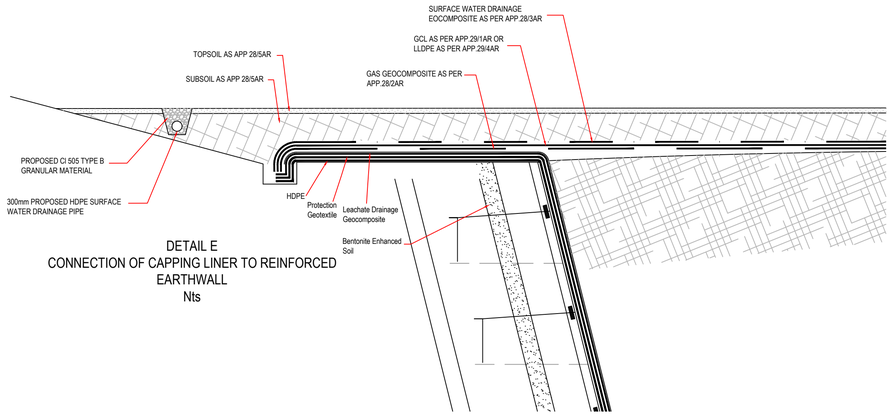
Appendix 2
Proposed capping details



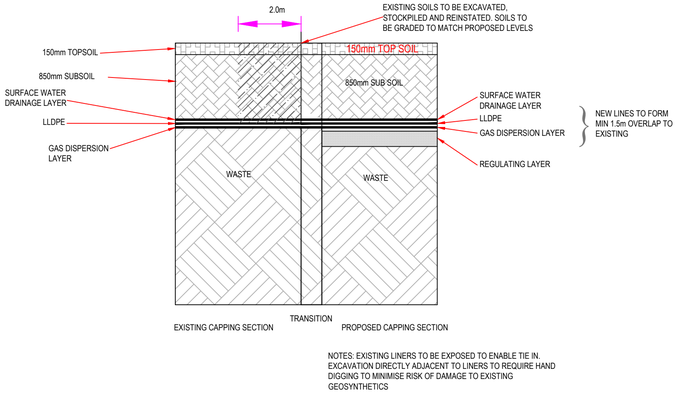
DETAIL D
CONNECTION OF SURFACE WATER DRAINAGE GEOCOMPOSITE TO PROPOSED SURFACE WATER CHANNEL
SCALE 1:50



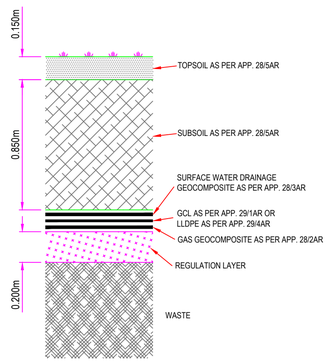
DETAIL C
CAP CONNECTION AROUND BIRD NETTING MASTS
SCALE 1:50



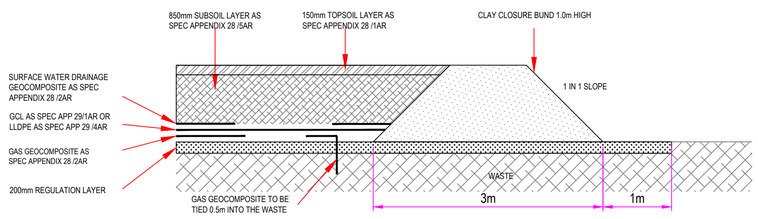
DETAIL E
CONNECTION OF CAPPING LINER TO REINFORCED EARTHWALL
Nts



DETAIL F
TRANSITION CONNECTION DETAIL TO EXISTING CAPPING
NTS



DETAIL A
PROPOSED CAPPING SYSTEM PROFILE
SCALE 1:25



DETAIL B
CAPPING EDGE BUND DETAIL
NTS

NOTES

1. Verifying Dimensions.
   The contractor shall verify dimensions against such other drawings or site conditions as pertain to this part of the work.
2. Existing Services.
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4. Datum.

rev	amendments	drawn	date

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Project
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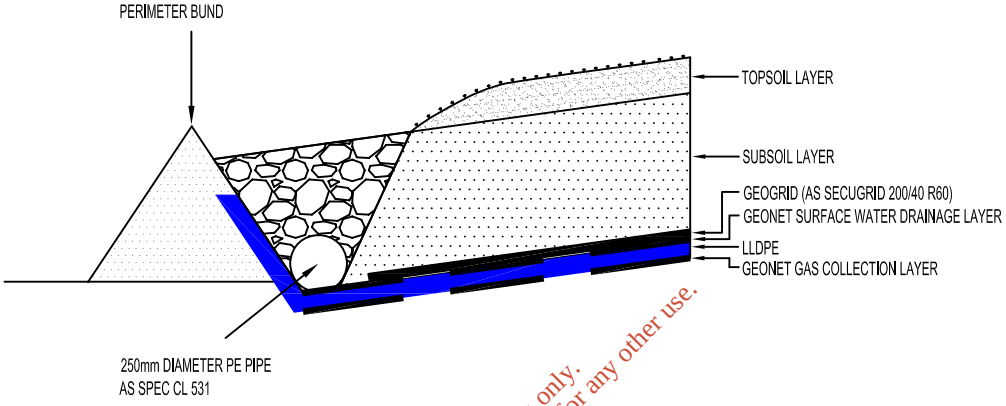
Title
Capping Details

Drawing Status	Sheet Size	Drawing Scale
Tender	A1	As Shown

Drawing Number	Rev
IBR1092 /106	-

Project Leader	Drawn By	Date	Initial Review
J Byrne	J Close	13-05-19	J Byrne

Appendix 3
Surface water drainage details



DETAIL A

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Drawing Number: IBR0275/106

Rev: 0

Project: Drogheda Landfill Site

Title: Surface Water Drainage Detail

Client: Drogheda Borough Council

Architect:

Drawing Status	Sheet Size	Drawing Scale	Project Leader	Drawn By	Date	Initial Review
Preliminary	A4	NTS	DD	AMB	Aug '11	AMcG