

***This Report has been cleared for submission to the Board by Programme Manager,  
Marie O'Connor***

*Marie O'Connor*  
**Signed:**

**Date: 15/03/2023**



**OFFICE OF ENVIRONMENTAL  
SUSTAINABILITY**

**INSPECTOR'S REPORT ON AN INDUSTRIAL EMISSIONS LICENCE  
REVIEW, LICENCE REGISTER NUMBER W0146-04**

**TO: BOARD OF DIRECTORS**

**FROM: ANNE LUCEY**

**DATE: 15 MAR 2023**

Applicant:	Knockharley Landfill Limited
CRO number:	529325
Location/address:	Knockharley, Navan, (Includes Townlands of Tuiterrath & Flemingstown), County Meath.
Application date:	22 October 2019

Classes of Activity (under EPA Act 1992 as amended):	<p>11.1 The recovery or disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in this Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under the said Part is or will be required.</p> <p>11.4 (b)(iii) Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, (other than activities to which the Urban Waste Water Treatment Regulations 2001 (S.I. No. 254 of 2001) apply): treatment of slags and ashes;</p> <p>11.5 Landfills, within the meaning of section 5 (amended by Regulation 11(1) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008)) of the Act of 1996, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste.</p>
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Category/ies of activity under IED (2010/75/EU):	<p>5.3 (b)(iii) Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, and excluding activities covered by Directive 91/271/EEC: treatment of slags and ashes.</p>
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5.4 Landfills, as defined in Article 2(g) of Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25 000 tonnes, excluding landfills of inert waste.	
Main CID:	There is no CID for the main activity of landfills.
All relevant CIDs, BREF documents and National BAT notes are listed in the appendices of this report.	
Activity description/background: Waste recovery and disposal activities including landfilling of waste, leachate treatment, storage and treatment of IBA (incinerator bottom ash) for recovery, and storage of baled recyclables and baled municipal solid waste.	
Additional information received:	Yes (07 Sept 21, 08 Dec 2021, 19 Apr 2022, 30 Aug 2022 (unsolicited), 26 Oct 2022, 04 Jan 23)
No of submissions received:	1
Environmental Impact Assessment required: Yes	Stage 2 Appropriate Assessment required: Yes
Environmental Impact Assessment Report submitted (EIAR): Yes (22 Oct 2019)	Natura Impact Statement (NIS) submitted: Yes (22 Oct 2019)
Site visit: 11 Aug 2022	Site notice check: 20 Nov 2019

## 1. Introduction

Waste licence Reg. No. W0146-01 was issued to Celtic Waste Ltd. in 2003 for the operation and development of a landfill at a greenfield site at Knockharley, Navan, Co. Meath. In accordance with this licence, waste disposal was limited to 175,000 tonnes per annum of residual, non-hazardous household, commercial and industrial waste and 25,000 of construction and demolition waste for recovery.

A revised licence, Reg. No. W0146-02, was issued to Greenstar Holdings Ltd. (formerly Celtic Waste Ltd.) in March 2010, following an Agency initiated review for the purposes of the Landfill Directive. A licence review application (W0146-03) submitted by the licensee was subsequently withdrawn in 2011.

The following amendments and changes have also occurred in relation to the licence as follows:

**Table 1:** Licence Amendments

Amendment	Date	Details
A	Jan 2013	European Communities Environmental Objectives (Groundwater) Regulations 2010.
B	Oct 2013	Temporary trial for metal recovery from incinerator bottom ash.
IE Amendment	Dec 2013	Agency amendment to bring licence into compliance with the Industrial Emissions Directive (Directive 2010/75/EU).
Licence Transfer	Mar 2014	Licence Transfer from Greenstar Holdings Ltd. to Knockharley Landfill Limited.
C	Nov 2016	Temporary increase of 95,000 tonnes of waste for disposal to meet landfill capacity requirements at that time.
D	Mar 2018	To permit the disposal of 70,000 tonnes of waste from an illegal landfill at Timoole, Co Meath and an additional 70,000 tonnes of waste for daily cover and Conditioning of the waste accepted from Timoole landfill.

The installation is currently licenced under Class 11.5<sup>1</sup> and 11.1<sup>2</sup> of the First Schedule to the EPA Act 1992 as amended and operates in accordance with the requirements of the Landfill Directive<sup>3</sup>. This existing Industrial Emissions (IE) licence (W0146-02)

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<sup>1</sup> Landfills, within the meaning of section 5 (amended by Regulation 11(1) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008)) of the Act of 1996, receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste.

<sup>2</sup> The recovery or disposal of waste in a facility, within the meaning of the Act of 1996, which facility is connected or associated with another activity specified in this Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under said Part is or will be required. (Is an industrial emissions directive activity, in so far as the process development or operation specified in 11.1 is carried on in an installation connected or associated with another activity that is an industrial emission directive activity)

<sup>3</sup> Council Directive (EU) 2018/850 of 30 May 2018 amending Directive 1999/31/EC on the landfill of

authorises a total annual waste acceptance of 200,000 tonnes with the following breakdown; the disposal of 175,000 tonnes of non-hazardous waste, including residual household, commercial and industrial wastes, and the recovery of 25,000 tonnes of construction and demolition wastes. However, Condition 3 of the associated planning permission granted by An Bord Pleanála (PL17.220331) restricted disposal capacity to 132,000 tonnes per annum until December 2010, thereafter reducing to 88,000 tonnes per annum. The remaining 87,000 tonnes of disposal capacity, between what's authorised by the current IE licence (i.e. 175,000 tonnes) and the planning permission, has to-date been utilised by accepting waste for recovery.

On 30 April 2021 An Bord Pleanála (ABP) granted permission (ABP-303211-18) for further development at the landfill, including an increase of the total quantity of waste for acceptance at the installation to 440,000 tonnes per annum, subject to a number of Conditions. The increased waste quantity permits the acceptance of 150,000 tonnes of incinerator bottom ash (IBA) and up to 5,000 tonnes of stable, non-reactive hazardous waste (SNRHW). Permission is also provided for the biological treatment of the organic fraction of municipal solid waste (MSW), i.e. "MSW fines". This IE licence review application (W0146-04) relates to the ongoing activity associated with the installation and this proposed further development at the landfill, of which further details are provided in Section 2 below.

## **2. Description of activity**

The installation is located in a rural setting, approximately 10km east of Navan town centre and 1.5km north of Kentstown village in Co. Meath, as per Appendix 1. Agricultural fields surround the site and there are numerous residential properties located adjacent or close to the northern and eastern site boundaries. The site boundary is broken by the L5056 public road which traverses the site to the east, however all landfill cells and associated operations are located to the west of the L5056 road. Access to the site is off the main N2 road to the east of the site, via a private gated entrance road which passes under the L5056.

The existing permitted landfill footprint is approximately 25ha and sits within the site ownership boundary of 135ha, as per Appendix 2. The site opened for waste acceptance in December 2004 and currently accepts the residual fraction of household, commercial and industrial wastes. Residual waste is defined in the current licence as "The fraction of collected waste remaining after a treatment or diversion step, which generally requires further treatment or disposal". Construction and demolition waste is also currently accepted and IBA is accepted for use as landfill cover. The site is licensed to operate from 07:30 to 18:30 Monday to Saturday inclusive and is licensed to accept waste for disposal between 08:00 and 18:00 Monday to Saturday (excluding public holidays). The existing infrastructure comprises of the following:

- Engineered lined landfill. The existing landfill is being developed in seven phases. To-date Phases 1-4 (Cells 1-16) of the 7 permitted phases have been fully constructed. A permanent cap has been placed on Phase 1 and Phase 2 (Cells 1-8) and almost complete on Phase 3 (Cells 9-12).
- Landfill gas management system (comprising of collection pipework, wells and landfill gas treatment compound).

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waste.

- Leachate management system (comprising of collection pipework and one storage lagoon).
- Surface water management system (comprising of collection pipework, attenuation pond and integrated constructed wetland).
- Groundwater management infrastructure.
- Two weighbridges, inspection and quarantine slab, maintenance garage, portable storage cabins, an administration building and car parking area.

### **Scope of Review**

The proposed further development at the landfill, which has been granted permission and, for which this licence review application comprises is summarised as follows:

- **An increase in the total quantity of waste for acceptance at the installation to 440,000 tonnes per annum**, including:
  - up to 435,000 tonnes per annum of non-hazardous wastes, which will comprise of up to 150,000 tonnes of incinerator bottom ash (IBA), as well as household, commercial and industrial wastes including residual fines, non-hazardous contaminated soils, construction and demolition (C&D) wastes and baled recyclables and MSW.
  - up to 5,000 tonnes per annum of stable, non-reactive hazardous waste (not to exceed 49,999 tonnes over the lifetime of the facility).
  - The waste is proposed to be managed through disposal or recovery activities, dependant on the nature of the waste material.
- **An increase in height of the landfill body** from the current permitted post settlement final contour height of 74 mOD to a post settlement contour height of 85 mOD – the proposed height increase will apply from the active landfill phase at the date of permission grant.
- **The construction and operation of a dedicated Incinerator Bottom Ash facility:** IBA will be stored in 5 landfill cells until recovery outlets are identified. Permission is also sought for trials to prepare IBA for recovery and removal off site (weathering, metal recovery trials and crushing and washing to facilitate recovery trials and processing). The IBA facility will also include a portal frame building (76m x 76m x 15.5m) to accommodate weathering, metal recovery trials and crushing and washing activities to facilitate recovery trials and processing. Permission is sought for the operation of the IBA facility until the cells are full and subsequent aftercare activities as may be required are complete.
- **The installation of a leachate management system** for continued operation post filling of the landfill cells.
- **Construction of an additional surface water management infrastructure** with a new discharge point to the adjacent Flemingstown River (also known as Knockharley stream), comprising of a holding pond, attenuation pond and integrated constructed wetland.
- **Additional works and/or supporting infrastructure** is also proposed as follows:
  - Additional perimeter (haul) roads and screening berms located along the western and eastern boundary, to a maximum of 10m high, and along the northern boundary to a maximum of 6m high.
  - Felling of c. 12.5ha of existing commercial broadleaf/conifer mix plantations to facilitate the construction of the berms, the development of landfill cells 27 and 26 and the new surface water attenuation pond.
  - Replanting and new planting, totalling c. 16.8ha, to off-set the loss of felled plantations over the berms and the cap of landfill cells 25-28.

- Construction of two additional ESB sub-stations and relocation /installation of overhead ESB powerlines.
- Extension of existing, and provision of new, below ground infrastructure (power, water, telemetry, leachate rising mains and drainage) and extension of existing car park facilities.
- **The installation of solar panels.** The licensee intends to install solar panels over the landfill under planning permission reference AA/1801145 from Meath Co. Co. The intention of the solar development is to make use of the existing grid connection, which currently serves the landfill gas utilisation compound, and to gradually replace landfill gas generation with solar generation. The solar panels will have an export capacity of approximately 3MW.

It is anticipated that 17 people shall be employed on a full-time basis when the proposed development is operational. No changes to the hours of operation or waste acceptance are proposed.

Non-hazardous household, commercial and industrial wastes will continue to be accepted for landfilling as currently permitted. The additional waste types to be landfilled as part of the proposed development are stable, non-reactive hazardous waste and IBA. IBA is accepted at the installation and utilised as landfill cover and road surface material, since approved by the Agency in November 2021, but to-date has not been stored in dedicated cells as a waste material for recovery. A temporary trial for metal recovery from incinerator bottom ash was permitted in accordance with Technical Amendment B, issued in 2013, for a maximum of 4,000 tonnes of incinerator bottom ash for an 8 - 10 week period. Baled recyclable waste and baled MSW will also be accepted for the first time as contingency storage at the site prior to onward transfer to authorised facilities for further processing. This assessment has regard to the Circular Economy and Miscellaneous Provisions Act 2022 in relation to waste management.

### **Waste Quantities**

The licensee provided a breakdown of tonnage of annual waste types to be received at the installation, as per Table 1 as follows, but noted that the quantities were indicative and subject to availability of national landfill capacity and prevailing market conditions. Accordingly, the licensee noted that it is not proposed to limit waste disposal or recovery for respective waste type inputs. This is generally an agreeable approach, therefore *Schedule A.2* of the RD applies a limit to waste acceptance for "non-hazardous wastes" which incorporates some of the specific waste types outlined in Table 1. Other waste types identified in Table 1 are automatically included within the waste category of "Household, Commercial and Industrial" within *Schedule A.2*. A limit is also applied for IBA and stable, non-reactive hazardous waste. All limits are in line with planning permission. A number of Conditions are also applied in the footnotes to the table of waste acceptance limits in *Schedule A.2* of the RD. This includes a limit of 65,000 tonnes per annum on non-stabilised biodegradable waste, which will be the potential source of odourous waste accepted at the installation. As odour dispersion has been modelled based on this quantity of odourous waste, a limit is deemed appropriate.

Footnotes to *Schedule A.2* also incorporate additional planning Conditions related to an annual restriction of 188,000 tonnes for disposal on residual MSW. An annual contingency capacity of 44,000 tonnes per annum is required in accordance with planning permission Condition 4(b), which is intended as reserve capacity as required by the Waste Regions, but this is not regarded as an environmental licensing

requirement and is therefore not included the RD. Storage of baled waste is also limited to 5,000 tonnes per annum as noted by the licensee. The licensee proposes that final capping material will be additional to the waste quantities in Table 1, however as planning permission caps the annual waste intake to 440,000 tonnes per annum, this must include all waste materials accepted for disposal and recovery at the installation, including waste materials used for capping and final profiling. In line with the current licence, specific LoW (list of waste) codes are not included in the licence but were included in the application form.

**Table 1:** Proposed Waste Acceptance Types

<b>Incoming Waste Material Types</b>	<b>Annual Intake (Tonnes)</b>	<b>Description</b>
Residual MSW	65,000	Biological fraction (non-stabilised)
Fines materials - MSW		
Soil & stone and other C&D materials	225,000	Stabilised & Inert
Non-recoverable bulky waste individual industrial waste streams & SNRHW		
Fines materials – C&D, C&I (commercial & industrial), MSW		
Street Sweepings & similar Cleansing Wastes		
IBA	150,000	No biological fraction
<b>Total</b>	<b>440,000</b>	<b>-</b>

In relation to the waste types tabled above, the licence review application also notes the following:

- Residual MSW will include waste of household, commercial and industrial origin, which will have undergone pre-treatment, from separate 'black bin' collection to biological treatment in the form of stabilised residual fines, as well as residual MSW from other sources such as unauthorised landfill remediation and/or repatriated wastes.
- Non-recyclable bulky wastes are considered to be larger wastes which do not fit in household/commercial bins, e.g. mattresses, furniture, etc.
- Individual volumes of non-hazardous industrial wastes from various industries will be accepted such as food preparation, chemical processes, thermal processes, metal treatments, health care (non-hazardous) and water/wastewater treatment industries, all of which are currently accepted at the facility.

**Non-stabilised wastes** will be placed in cells developed within the existing permitted landfill footprint where it will, under anaerobic Conditions, result in landfill gas and leachate production, which will be controlled in accordance with the licence.

**Stabilised and inert waste** will be landfilled in separate specific cells and isolated from the non-stabilised waste to prevent oxygen ingress into anaerobic cells. The term stabilised is used to reflect the relatively 'non-reactive' nature, in terms of leachate and landfill gas generation of this waste.

**Stable, non-reactive hazardous waste (SNRHW)** is proposed to be accepted on site up to 5,000 tonnes per annum, as granted by planning permission, and the licensee states that the amount of SNRHW will not exceed 49,999 tonnes over the lifetime of the installation. The licensee proposes that SNRHW will be landfilled within dedicated sub cell areas within cells 27 and or 28. It is also proposed that SNRHW will be contained within plastic sheeting and covered with stable inert waste. The licensee doesn't propose specific SNRHW types in the application, but examples of SNRHW include solidified wastes that have been mixed with cement or PFAS (Per- and polyfluoroalkyl substances) or wastes produced by a variety of treatment plants such as filter cakes and treated fly ash, and construction materials containing asbestos.

Certain hazardous waste is suitable for disposal in non-hazardous landfills in accordance with the Landfill Directive (Council Directive 1999/31/EC), as amended, with which the installation must comply with. So called stable, non-reactive hazardous waste, must have a leaching behaviour equivalent to those of non-hazardous wastes, which fulfil the relevant acceptance criteria set out in Annex II of the Directive. The Directive also requires that these hazardous wastes shall not be deposited in cells destined for biodegradable non-hazardous waste.

As outlined in previous Technical Guidance prepared by the Agency<sup>4</sup> in relation to SNRHW, the term stable, does not mean that the waste is stabilised as provided in European Commission Decision (2001/118/EC) amending Decision 2000/532/EC as regards the list of wastes. That defines stabilised wastes to be ones that have been treated so that they are no longer hazardous (i.e., stabilised wastes have had the hazard removed, whereas, in stable hazardous wastes the hazard is still present). Additionally, hazardous waste, unlike other waste types, generally does not degrade nor does the hazardous classification diminish. The guidance further notes, that where a non-hazardous landfill proposes to accept more than 10% total intake or 50,000 tonnes of SNRHW, its classification will change to hazardous – if not for the entire landfill but at the very least for the cell containing the hazardous waste. It is noted that the licensee has stated that the acceptance of SNRHW will not exceed 49,999 tonnes over the lifetime of the installation.

Accordingly, strict Conditions are included in the RD regarding the acceptance, disposal and management of SNRHW at the installation in line with the Landfill Directive (1999/31/EC), Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC, and other jurisdictions including the Scottish Environment Protection Agency (SEPA) and the Environment Agency for England and Wales. This includes the separate collection and management of landfill gas and leachate from the cell or sub-cell storing SNRHW. An independent risk assessment to assess the potential impacts to receptors is also required prior to acceptance of SNRHW on site. The risk assessment is also required to determine the compatibility of the SNRHW with other wastes stored in the cell/sub-cell and the need for separate treatment systems for landfill gas and leachate. The RD also requires that each proposed SNRHW stream to be accepted at the landfill must first be approved by the Agency.

**Incinerator bottom ash** is proposed to be accepted and placed in five cells (29-33) to the east of the landfill footprint, as per Appendix 3 (excluding cell 33). Cell 33 is termed the 'wedge' as it sits at the interface between the existing landfill and the

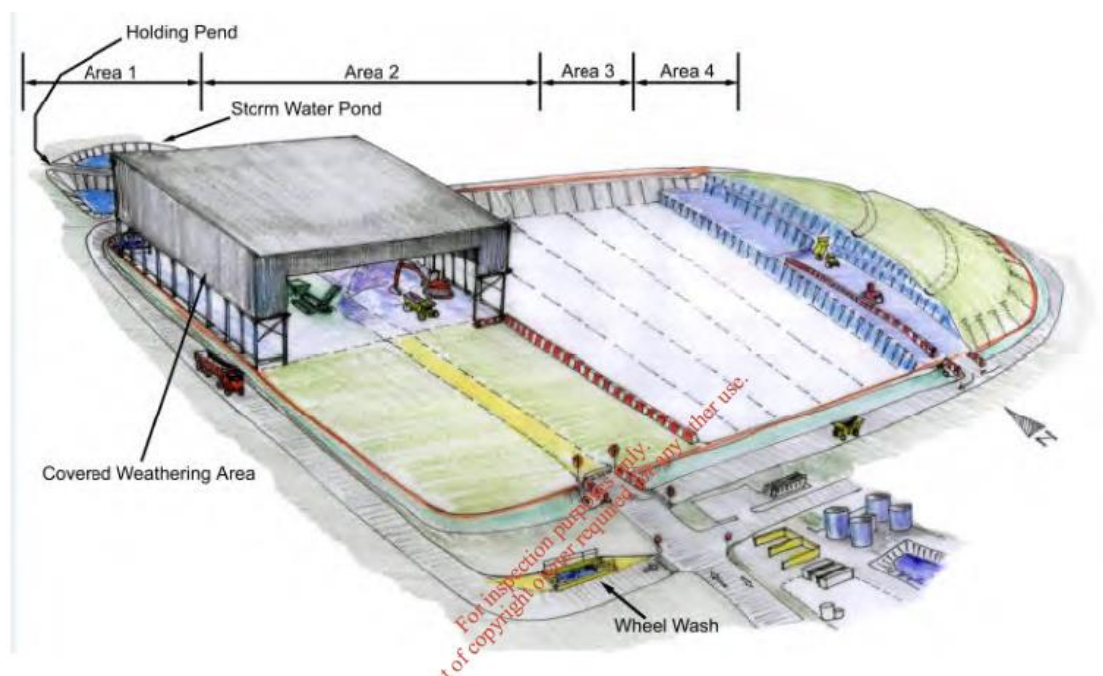
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<sup>4</sup> EPA Technical Guidance on The Landfilling of Asbestos Waste, 2006. [Guidance landfill Asbestos 2006.pdf \(epa.ie\)](#)



proposed IBA area and will “piggy back” onto the adjacent landfill cells. Only inert waste will be placed under the “piggy back” area to provide future stability for the IBA material. It is the intention of the licensee to store IBA in lined cells for future recovery off-site and permission is sought to carry out trials to facilitate recovery.

**Figure 1.**, as follows, shows an aerial overview of the proposed IBA cell footprint for cells 29-32 (excluding the wedge cell 33):



**Figure 1. Aerial overview of the proposed IBA cell footprint for cells 29-32 (excluding the wedge cell 33) (Reference Section 2.5.5.1 of Main EIAR)**

- Area 1 above, will be assigned to ‘weathering’ of IBA prior to placement and will provide a covered weathering area. Area 1 will facilitate two stockpiles, each with a capacity to accommodate up to three months of IBA acceptance (c. 37,500 tonnes) and temporary storage so that an appropriate weathering period is provided for. Incoming IBA will be tipped at the relevant stockpile to facilitate turning of material during the weathering period.
- The building of Area 1 may also facilitate recovery trials which may include metal recovery, crushing, screening, and washing of IBA. These techniques, including aging (i.e. weathering) are considered an appropriate combination of techniques based on a risk assessment, in accordance with BAT 36 of the Commission Implementing Decision on waste incineration (EU 2019/2010), which is applicable to the treatment of bottom ashes from waste incineration.
- Area 2, 3 and 4 above, will fill with IBA material as the working face develops from the east. Area 4 above, illustrates IBA with temporary or permanent capping in place. As the areas fill, temporary sealing/covers and permanent covers will be installed to rainfall ingress.

The existing licensed (W0146-02) capacity of Knockharley landfill is 3,616,955m<sup>3</sup>. The total quantity of waste and recovery materials landfilled at the site within cells 1-16 is approximately 2,170,954 tonnes (Section 2.2.11 of EIAR). According to licensee returns, as of September 2022, the remaining waste capacity of the landfill is 1,921,953 tonnes, which will bring the landfill to the year 2032 under the existing licence. With the intensification of landfilling, resulting from the increased rate of waste

acceptance of 440,000 tonnes per annum, the licensee anticipates that the landfill is expected to run out of void space during year 6 if the installation attracts waste at the maximum rate. Section 2.4.2 of the EIAR states that the increased profile of the landfill from 74mAOD to 85mAOD, applied to operational cells post planning permission grant, will result in an additional void capacity of approximately 217,000m<sup>3</sup>. Accordingly, *Schedule A.2 Waste Acceptance* of the RD is revised to include this additional void capacity on top of the current licensed volume of 3,616,955m<sup>3</sup>.

Section 2.5.3.3 of the EIAR states that the IBA void capacity for cells 29-33 will be 890,443m<sup>3</sup>. In licensee correspondence dated 30 August 2022, the licensee stated that total IBA void capacity was estimated at 1,315,952m<sup>3</sup>, however planning permission Condition 4(f) required the licensee to submit "details of the overall volume and tonnage of waste which will be deposited in the landfill cells consistent with the information as contained in the application documentation". The licensee provided this submission on the 04 Jan 2023 but only waste tonnage was stated in the submission as per Table 1 above and no details of waste volumes were provided. Consequently, the capacity of 890,443m<sup>3</sup> for IBA cells is included in Schedule A.2 of the RD, as contained in the application documentation.

The planning permission granted by An Bord Pleanála in April 2021, permits landfilling of the cells until full. The proposed cell phasing and filling for the existing permitted landfill cells will require two working faces (an increase from the existing one working face) and the proposed IBA Cells will require one working face.

The main emissions arising from the proposed development will be emissions to air from landfill gas utilisation engines and flares, emissions to water from surface waters and dust, noise and odour from operational activities.

### **Licence Activity Classes**

The current licence W0146-02 permits activity class 11.1 and 11.5, as outlined in the table on page 1 of this report. The additional class of activities applied for as part of the application include: 11.4(a)(ii), 11.4(b)(iii) and 11.4(b)(i), which are discussed further as follows:

The review application includes an option for a treatment plant to pre-treat landfill leachate on site, prior to being tankered off-site to an authorised WWTP and accordingly included the following activity class:

- *11.4 (a)(ii) Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day involving one or more of the following activities (other than activities to which the Urban Waste Water Treatment Regulations 2001 (S.I. No. 254 of 2001) apply): physico-chemical treatment;*

The collection, storage and treatment of leachate is regarded as an associated landfill activity, as set out in the National BAT Guidance Note for Landfill Activities<sup>5</sup>, and is covered under the existing class of activity for landfilling (11.5) as follows:

- *11.5 Landfills, within the meaning of section 5 (amended by Regulation 11(1) of the Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008)) of the Act of 1996,*

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<sup>5</sup> Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Landfill Activities

*receiving more than 10 tonnes of waste per day or with a total capacity exceeding 25,000 tonnes, other than landfills of inert waste.*

Activity class 11.4(a)(ii) as above, is therefore not required and so is refused.

During the assessment, the licensee informed the Agency that the proposed biological treatment plant for the biostabilisation of MSW fines material would no longer be required as part of the application. For this reason, activity class 11.4(b)(i) as follows has not been included in the RD.

- *11.4 (b) Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, (other than activities to which the Urban Waste Water Treatment Regulations 2001 (S.I. No. 254 of 2001) apply):*  
*(i) biological treatment;*

In correspondence dated 26 October 2022, the licensee noted that it was their intention to still construct the biological treatment plant building, in accordance with planning, for the purpose of storing baled recyclables and baled MSW, prior to removal off-site. The storage of baled recyclables and baled MSW can be accommodated under activity class 11.1, provided that the storage capacity does not exceed 75 tonnes per day for baled MSW. In the event that capacity is exceeded, activity class 11.4(b)(ii) as follows would be required, as storage of waste is regarded as pre-treatment, and this activity class has not been applied for as part of this licence review. Accordingly, Condition 3 of the licence requires that the storage capacity provided for baled MSW does not exceed 75 tonnes per day.

- *11.4 (b) Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day involving one or more of the following activities, (other than activities to which the Urban Waste Water Treatment Regulations 2001 (S.I. No. 254 of 2001) apply):*  
*(ii) pre-treatment of waste for incineration or co-incineration;*

In relation to the acceptance of IBA waste at the installation, planning permission (ABP-303211-18) Condition 4(c) for the proposed development, requires that IBA shall be accepted for storage pending recovery, and that the period of storage of the material shall not exceed five years unless otherwise agreed in writing with the planning authority. In line with this planning requirement, Condition 3 in the RD requires that the placement of IBA in landfill cells is for the purpose of waste recovery. In relation to storage pending recovery for a period of five years, in the context of landfilling, the Landfill Directive provides the following definition for a landfill:

*'landfill' means a **waste disposal site** for the deposit of the waste onto or into land (i.e. underground), including:*

- *internal waste disposal sites (i.e. landfill where a producer of waste is carrying out its own waste disposal at the place of production), and*
- *a permanent site (i.e. more than one year) which is used for temporary storage of waste,*

***but excluding:***

- *facilities where waste is unloaded in order to permit its preparation for further transport for recovery, treatment or disposal elsewhere, and*
- ***storage of waste prior to recovery or treatment for a period less than three years as a general rule, or***

— storage of waste prior to disposal for a period less than one year;

Storage of waste prior to recovery 'as a general rule' should be within the timeframe of less than three years, but taking account of the licensee's objective to achieve end-of-waste status for the IBA waste, Condition 3 of the RD requires that the storage period of IBA shall not exceed five years, unless approved by the planning authority and Agency. In the event of an extension request on this time period, Condition 3 also requires the licensee to seek approval from the Agency six months prior to the expiry of the five year timeframe. Condition 2 of the RD also includes the achievement of end-of-waste status for IBA as part of the Schedule of Environmental Objectives and Targets.

### 3. Planning Status

A number of planning applications have been made by the licensee for the area within the installation boundary since the original licence was issued in 2003. Details of these relevant planning permissions have been provided in the application documentation and summarised in the Table below:

**Table 2:** Granted Planning Permissions

<b>Planning Reference No.</b>	<b>Permission Details</b>
An Bord Pleanála (ABP-303211-18)	Granted on 30 April 2021: Increase in the rate of waste acceptance up to 440,000 tonnes per annum, comprising up to 435,000 tonnes of non-hazardous waste and up to 5,000 tonnes of stable, non-reactive hazardous waste. A total of 44,000 tonnes per annum of the total quantity of waste for acceptance is required to be reserved as contingency capacity. Storage of 150,000 tonnes per annum of incinerator bottom ash, pending recovery, is permitted as part of non-hazardous waste, for a period of 5 years.
Meath County Council AA180145	Granted 21 June 2018: Permission granted to Starrus LFG Ltd. for the development of a solar farm to be installed over reclaimed landfill with an export capacity of 3MW.
Meath County Council AA161431	Granted 17 January 2017: Extension of duration of original planning permission 01/5006 (An Bord Pleanála reference PL 17.125891).
Meath County Council NA60336 (An Bord Pleanála reference PL17.220331)	Granted on 21 March 2007: Landfill extension (c. 2ha), removal of regional restriction on the origin of waste accepted and continuation of the restricted waste intake of 132,000 tonnes per annum until December 2010. Permission refused for the increase in the waste intake volume to 200,000 tonnes per annum.
Meath County Council NA70015	Granted 03 April 2007: Installation and operation of a gas utilisation plant on a 0.3ha site to generate up to 4.2 MW of electricity for export to the National Grid.
Meath County Council 01/5006 (An Bord Pleanála reference PL17.125891)	Granted 26 Aug 2002: Permission for the development and operation of an engineered landfill to accept 180,000 tonnes/annum of non-hazardous waste for 14 years, subject to restriction Conditions of 132,000 tonnes per annum until December 2007 and thereafter to 88,000 tonnes per annum.

The licensee has submitted the EIAR associated with planning permission ref. ABP-303211-18. Having reviewed the planner's reports for previous planning permissions, it is considered that the EIAR submitted with the licence application, along with the licence application and further information received, contains adequate information to

inform the Agency's assessment and the EIS relating to previous planning permissions is not required for the Agency's assessment.

The Agency has had regard to the reasoned conclusions reached by An Bord Pleanála in undertaking its environmental impact assessment of the activity.

#### **4. EIA Screening**

In accordance with Section 83(2A) of the EPA Act 1992 as amended, the Agency must ensure that before a licence or revised licence is granted, that the application is made subject to an environmental impact assessment (EIA), where the activity meets the criteria outlined in Section 83(2A)(b) and 83(2A)(c).

In accordance with the EIA Screening Determination, the Agency has determined that the activity is likely to have a significant effect on the environment, and accordingly is carrying out an assessment for the purposes of EIA.

The changes to the activity exceed the threshold of project type 11(b) in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 as amended (Installations for the disposal of waste with an annual intake greater than 25,000 tonnes not included in Part 1 of this Schedule).

An EIAR was submitted to the Agency as part of the application on 22 October 2019. This is dealt with in the EIA Section later in this report.

#### **5. Best Available Techniques**

There is no BREF/CID for landfill activities, this is covered by the Landfill Directive (1999/31/EC). However, BAT for the installation was assessed against the BAT conclusions contained in the Commission Implementing Decision (CID) for Waste Incineration, which is applicable in relation to the treatment of IBA. National BAT for landfills; *Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Landfill Activities (EPA, 2011)*, hereafter referred to as National BAT Guidance, is also applicable to the installation and has been taken into account in the assessment.

Other relevant BREF documents assessed are specified in the appendices of this report. BAT assessments were carried out by the licensee and are included in application submissions dated 07 September 2021. Conditions in the RD incorporating or addressing BAT Conclusions are detailed in the appendices of this report. Any relevant BAT-AELs are specified in the emissions sections of this report.

I consider that the applicable BAT Conclusion requirements are addressed through the technologies and techniques as described in the application, as well as the Conditions and limits specified in the RD.

Appendix 11 of this report sets out the applicable CIDs and horizontal BREFs. Appendix 12 sets out the CID BAT conclusion numbers and requirements, applicable to the installation, and the relevant Condition/Schedule where incorporated into the RD. Specific BAT techniques employed by the installation from horizontal BREFs and the relevant Condition where incorporated in the RD are also included.

## 6. Emissions

### 6.1 Emissions to Air

This section addresses emissions to air from the installation and the environmental impact of those emissions. Emissions to air from the installation include landfill gas, combustion products of landfill gas, dust and odours.

#### 6.1.1 Channelled Emissions to Air

**Stabilised waste, inert waste and SNRHW** will be placed in cells without active gas extraction. These broad waste streams will typically be less compressible than residual non-stabilised wastes, contain minimal/no organic matter and as such will not produce landfill gas. Such emissions as may be produced will be vented passively as a precautionary measure via carbon filters from the specific cells in which this material is placed.

In the **IBA weathering area and cells**, exothermic reactions may cause elevated temperatures and hydrogen gas may be released. Peak gas production will occur within 3 to 4 months following receipt of IBA on-site and rapidly decline over the following 12 months. It is proposed that horizontal gas collection pipes that connect to passive vents will be progressively installed in the cells.

Section 2.5.5.3 of the EIAR states that specific design and operational practices will be put in place to manage safe venting of hydrogen to atmosphere and to mitigate the risk of high temperatures damaging the HDPE liner of the cell. In response to a request for further information on the details of the specific design and operational practices, the licensee noted that the rate of evolution of hydrogen gas was extremely low. In accordance with the Landfill Directive and current licence Conditions, no waste which in the Conditions of the landfill is explosive, shall be accepted at the landfill. Accordingly, an independent risk assessment is required to ensure that in the Conditions of the landfill, the waste treatment activities associated with IBA storage do not result in an explosive atmosphere (Condition 3).

For passive venting for cells containing stabilised waste, inert waste, IBA waste and SNRHW (pending risk assessment), the RD requires that the passive vents are installed in accordance with EPA Landfill Manuals (Condition 3). The licensee is also required to install a minimum of two in-waste monitoring wells in each cell containing stabilised waste, inert waste and SNRHW (pending risk assessment) (Condition 3), which are to be monitored on a monthly basis for landfill gases. The licensee is further required to propose a trigger level for landfill gas emissions (from stabilised, inert waste and SNRHW cells) above which active gas extraction will be required (pending risk assessment for SNRHW cells) (Condition 3).

**Residual non-stabilised waste** will be placed in cells where it will, under anaerobic Conditions, result in landfill gas production, which will be actively extracted under negative pressure and utilised to generate electricity or flared. The existing active landfill gas collection and management system has sufficient treatment capacity to treat extracted landfill gas produced by the proposed development. The collection network will be extended to include the new cells.

Landfill gas is extracted from all active and filled cells via vertical and horizontal gas wells. Gas wells are constructed from the cell floor upwards as waste is placed in each cell. Additional bored gas wells are constructed in each cell to aid gas extraction upon

reaching a predetermined filling height. Gas extraction commences from each cell once sufficient waste has been placed above the leachate stone drainage layer to prevent air infiltration into the gas extraction system. In addition, short-term use of driven extraction pipes ('pin wells') are used as a temporary gas collection measure, close to the working face if required. A slotted horizontal gas collection pipe is also installed at the top of the cell side-slopes to intercept any gas travelling up the cell embankments. During cell construction, the perimeter gas collection pipework will be extended from the in-situ above ground system on-site. Capping works for landfill phases will involve the installation of more permanent well heads and below ground pipes to enable management of the landfill gas field.

Landfill gas is fed via both temporary over-ground and permanent below-ground HDPE pipes to a HDPE gas ring main located outside the perimeter of the waste cells. The ring main transfers landfill gas from the cells to the landfill gas compound. The landfill gas compound is located east of the landfill and consists of treatment infrastructure which includes a gas cleaning system (biogas desulphurization), landfill gas utilisation engines and flares. There is an ESB substation in the compound to facilitate the transfer of energy generated by the plant (currently 2.1 MW) to the national grid via an overhead 20 KV power line. A separate entity to the licensee, Starrus LFG Limited, operate and maintain the gas compound. The licensee regularly balances the landfill gas extraction system, which involves monitoring the in-waste gas wells and making subsequent alterations to the extraction rates based on the gas quality encountered in each well during the monitoring. The current (application submission 04 Jan 23) main channelled emission points associated with these engines and flares are as follows:

**Table 3: Main Channelled Emission Points**

<b>Emission Point Code</b>	<b>Site Reference</b>	<b>Description</b>	<b>Capacity (m<sup>3</sup>/hr)</b>
A2-1	KH01	Back-up gas engine	800
A2-2	KH02	Back-up gas engine	800
A2-3	KH03	Lead gas engine	675
A2-4	KH04	Lead gas engine	675
A2-5	F1	Enclosed Flare – during engine shutdown/ maintenance	1,500
A2-6	F2	Enclosed Flare – for burning gas unsuitable for engines	1,500
A2-7	F3	Enclosed Flare back up – for burning gas unsuitable for engines	1,500

There are other emission points to air at the installation which, due to their emission characteristics are not considered environmentally significant and are therefore regarded as minor emissions. These minor emissions are not considered as part of this impact assessment.

As part of the application, air dispersion modelling was carried out to predict the ambient pollutant concentrations resulting from all main emissions. The modelling carried out was in accordance with published Agency guidance and was considered sufficiently detailed and conservative to assess the impact of the main emissions to air. The table below gives details of the predicted impact of the existing main channelled emissions to air:

**Table 4: Main Channelled Emissions Impact**

Parameter	Averaging Period	Background concentration (µg/m <sup>3</sup> )	Process contribution to PEC (µg/m <sup>3</sup> )	Predicted Environmental Concentration (PEC) (µg/m <sup>3</sup> )	PEC as % of Air Quality Standard	Air Quality Standards/Guidelines (µg/m <sup>3</sup> ) Note 1
Nitrogen Oxides (as NO <sub>2</sub> )	99.79%ile hourly	6.2	18.9	25.1	12.6	200
	Annual	3.1	1.6	4.7	11.6	40
Sulphur Dioxide	1 hour (99.73%ile)	2.6	162.2	164.8	47.1	350
	24 hours (99.18%ile)	1.3	73.0	74.3	59.4	125
Carbon monoxide (CO)	Maximum 8 hour	800	51.9	851.9	8.5	10,000
PM <sub>10</sub>	24 hours (90.4%ile)	7.6	1.2	8.8	17.6	50
	Annual	7.6	0.4	8.0	20.0	40
Hydrogen Chloride	1 hour	0	2.7	2.7	0.4	750
Hydrogen Fluoride	1 hour	0	0.24	0.24	0.1	160
	Monthly Mean	0	0.04	0.04	0.2	16
Benzene	Annual	0.2	0.2	0.4	7.1	5

Note 1: Air Quality Standards Regulations, SI 58/2009 and 180/2011 for all except hydrogen chloride and hydrogen fluoride. In the absence of EU ambient air quality limit values for hydrogen chloride and hydrogen fluoride, Environmental Assessment Levels (EALs) from the UK were examined for limit values for these parameters.

The modelling results indicate that predicted concentrations fall below all of the short and long term limit values for all of the pollutants assessed. The predicted concentrations are also below the maximum allowable process contribution for all pollutants assessed as set out in the EPA Air Dispersion Modelling from Industrial Installations Guidance Note (AG4). Additionally, the results of the ecological receptors assessment indicate that the predicted annual concentrations of NO<sub>x</sub> are below 1 µg/m<sup>3</sup> at the assessed designated European sites within 15km of the site. This is substantially below the annual critical level (1 µg/m<sup>3</sup>) for the protection of vegetation and natural ecosystems.

There have been no exceedances in ELVs in monitoring results from gas utilisation engines or flares in the last 8 years. The licensee proposed to retain current licensed emission limit values (ELVs) for monitored parameters and volumetric flow rates (3,000 m<sup>3</sup>/hr) for both landfill gas utilisation engines and flares but subsequently noted (application submission 26 Oct 22) that two newer gas engines with a lower volumetric capacity (800 m<sup>3</sup>/hr) had been installed since the EIAR was produced (Nov 18). The licensee further stated (application submission 04 Jan 23) that they were satisfied to accept flow rate ELVs based on the listed capacities of the engines and flares in Table 3 above, as utilised in the air dispersion model.

Schedule B.1 of the Recommended Determination (RD) specifies emission parameters and ELVs for the gas utilisation engines and flares having regard to the EPA Guidance Note on Landfill Flare and Engine Management and Monitoring (AG7) and the BAT associated emission limits presented in the Landfill BAT Guidance Note. This largely results in no change to current licensed ELVs. ELVs are also included for gas utilisation engines in accordance with the applicable Medium Combustion Plant (MCP)



Regulations 2017, for SO<sub>2</sub> and NO<sub>x</sub>, with ELVs provided for “existing medium combustion plant” (put into operation before 20 Dec 2018) and “new medium combustion plant” to take account of the newer gas engines installed if applicable, and subsequent installations if required. There is no ELV for sulphur dioxide in the current licence but will be applicable to gas engines as per the MCP regulations from 01 January 2030.

For gas engines also, carbon monoxide is currently compared to an ELV of 1,400 mg/m<sup>3</sup> for monitoring and not the current licensed limit of 650 mg/m<sup>3</sup>. This was previously approved by the Agency, is in line with AG7 and considered appropriate on review of monitoring results and is reflected in the RD. Current monitoring of gas engines is carried out for TA Luft Organics Class I only and not Class II and III as per the current licence. The licensee only proposes Class I for monitoring in the licence application, however it is considered prudent to retain Class II and III monitoring parameters in the event of changes to the nature of waste streams. Condition 6 of the RD also provides for the scope of monitoring to be amended as required or approved by the Agency following evaluation of test results.

The current licence requires monitoring for Total Organic Carbon (TOC) for gas engines and flares with an associated ELV of 10 mg/m<sup>3</sup>. This ELV is referenced for flares in AG7 but for gas engines is noted at 1,000 mg/m<sup>3</sup>. Monitoring for TOC is only being completed currently for flares so it is proposed to amend the limit for gas engines to 1000 mg/m<sup>3</sup> in the RD, in line with AG7, and require the parameter to be monitored. Additionally, the term Total Organic Carbon, as an air monitoring parameter, is obsolete and is replaced throughout the RD by Total Volatile Organic Carbon where relevant.

Emissions from gas engines are currently corrected to an O<sub>2</sub> content of 5% and this is permitted as referenced in AG7. Monitoring methods and frequencies for emissions to air from gas engines and flares are set out in *Schedule C* of the RD, along with key control parameters for gas utilisation and flaring which are continuously monitored utilising a supervisory control and data acquisition (SCADA) control system. Monitoring of the in-waste gas wells is currently carried out in a minimum of two wells per cell and this is reflected in Condition 3 and *Schedule C.1.3* of the RD, correcting the existing licence Condition of a minimum of two wells per hectare for a more practical application.

Drawings were submitted for all existing emission monitoring points (LW14-821-01-P-0050-001) and proposed monitoring points (LW14-821-01-P-0050-002). Accordingly, Condition 11 of the RD requires the licensee to maintain a drawing for all emission point references and monitoring points as set out in the licence.

### 6.1.2 Diffuse Emissions

Diffuse emissions to air at the installation may arise from dust emissions (discussed further in section 6.1.3) and the extraction and collection of landfill gas from waste within the cells and may be a significant source of odour (discussed further in section 6.1.4). The extraction system comprises of a network of horizontal and vertical landfill gas extraction wells (at 50m lateral and longitudinal centres). Independent surface volatile organic carbon (VOC) surveys for diffuse landfill gas emissions will continue to be carried out biannually in order to minimise or eliminate landfill gas migration and diffuse emissions in accordance with Condition 6 of the RD. Trigger levels are established for surface VOC emissions in Condition 4, as per EPA Air Guidance Note 6

(AG6) Surface VOC Emissions Monitoring on Landfill Facilities, and if exceeded, additional vertical wells will be installed, or other appropriate remedial action taken. Additional wells will be installed between the constructed main gas extraction wells, so as to reduce the distances between the individual wells and to increase the capture rate of landfill gas. Where required, "pin" wells will also be installed. Pin wells are used as a temporary gas collection measure, close to the working face. Vertical gas wells are also sealed at the surface with bentonite to minimise the ingress of oxygen and reduce the potential for diffuse landfill gas emissions and migration.

Monitoring for landfill fill gas migration will continue to be carried out outside the perimeter of the waste body at 50m intervals on a monthly basis as per *Schedule C.1.3 Monitoring of Landfill Gas Emissions* of the RD. The EIAR states that landfill gas perimeter monitoring wells will be installed 12 months prior to waste acceptance. Monitoring of perimeter wells in November 2004, prior to waste deposition, confirmed elevated naturally occurring concentrations of carbon dioxide in the subsoils and this has continued with carbon dioxide generally detected at some level in all perimeter monitoring wells during monthly monitoring. Methane was detected above the ELV in one perimeter well (LG-03), located near the gas compound, in February 2017 but no further exceedances have occurred to-date. Continuous gas monitors, with associated alarms, are also required within the site office and any building or enclosed structure at the installation. These requirements are provided for in *Schedule C.1.3 Monitoring of Landfill Gas Emissions* of the RD, with associated landfill gas concentration limits provided in *Schedule B.1.3 Landfill Gas Concentration Limits*.

In addition to the limits and monitoring requirements specified above, Condition 6 of the RD requires the licensee to prepare and maintain a programme for the identification and reduction of any diffuse emissions using an appropriate combination of best available techniques.

The current licence also states that the licensee "shall install a continuous VOC monitor with directional information at the school (if agreed) otherwise at a location on a site agreed by the Agency. This requirement will be reviewed by the Agency on an annual basis." This Condition was included in the original licence W0146-01 but during the site visit, the licensee confirmed that continuous monitoring was not being carried out in accordance with this Condition. It is considered that this Condition is retained for use if required by the Agency and amended to any location rather than specifically the school.

### 6.1.3 Dust

Dust generation resulting from the proposed development was assessed from a construction and operational perspective as follows:

**Construction dust**, which may arise from construction activities in the development of the new cells, associated infrastructure and berm development will primarily comprise of larger dust particles (i.e. >30 µm) and has the potential to deposit over shorter distances on buildings and vegetation surrounding the site of the construction activities. In the absence of specific Irish guidance, the licensee assessed the potential effects on both residential and ecological receptors from dust and PM<sub>10</sub>, for specific construction activities in accordance with guidance produced by the UK Institute of Air Quality Management (IAQM). Potential traffic emissions (PM<sub>10</sub>), nitrous oxides (NO<sub>x</sub>) and carbon dioxide (CO<sub>2</sub>) from construction vehicles on the local road network were also assessed in accordance with guidance produced by the National Road Authority

(NRA), now called Transport Infrastructure Ireland, which again considers potential effects on both residential and ecological receptors.

The assessment determined a low risk from construction phase activities with regard to dust (dust soiling) and PM<sub>10</sub>. Commercial forestry is also located within the site and this includes the areas of the northern and eastern boundaries of the site, which will help to buffer dust and PM<sub>10</sub>, contributing to further mitigation of the Low Risk impact to sensitive receptors located within 100 m north and east from the redline boundary. The risk from construction phase activities on ecology were also deemed negligible as sensitive receptors are located outside the zone of potential impact. Similarly, traffic emissions from increased traffic flows during the construction phase was determined as being imperceptible.

Notwithstanding the above low risk determinations, the assessment identified a number of mitigation measures to reduce the impact from dust or PM<sub>10</sub> from construction activities to imperceptible. These measures, as set out in Section 7.5.1.1 of the Main EIAR, are to be included in a dust control plan. The control measures, some of which are also applicable to operation phases, relate to speed limits on haul roads, spraying of soil stock piles during dry weather, availability of a water bowser to spray work areas and haul roads, daily inspection of haul roads, sweeping of hard surface roads, restriction of site traffic on un-surfaced roads, use of on site wheel wash and covering of truck loads with a dust nuisance potential. The requirement for the dust control plan and other controls are provided for in Condition 6 of the RD. During the construction phases, the site monitoring programme for dust will also continue as set out below in relation to dust from operations.

**Dust from operations** may be generated from the movement of vehicles around the site and from the proposed landfilling of non-hazardous stabilised and inert waste at the northern face of the landfill and placement/removal of IBA. The assessment of the impact of vehicle emissions on the local road network during the operational phase was carried out, using the same methodology as for the assessment of vehicle emissions for the construction phase, and deemed negligible. However, additional mitigation measures were identified as part of the assessment (Section 7.5.2.1 of the Main EIAR) and are incorporated into the RD in Condition 6. The measures relate to IBA haul roads which will be surface sealed to mitigate dust. IBA stockpiles are to be weathered under cover in the IBA facility building and only transported in covered trucks to prevent windblown dust. Operational controls such as maintaining high moisture content of IBA will also be undertaken to ensure a high degree of compaction within the landfill to prevent dust emissions.

Monitoring for ambient dust and PM<sub>10</sub> will also continue. Currently eight locations (D1-D8) are monitored on a quarterly basis for ambient dust, as per Appendix 5. All locations have been in compliance with the licence limit of 350 mg/m<sup>2</sup>/day since 2016 and no complaints for dust have been reported during that time. For the proposed development however, it is considered that this monitoring should be extended to monthly taking account of the nature of IBA waste and the potential for dust emissions. The RD is revised to reflect monthly monitoring in *Schedule C.4 Ambient Air Monitoring*. It is also considered that the location of ambient dust monitoring points D1 and D2 may have to be moved due to the location of the proposed development. Accordingly, Condition 6 of the RD requires the review of dust (and PM<sub>10</sub>) monitoring locations during and on-completion of the development to ensure they are located appropriately. The RD also provides for additional monitoring locations to be installed,

maintained and monitored if required by the Agency in the event it is determined more monitoring points are required once the development is completed.

PM<sub>10</sub> monitoring is undertaken annually at six monitoring locations (PM1 - PM6) at the installation, as per Appendix 5. Monitored results are compared to the limit value for the protection of human health in the Air Quality Standards Regulations (S.I. No. 180 of 2011) which sets a PM<sub>10</sub> 24-hour limit value of 50 µg/m<sup>3</sup>. There were no exceedances of the limit value since 2014. The RD recommends that PM<sub>10</sub> monitoring continues annually and is provided for in Schedule *C.4 Ambient Air Monitoring*.

#### 6.1.4 Odour

The landfilling of malodourous waste materials, particularly from non-stabilised waste has the potential to cause odour and result in odour nuisance off-site. On-site odours may also be generated from the leachate storage ponds, landfill gas utilisation engines and from gas leakage through capping and gas infrastructure. The licensee carried out an odour impact assessment of these sources of odour utilising an AERMOD dispersion model in accordance with EPA Air Dispersion Modelling from Industrial Installations Guidance Note (AG4), utilising the following scenarios:

- Scenario 0: Baseline Conditions in 2018
- Scenario 1: Year 4 without the development. The situation which is likely to occur in the final active deposition stages of the landfill if it continues to operate in line with current planning and licence Conditions.
- Scenario 2: Year 4 of the proposed development.
- Scenario 3: Year 6 of the proposed development. The situation which will occur in the final stages of the landfill if the development proceeds.

The worst-case scenario from an odour impact perspective if the development goes ahead is Scenario 3, where gas generation is predicted to be at its highest and the active cell will be located to the north of the site. At the request of the Agency, the model was run utilising meteorological data from the inland monitoring station at Dunsany as opposed to data from Dublin Airport monitoring station. The licensee considers that this results in an overprediction in impact risk and should be considered when interpreting results.

The model predicted odour emissions in terms of odour units (OU or OU<sub>E</sub>/m<sup>3</sup>) at 54 discrete receptors, for each modelled scenario, and compared the results to an ambient odour standard of 1.5 OU<sub>E</sub>/m<sup>3</sup>, as recommended in AG4. The results at each of the receptors, for each scenario modelled, are tabulated in Appendix 6, along with the associated scenario isopleths which define the area where the predicted odour emission level is 1.5 OU<sub>E</sub>/m<sup>3</sup> in Appendix 7.

In relation to the different scenarios, the model results estimate odour emission rates for each scenario as per Table 5 as follows:

**Table 5:** Total Odour Emission Rates for Modelled Scenarios

Area of site	Source	Time weighted emission [ $\times 10^3$ ou <sub>E</sub> /s]			
		Scenario 0	Scenario 1	Scenario 2	Scenario 3
Landfilling	Active cell operations	20.7	7.6	8.7	8.7
	Gas flux/leakage from capping	31.7	27.3	24.0	25.3
Gas compound	CHP engines and flares	9.4	9.4	8.2	8.2
Lagoons	Lagoons and tankers	<0.1	<0.1	<0.1	<0.1
	<b>Total</b>	<b>61.8</b>	<b>44.3</b>	<b>40.9</b>	<b>42.2</b>

Table Reference: Section 5.1 of Updated Odour Impact Assessment, dated October 21, 2022.

The results indicate the following:

- The highest odour emissions occur in the baseline year (scenario 0), which is due to a combination of the higher odour potential of the waste received by the site and the fact that four cells had intermediate capping.
- Emissions decrease in scenario 1 (yr 4 without development) which is a result of the reduction of the number of cells with intermediate capping to two and the reduction in odour potential of waste.
- A further reduction is evident in scenario 3 (yr 4 with development) which is primarily due to the application of hermetically sealed geo-mulitcovers as intermediated capping which will be introduced as part of the development. The emissions are then predicted to increase slightly in the worst case development scenario (scenario 3) as the gas generation from the site reaches a peak.

In overall terms, the licensee concludes that the model indicates that the odour emissions from the site are predicted to decrease if the development goes ahead. This is despite the increase in waste input and is due to the enhancement in the intermediate capping proposed as part of the development and the fact that the majority of additional waste which will be accepted will be stabilised, inert or non-biodegradable and hence has a low gas and odour generation potential. This is reflected in the tabulated results of predicted odour emissions at the individual receptors (all exceedances of the 1.5 OU<sub>E</sub>/m<sup>3</sup> ambient odour standard are highlighted red) in Appendix 6. The total no. of receptors exposed to odour levels that exceed the 1.5 OU<sub>E</sub>/m<sup>3</sup> ambient odour standard are predicted to be as follows:

**Table 6:** Receptors Exposed to Odour Levels above the Odour Standard

Without Development		With Development	
Scenario 0	Scenario 1	Scenario 2	Scenario 3
<b>15</b>	<b>7</b>	<b>1</b>	<b>3</b>

The above results show that odour levels at receptors are predicted to decrease with the development, with levels marginally exceeding the odour standard at 1 receptor (No. 42) in scenario 2 (Year 4 of the proposed development) and 3 receptors (No. 19, 20 & 42) in scenario 3 (Year 6 of the proposed development). Accordingly, Conditions requiring odour control measures are included in the RD as outlined below.

Odour complaints related to the installation since 2015 are provided in Table 7 as follows:

**Table 7:** Odour Complaints reported in Annual Environmental Reports

2015	2016	2017	2018	2019	2020	2021	2022*
13	172	21	14	7	3	5	5

\* **Note:** 2022 AER not yet received, data from reported complaints to OEE.

A significant number of odour complaints occurred in 2016, following which a range of actions were taken to address odour sources related to waste intake and placement, landfill gas collection infrastructure and landfill area, gas utilisation infrastructure and leachate collection and management infrastructure. Since then, odour complaints have significantly decreased over time.

The licensee notes that generally complaints have been reported from the nearest receptors to the north and east of the site and typically relate to landfill gas type odours. The licensee also states that site investigations indicate that such odours are most likely to be generated from incidental activities such as equipment breakdown or pipe laying. Any malfunction or breakdown of key environmental abatement, control or monitoring equipment is regarded as an incident and must be dealt with in accordance with Condition 9 of the RD. Breakdown of equipment in emergencies resulting in the closure of the installation is also addressed in Condition 9. A maintenance programme of all plant and equipment is also required under Condition 2.

Additionally, as noted from Table 5 above, the largest contribution to the total odour emission rates for the modelled scenarios is from gas flux/leakage from capping. Accordingly, and as attributed to the reduction of odours in the modelled scenario 3, Condition 6 of the RD requires that hermetically sealed geo-multicovers are used for intermediated capping.

The licensee currently carries out odour inspections on a daily basis and also in response to any odour complaints. Ambient odour monitoring is stated in the current licence as a monthly frequency, and this is revised in the RD to a daily requirement to reflect current practices, in line with EPA Air Guidance Note 5 (AG5) Odour Impact Assessment Guidance for EPA Licensed Sites. The RD also includes a Condition to review the technology related to electronic odour monitoring and trial or implement a suitable device as part of odour management controls, to address a recommendation in the planning authority's Inspector's Report which stated that 'E-Nose' technology or equivalent odour monitoring technology should be installed at locations around and external to the site. It is considered that the implementation of available technology for odour detection would be more than beneficial to a landfill site in the early detection and correction/prevention of odours.

The RD also specifies the following odour control Conditions:

- Condition 6 requires a revised odour management plan to be submitted to the Agency within three months of the date of grant of this licence.
- Condition 5 prohibits the licensee from allowing a nuisance to be caused by odour emissions from the installation.
- Condition 2 requires a public awareness and communications programme to ensure that members of the public can obtain information at the installation, at all reasonable times, concerning the environmental performance of the installation.
- Condition 8 requires the waste and materials storage plan to incorporate limitations on waste storage arrangements to prevent odours arising.

Taking account of the conservatism of the odour prediction model, and the implementation of the odour control measures outlined above, it is considered that the installation will be able to achieve the ambient odour standard of 1.5 OU<sub>E</sub>/m<sup>3</sup>.

## 6.2 Emissions to Water/Ground/Sewer

### 6.2.1 Emissions to Surface Waters

**Existing surface water:** runoff from roads and hard standing areas discharge to a surface water trunk main collection pipe. The collection pipe discharges to the existing southern surface water attenuation pond and wetland, via a Class 1 bypass oil interceptor.

Surface water from the landfill footprint is drained via the main landfill perimeter swale to the southern attenuation pond and wetland also. Swales are vegetated channels which convey flows at low non-erosive velocities. Swales drain surface water from the landfill footprint and embankments surrounding the landfill cells and will continue to be constructed as the landfill cells develop further. Rainwater, gathering in cells prior to waste filling, is also directed for discharge via the swales. Groundwater additionally, as required is pumped to maintain levels below the landfill base and this water is also discharged via the southern surface water attenuation pond and wetland.

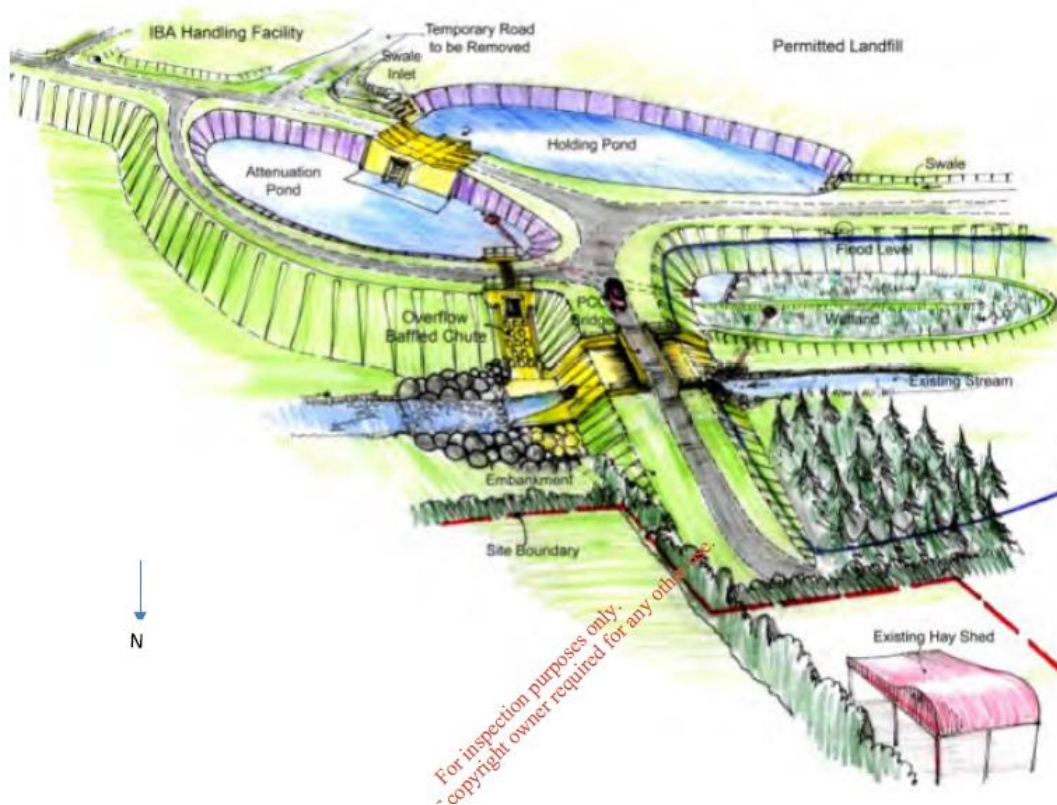
The southern surface water attenuation pond (4,253 m<sup>3</sup>) and wetland were designed to manage the runoff from the development for up to a 1 in 100-year design storm event. The outflow from the constructed wetland discharges into the Flemingstown River (also known as the Knockharley stream) at the south-eastern corner of the site via emission point SW9.

Trigger levels are established for pH, electrical conductivity and TOC which are continuously monitored, and the discharge is controlled by a slam shut valve that prevents surface water discharging to the wetland if TOC indicates potential contamination. The discharge is analysed for a suite of parameters on a quarterly and annual basis and an ELV is in place for suspended solids (35 mg/l).

**Proposed surface water management:** the site has a watershed running approximately east to west through the Phase 4 cell development area of the landfill. Surface runoff from the landfill and adjacent lands south of the watershed has to-date discharged through the existing surface water attenuation pond and wetland via SW9. It is proposed to direct additional surface water runoff from the proposed leachate treatment plant, and former biological plant area (the building of which will still be used to store baled recyclables and baled MSW), into the southern surface water management system via the interceptor. The existing outfall structure between the southern attenuation pond and wetland will require the pipe outfall diameter to be increased to throttle flows to the greenfield discharge flow rates of 0.284 m<sup>3</sup>/s.

It is also proposed to develop a northern surface water holding pond, attenuation pond and wetland to facilitate surface water generated in the northern catchment area of the site, which will discharge through the proposed emission point SW10, as per Figure 2 below.

To provide access to the northern part of the site, it will be necessary to replace an existing culvert across the existing Flemingstown River which traverses the site, subject to permission from the OPW. The new culvert will also facilitate flooding - the proposed foot print impinges on a naturally occurring flood plain which comes into effect following a 1:1000 rainfall event. The low-lying area lies within the footprint of the permitted development and in the natural low point where it is proposed to install the attenuation pond. The culvert will restrict upstream extreme runoff flows and cause water levels upstream of the culvert to backup, resulting in flooding of lands immediately upstream of the culvert outside the landfill footprint and contained within the confines of the waste licence (and planning) boundaries of the proposed development, as per the blue water line on Figure 2 as follows. A 1:30 year storm event will pass through the culvert with no impacts on upstream levels. Subject to OPW consent, a realignment of the river is also required in the north-eastern corner of the proposed development. As per National BAT Guidance, the RD requires that Inland Fisheries Ireland are consulted in relation to the realignment (Condition 3). Additionally, as per planning permission Condition 11 "no instream works shall be carried out between the 1<sup>st</sup> day of October and the 30<sup>th</sup> day of June in any given year" and this has also been included in Condition 3 of the RD.



**Figure 2. Aerial overview of the proposed northern surface water management infrastructure (Reference Section 12.5.1 of Main EIAR)**

The proposed surface water management infrastructure to be located in the northern area of the site, as per Figure 2 above consists of:

- A surface water holding pond (>2,000 m<sup>3</sup>) to facilitate containment, if required, of contaminated surface water. An automated slam shut control valve will be installed to facilitate isolation, if required of incoming (contaminated) surface water flows. Flows will discharge to the surface water attenuation pond.



- A surface water attenuation pond (> 4,698 m<sup>3</sup>) to attenuate surface water runoff from the permitted and proposed developments and facilitate settlement of suspended solids. The pond will have a constant discharge outflow to a wetland.
- A wetland (250m<sup>2</sup> footprint) at the outlet of the surface water attenuation pond designed to polish surface water flows and reduce suspended solids further to <25mg/L. The wetland will discharge via a piped outflow to the Flemingstown River (Knockharley Stream). An overflow weir will also be in place to accommodate failure of the outflow structure. The wetland will be a free water surface wetland (surface water flows are above ground and exposed to the atmosphere) - effective at removing suspended solids, and BOD. Removal of nitrogen pathogens and other pollutants, e.g. heavy metals is high. Phosphorous removal will be low.
- IBA french drain perimeter pipework taking surface runoff from the IBA perimeter road and discharging runoff into IBA cells/leachate collection system during operations and the holding pond via the interceptor post operations.
- Ancillary infrastructure includes an emergency spill to the river from the holding pond and from the attenuation pond. Also, water quality monitoring stations at the interface between the holding pond and the attenuation pond and at the outfall from the wetland into the river.

SW9, and the proposed SW10, will both discharge into the Flemingstown River (IE\_EA\_08F050930, segment 08\_226). The river is low flowing and was observed to have no flow when visited on 02 Sept 2022 by an EPA Water Management Programme Scientific Officer. The Water Framework Directive (WFD) status of this river segment is poor (2016-2021 status), as is the further downstream segment (08\_352) into which the Kentstown stream and the Veldonstown stream also flow. The Flemingstown River enters the Nanny River (IE\_EA\_08N010280, segment 08\_738) approximately 2.5km downstream of the site boundary. In the most recent monitoring results, the status of the Nanny River was also determined 'poor' at the downstream monitoring station (RS08N010280) and is classified as at risk of failing to meet WFD objective of 'good' surface water status by 2027. The site is also located within a groundwater drinking water protected area (Realtage, IEPA1\_EA\_G\_020) with the above rivers identified as potential waterbody dependency. See Appendix 8 for details of river flows around the site, SW9 and proposed SW10 discharge points, and licence river monitoring points as outlined under monitoring section below.

**Flemingstown River:** Initial WFD related assessments identify agriculture and the Knockharley Landfill as two pressure sources to the Flemingstown River with nutrient pollution identified as the impact. The assessments noted that agriculture is the likely pressure source but this is currently unconfirmed in WFD assessments. River water monitoring is carried out by the licensee upstream and downstream of the installation and as per Table 12-8 of the EIAR, averaged monitoring results show no current impact to phosphorous or nitrogen monitored parameters from the installation. Biochemical Oxygen Demand (BOD), lead, magnesium and sulphates show increases in the downstream monitoring point SW6 when compared to the upstream point SW2 (BOD upstream 2.09mg/l v's downstream 4.59mg/l, lead 1.82µg/l v's 2.15µg/l, magnesium 8.90mg/l v's 16.95mg/l and sulphate 21.65mg/l v's 246.30mg/l), showing that the landfill discharge is likely impacting on the river. Furthermore, monitoring results from the discharge point SW9, also show higher concentrations of magnesium and sulphates when compared to the upstream monitoring point SW2. Accordingly, additional ELVs for BOD, lead and sulphate are to be applied in the RD to the current and proposed emission points SW9 and SW10. The RD sets environmental quality standards (EQS) as emission limits for BOD and lead from the European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended, (S.I. 272 of 2009).

Sulphate is set utilising the BAT AEL of 400-1000 mg/L from the Waste Incineration CID as a benchmark, in the absence of an EQS or limit in the National BAT Guidance. There is no numerical environmental quality standard for magnesium.

Owing to the potential for contamination to site surface water discharges from the proposed IBA and leachate treatment facilities and the poor WFD status of the Flemingstown and Nanny Rivers, ELVs for additional parameters are also considered necessary to ensure that the achievement of the WFD objective of 'good' surface water status by 2027 is not compromised by the activities of the site. Parameters include additional metals, which may be present in IBA waste and leachate, and total ammonia and orthophosphate to ensure that the installation does not impact the achievement of EQSs in the receiving water. Environmental quality standards are utilised as emission limits for these parameters in the RD also.

Mass balance calculations, were used to determine the impact of the emissions on the Flemingstown River. The key parameters for the receiving waters, as determined by this assessment are BOD, total ammonia, orthophosphate and suspended solids. The mass balance calculations are based on the 95%ile flow (0.001m<sup>3</sup>/s) in the receiving water, an adjusted background concentration of each parameter in the receiving water to account for the poor WFD status, the maximum combined discharge rates as per the EIAR (greenfield flow rates of 284.5l/s on SW9 & 255l/s on SW10), and the relevant EQS as the maximum concentration of each parameter in the discharge, with the exception of suspended solids for which there is no EQS. Suspended solids are instead assessed at an ELV of 35mg/l, which is in-line with the National BAT Guidance.

**Table 8: Assessment of Surface Water Discharge to Receiving Waterbody**

Parameter	Background Concentration (mg/l)	ELVs in RD (mg/l)	Contribution from the emission (mg/l)	Predicted total concentration in receiving water (mg/l)	EQS <sup>Note1</sup> good status (mg/l)
BOD	1.40	2.6	2.5982	2.5978	2.6
Total Ammonia	0.0530	0.14	0.1397	0.1398	0.14
Orthophosphate (MRP)	0.0300	0.075	0.07486	0.07492	0.075
Suspended solids	10.0	35 <sup>Note2</sup>	34.9352	34.9537	N/A

**Note 1:** European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended.

**Note 2:** A maximum limit of 35mg/l is permitted for the proposed new discharge point SW10 for one year after first discharge, thereafter, reverting to 25mg/l.

The *European Communities Environmental Objectives (Surface Waters) Regulations* (S.I. 272/2009) as amended, set environmental quality objectives for the receiving water for a number of parameters, as per the table above. Using mass balance calculations, proposed limits were assessed for BOD, ammonia, orthophosphate and suspended solids. As can be seen from the table, these emission limit values aim to achieve compliance with the relevant environmental quality standards. The RD sets environmental quality standards as emission limits also for metals and the maximum allowable concentration (MAC) has been applied where applicable (cadmium, Chromium III, lead, nickel and mercury), with the annual average EQS applied to metals with no MAC-EQS (arsenic, Chromium VI, copper and zinc). In relation to suspended solids, section 12.4.3 of the EIAR outlines that the northern surface water management system will deliver an outflow of less than 25mg/l for suspended solids. Accordingly, this limit has been included for the associated emission point SW10. A higher limit of 35mg/l is permitted for one year following the initial discharge from SW10 to allow for the establishment of the constructed wetland. Quarterly monitoring

results from the existing emission point SW9 have been consistently <10mg/l for suspended solids. It is therefore considered appropriate to reduce the existing suspended solids ELV of 35mg/l to 15mg/l for SW9.

A limit of 400mg/l is applied to sulphate, taking account of the BAT AEL of 400-1000mg/L from the Waste Incineration CID. The lower limit is considered appropriate given the increased sulphate levels shown in monitoring results downstream of the installation. Annual sulphate monitoring results for the existing surface water discharge point SW9 for 2017 to 2022 (excluding 2020 as not available) were; 363mg/l, 393mg/l, 191mg/l, 446mg/l and 325mg/l. All limits specified for the proposed emission are considered compliant with the requirements of the EO Surface Waters Regulations, including the WFD's requirements for Protected Areas (as well as the requirements of the Industrial Emissions Directive and BAT for the sector). As per the current licence requirement on the current discharge from SW9, a full retention Class I oil separator is also required for discharge point SW10.

It is also considered that the general requirements of Annex I of the Landfill Directive (1999/31/EC), as amended, are satisfied in relation to the risk of flooding, water control and leachate management, given the infrastructure and the control and monitoring measures to be put in place as required by the RD.

Additionally in relation to sulphate, a 2010 EPA commissioned report<sup>6</sup> noted that "Gypsum wastes and other wastes with a high sulphate content are neither inert nor stable and nonreactive, because they biodegrade. Therefore, they must be separated from biodegradable wastes if disposed at a non-hazardous landfill". This still reflects the requirements for landfilling by (SEPA) and the Environment Agency for England and Wales<sup>7</sup>. The current licence has this requirement for gypsum wastes but not high sulphate containing wastes. Accordingly, the RD includes high sulphate containing wastes along with gypsum in the revised Condition 3.

## **Monitoring**

Monitoring of the surface water emissions from SW9 and SW10 will be carried out in accordance with the revised *Schedule C.2.2 Monitoring of Emissions to Water* proposed in the RD. Surface water monitoring is also carried out by the licensee at three locations upstream (SW1, SW2, SW3) and three locations downstream (SW6, SW7 & SW8) of the site on the Flemingstown River, the Kentstown Stream and the Veldonstown Stream for a number of parameters on an annual and quarterly basis. An additional monitoring point SW5, which is side-on to the facility is also monitored. Monitoring results for SW1-SW8 are compared to baseline results taken prior to waste acceptance at the site. The *Schedule C.2.3 Receiving Water Monitoring* for these monitoring points is also updated in the RD for additional parameters including additional metals, organic compounds and priority substances to take account of the new waste streams.

Due to the additional emission point and monitoring parameters, the RD requires a test programme for the new wetland and for existing trigger values for surface water emissions to be reviewed and approved by the Agency.

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<sup>6</sup> Technical and Economic Aspects of developing a National Difficult Waste Facility (NaDWaF) available at: [Microsoft Word - EPA NaDWaF report Final 090710.docx](#)

<sup>7</sup> [Landfill operators: environmental permits - Accept the right waste - Guidance - GOV.UK \(www.gov.uk\)](#)

Weekly inspections are required of the on-site surface water drainage system as per the current licence. During the site inspection, additional on-site drains were noted to traverse the site but were not connected to the surface water drainage system. In unsolicited correspondence, received on the 30<sup>th</sup> August 2022, the licensee noted these particular drains were agricultural drains which pre-date the development, and form part of the local agricultural land drainage network constructed by surrounding landowners and allow drainage of fields to nearby streams. The licensee further noted that there is no hydrological link between the landfill, landfill surface water drains and these agricultural drains. That being the case, it is considered that these drains do not need to be connected to the site surface water drainage system, but are required to be inspected as part of the weekly inspections to ensure there is no impact to them from the installation.

The RD contains standard Conditions in relation to the storage and management of materials and wastes. The RD also requires that accident and emergency response procedures are put in place. The controls pertaining to accidents and emergencies are addressed in Prevention of Accidents section later in this report. Condition 2 of the RD also requires the licensee to implement a Construction and Environmental Management Plan. The plan is required to cover all aspects of construction and incorporate measures to mitigate the potential effects on the environment during construction phases. The plan shall include controls related to surface water management, as set out in the EIAR, which has the potential to be impacted by silt and sedimentation run-off.

#### **6.2.2 Emissions to ground/groundwater**

There are no direct discharges to ground or groundwater from the installation.

#### **6.2.3 Other emissions to ground/groundwater**

The existing sanitary facilities are located within the administration building and are discharged untreated to the leachate lagoon for collection and disposal off site. In the event that the leachate lagoon is not suitable or available in the future, the RD includes a standard Condition which requires the licensee to provide and maintain a wastewater treatment plant for the treatment of sanitary effluent, if required by the Agency. The Condition also requires the waste water treatment system and percolation area to satisfy the criteria set out in the EPA Code of Practice for Domestic Waste Water Treatment Systems (Population Equivalent  $\leq 10$ ) 2021 or the EPA Wastewater Treatment Manuals - Treatment Systems for Small Communities, Business, Leisure Centres and Hotels 1999, as may be appropriate at the site in the future.

### **6.3 Storm water discharges**

Surface water generated on-site, which includes runoff from roads and hard standing areas, is addressed in section 6.2.1 above.

### **6.4 Noise**

The main sources of noise at the installation will be associated with the construction phase and the operational phase, which will occur simultaneously and include delivery of waste and materials to site, site clearance and construction preparation works,

construction of the northern surface water attenuation pond, holding pond and wetland, construction of incinerator bottom ash (IBA) cells, construction of buildings, installation of plant, construction of haul roads and service works, construction of the landfill cells and placing of waste in the landfill cells. In addition, noise may be generated from the IBA weathering area biological treatment facility, the landfill gas utilisation plant and site traffic. The site is located immediately adjacent to a number of residential dwellings. Accordingly, there is potential for noise nuisance arising the site activities to be observed at the noise sensitive locations. Additionally, noise from N2 road, which runs 100m east of the eastern site boundary, can also contribute to noise nuisance at the NSLs.

As part of the existing licence, noise monitoring is carried out quarterly at four on-site locations (N1 to N4) along the site boundary, as shown in Appendix 9 and the Table below. As part of the licence review application (W0146-04) the licensee proposes two additional noise monitoring locations N5 and N6 at the noise sensitive locations (residential dwellings) outside the site boundary, as also shown in Appendix 9 and the Table below.

**Table 9: Noise monitoring locations**

<b>Monitoring Id</b>	<b>Location</b>	<b>Distance to the nearest noise sensitive location</b>
N1	Within the site; 30m from the northern boundary	78m
N2	Within the site; 5m from the eastern site boundary	56m
N3	Within the site; 50m from the southern boundary	100m
N4	Within the site; 40m from the northern boundary	83m
N5	Outside the site; 120m from the northern site boundary	28m
N6	Outside the site; 265m from the eastern site boundary	60m

The monitoring results from the recent years indicate that the installation is compliant with the licence limits. Annual Environmental Reports (AER) 2019, 2020 and 2021 state that the locations (N1 to N4) were within the existing noise daytime limit of 55 dB(A)LAeq (30 minutes) and the night-time limit of 45 dB(A)LAeq (30 minutes). OEE records show however that there have been noise complaints received in recent years in relation to the installation. OEE records show that 10 complaints related to noise since 2016. Each of these complaints has been closed.

Noise modelling has been used by the licensee to predict worst-case impacts of noise sources from the installation at seventy two nearby dwellings. Noise levels were predicted for activities associated with the proposed development, which will include the existing on-site activities. The proposed development will result in increased noise levels at nearby noise sensitive locations during daytime periods. There will also be increased traffic on the N2 with an expected increase of 30 HGV trips per day. For most of the scenarios modelled and the majority of receptors, the predicted noise levels are below the daytime noise limit. However, there are 3 no. scenarios (2b, 3a and 3b) where the predicted noise levels are above the daytime noise limit at a total

of four receptors, one of which is a within the landownership boundary. These exceedances are predominantly attributed to felling of trees (1 week duration) and construction of earth berms A and B (2 to 3 weeks duration for the construction of each berm). The EIAR states that these works will ultimately serve to protect the noise sensitive locations in the long term but given the proximity of these activities to some of the noise sensitive locations there is potential for short term elevated noise levels. The EIAR further states that it is expected that with the implementation of the noise mitigation measures, the predicted noise impact will be below the daytime noise limit and there will be no residual impact and that the predicted noise levels are expected to be compliant with the evening and night-time noise limit criteria for all noise sensitive locations during the operational phase.

Noise Conditions and emission limit values, which apply at the installation boundary (N1 to N4) and the noise sensitive locations (N5 & N6), have been included in the RD. *Schedule C.3 Noise Monitoring* requires continuation of noise monitoring on a quarterly basis, however if required, Condition 6 allows for a change of the monitoring scope, including the monitoring frequency, following evaluation of test results. In accordance with the EPA document *Guidance Note for Noise: Licence Applications, Surveys and Assessments in relation to Scheduled Activities (NG4) (2016)*, the day time emission limit value (ELV) has been changed from 55dB LAeq to 55dB LAr, to allow for corrections for tonal noise, and an evening time ELV has been introduced.

The licensee is required to prepare, maintain and implement a Noise Management Plan under Condition 6 of the RD, which is required to incorporate mitigation measures recommended in the EIAR.

In addition, the site will operate only within the daytime Hours of Operations in accordance with Condition 1. Working hours during the construction phase of the proposed development are also restricted to between 08:00 and 18:30 Monday to Friday and between 08:00 and 14:00 on Saturdays. No construction work is permitted on Sundays and public holidays.

## **7. Waste generation**

Waste generated on site comprises of office and canteen waste, vehicle servicing waste and landfill leachate.

Leachate is classified by the licensee as non-hazardous (List of Waste (LoW) code 19 07 03) and is currently pumped from the landfill cells via side riser sumps to a perimeter leachate collection rising main, which will ultimately be laid around the entire perimeter of the landfill. Leachate is then discharged from the rising main to the existing lined leachate lagoon (L1). Leachate is tankered off-site for treatment at a wastewater treatment plant. Drainage from the existing waste inspection and quarantine bays and all foul effluent, generated from on-site welfare facilities, is also discharged untreated to the existing leachate lagoon.

Currently leachate levels are monitored daily from landfill cells, and on a quarterly and annual basis leachate is analysed for a suite of parameters from samples taken from active landfill cells and the leachate lagoon. There are no compliance criteria (ELVs or Trigger Levels) for leachate, but monitoring results are compared to composition ranges for leachates in the EPA Landfill Manuals – Landfill Site Design.

The proposed development will result in a leachate peak to approximately 28,031 m<sup>3</sup> at its highest year before reducing to approximately 42 m<sup>3</sup> at its lowest. As part of the development, it is proposed to install a leachate management system for continued operation post filling of the landfill cells, consisting of:

- 3 additional floating cover leachate storage ponds (L2, L3 and L4) to be installed adjacent to the existing pond, to store raw leachates.
- 2 bunded above ground tanks for raw leachate from IBA cells (S1 and S2).
- 3 bunded above ground leachate tanks; 1 for treated landfill leachate (S3), 1 for treated leachate from IBA (S4) and 1 for leachate concentrate (S5).
- 6 modular containerised leachate treatment units (C1-C6), on a concrete slab of c. 1000m<sup>2</sup> and 1 elevated tank (T1) with provision for 2 additional low level bunded storage tanks for dosing and other compounds (T2 and T3).
- Extension of existing loading area to accommodate 2 x 25 tonne articulated tankers and one new loading area for 2 x 25 tonne articulated tankers.

The EIAR states that the leachate plant will be designed to facilitate pre-treatment of respective leachate streams as may be required prior to transfer to off-site wastewater treatment plants. The need or otherwise for on-site pre-treatment will be subject to factors such as local waste water treatment facilities, IE licence Conditions, commercial considerations or other which may change over the lifetime of the installation. If leachate is pre-treated on-site, treated effluent will be stored in adjacent bunded above ground tanks. On-site capacity for treated effluents will accommodate no less than seven days treatment throughput.

On-site raw leachate capacity will accommodate one month's storage and pumping to the storage ponds will be automated and controlled by SCADA control systems or similar. The different leachate streams will be generated from residual non-stabilised waste, stabilised and inert waste and IBA waste. Leachate from respective sources will be stored separately to facilitate site specific pre-treatment as required.

Leachates with differing pH (pH 8 – 12) and concentration (contaminants and metals) will be produced within the IBA cell footprint depending on source location and extent of weathering. A higher pH is expected from the weathering Area 1, with reducing pH expected in weathering Area 2, 3 and 4. In accordance with the Landfill Directive and current licence Conditions, no waste which in the Conditions of the landfill are corrosive, shall be accepted at the landfill. Accordingly, an independent risk assessment is required to ensure that adequate controls are in place in relation to the generation of corrosive leachate and waste residues, resulting from the storage and treatment of IBA within the landfill (Condition 3).

All leachate from the IBA weathering Area 1 will be collected from the basal stone drainage and from surface runoff in perimeter edge drains which will direct leachate to a temporary settlement pond located on the northern boundary of Cell 32. Solid materials within runoff from Area 1 will settle by gravity within the pond and will be retained behind a weir. Leachate will pass over the weir into an adjacent side riser pump sump and from there to the storage tanks via a pumped rising main. The settlement pond will be de-sludged as required during operations. De-sludged material will be placed within the Area 2, 3 or 4. Leachate generated within areas 2, 3 and 4 will be collected within the cell drainage layer and pumped via a rising main to a small sedimentation tank to remove suspended solids, before being pumped to the covered leachate storage tanks.

Owing to the nature of SNRHW, the RD requires that leachate from SNRHW is also collected and stored separately to other leachate streams in Condition 3 of the RD. As part of the risk assessment required for SNRHW, the risk posed by using the same treatment plant must also be assessed. The RD also requires that leachate from each source stream is appropriately characterised, analysed and assigned a LoW (list of waste) code in accordance with the EPA Waste Classification List of Waste & Determining if Waste is Hazardous or Non-hazardous<sup>8</sup>. Treatment of IBA leachate is subject to the BAT conclusions of the Waste Incineration CID. Accordingly, the applicable emission limit and monitoring for indirect discharges are applied to IBA leachate treated in the treatment plant in *Schedule B.5 Treated Leachate Limits* and *Schedule C.7.2 Monitoring of Treated Leachate* of the RD.

## 8. Energy Efficiency and Resource Use

The operation of the installation involves the consumption of fuel and electricity. The estimated quantities used in 2021 are given below.

Resource	Quantity per annum
Electricity	823 GJ
Heavy fuel oil	1,681 GJ
Light fuel oil	14,860 GJ
Water	1,441 m <sup>3</sup> (public supply)

The licensee employs a variety of technologies to maximise the efficient use of energy within the installation, including regular preventative maintenance on equipment. Landfill gas is utilised on site to generate electricity and in 2021, 18,872 MWHrs of generated electricity was exported to the grid.

In the application of BAT, Condition 7 of the licence provides for the efficient use of resources and energy in all site operations. It requires an energy audit to be carried out and repeated at intervals as required by the Agency and the recommendations of the audit to be incorporated into the Schedule of Environmental Objectives and Targets as outlined in Condition 2 of the licence.

Water utilised on site is from public water supplies only and there are no water abstractions from groundwater or other sources. Water is required for the existing wheel wash facility and for dust suppression. Water is taken from the on-site surface water pond and used for dampening down site roads during periods of dry weather. This amounted to 200 m<sup>3</sup> during 2021. Additional volumes required post development will not be significant and will be taken from the surface water pond where appropriate.

## 9. Prevention of Accidents

A certain amount of accident risk is associated with the licensable activity. The following table specifies the risks and preventative/mitigation measures relevant to the installation:

**Table 10: Prevention of Accidents**

Potential accidents & measures for prevention/limitation of consequences	
Potential for an accident or hazardous/ emergency	<ul style="list-style-type: none"> <li>Fire due to landfilled waste, contingency storage of baled waste and generation and management of landfill gas and hydrogen</li> </ul>

<sup>8</sup> <https://www.epa.ie/publications/monitoring--assessment/waste/2019--FULL-template.pdf>



Potential accidents & measures for prevention/limitation of consequences	
situation to arise from activities at the installation	<p>gas at the installation, resulting in emissions to air, water and/or soil.</p> <ul style="list-style-type: none"> <li>• Flooding on site.</li> <li>• Spillages/leaks of leachate and fuel/oils due to accidents and storage/loading/unloading/transporting activities.</li> <li>• Malfunction of plant/equipment leading to spills or emissions to air/water.</li> </ul>
Preventative/Mitigation measures to reduce the likelihood of accidents and mitigate the effects of the consequences of an accident at the installation	<ul style="list-style-type: none"> <li>• There are limits on the quantity of waste stored at the installation as set out in Schedule A.</li> <li>• Fire risk assessment and Emergency Response Procedure maintained on site (Condition 9).</li> <li>• Management and monitoring of landfill and hydrogen gas required.</li> <li>• Additional surface water attenuation pond and flood compensation culvert to provide equivalent 1:1000-year flood plain storage.</li> <li>• Plant and machinery will be regularly serviced in accordance with manufacturers recommendations.</li> <li>• Contaminated firewater to be directed to leachate storage for off site treatment/disposal.</li> <li>• Fire hydrants located on site.</li> <li>• Oil interceptors prior to surface water discharge.</li> <li>• Provision and maintenance of adequate bunding/storage facilities.</li> </ul>
Additional measures provided for in the RD	<ul style="list-style-type: none"> <li>• Waste and materials storage plan (Condition 8).</li> <li>• Accident prevention and emergency response requirements (Condition 9).</li> <li>• Integrity of tanks to be assessed every 3 years and maintenance carried out as required (Condition 6)</li> <li>• Loading and unloading of materials in designated areas (Condition 8);</li> <li>• Firewater retention assessment (Condition 3).</li> <li>• Emission limit values (Schedule B); and</li> <li>• Surface water discharge points to be monitored (Schedule C).</li> </ul>

Condition 9 of the RD requires procedures to be put in place to prevent accidents with a possible impact on the environment and to respond to emergencies so as to minimise the impact on the environment.

In accordance with Agency Environmental Liabilities guidance<sup>9</sup>, an Environmental Liabilities Risk assessment (ELRA) was submitted with the application and is required to be revised within six months of the date of grant of this licence to take account of the proposed developments. (see Fit and Proper Person Assessment section for further details).

## 10. Cessation of Activity

A certain amount of environmental risk is associated with the cessation of any licensable activity (site closure). For this installation landfill gas and leachate will

<sup>9</sup> Guidance on Assessing and Costing Environmental Liabilities (EPA 2014)

continue to be generated after landfilling of waste ceases. The licensee has provided a list of measures to be taken in the event of site closure/cessation of activity. These measures are listed in attachment titled "Application Form – Site Closure – CRAMP-Knockharley" of the application form. Condition 10 of the RD requires the proper closure of the activity with the aim of protecting the environment.

In accordance with Agency Environmental Liabilities guidance, a costed Closure, Restoration and Aftercare Management Plan (CRAMP) was submitted with the application and is required to be revised within six months of the date of grant of this licence to take account of the proposed developments. (see Fit and Proper Person Assessment section for further details).

Baseline Report Where an activity involves the use, production or release of Relevant Hazardous Substances, and having regard to the possibility of soil and groundwater contamination at the site of the installation, the IED requires operators to prepare a baseline report. A baseline screening assessment was undertaken by the licensee, in accordance with Stages 1 to 3 of European Commission Guidance<sup>10</sup>.

The screening assessment determined that, taking into account the type and quantity of substances used/generated as part of the activity (diesel and lubricating oils for mobile plant and equipment and current landfill leachate which is classed as non-hazardous), the storage and location of these substances on the site, in view of the soil and groundwater characteristics, and the measures to be taken to prevent accidents and incidents, the possibility of soil and groundwater contamination at the site of the installation is considered to be low. The installation is subject to the Landfill Directive, the provisions of which should ensure that no hazardous materials enter into the soil and groundwater, including appropriate lining and capping. Nonetheless, upon cessation of the activity, Condition 10 of the RD requires the licensee to take certain measures to ensure that there is, to the satisfaction of the Agency, no remaining risk of environmental pollution at the site.

*Schedule C.5 Groundwater Monitoring* of the RD requires monitoring of groundwater in boreholes upgradient and downgradient of the landfill and specifies the minimum parameters to be monitored, which include relevant hazardous substances. The existing licence requires monitoring in eight groundwater monitoring wells. As part of the review application the licensee proposes three additional monitoring locations downgradient of the landfill, to bring the total to ten.

Additionally, as new leachate streams have yet to be generated and assessed for hazardous properties, and taking account of potential hazardous chemicals which may be required for the proposed leachate treatment plant, the RD requires monitoring for relevant hazardous substances in soil at the installation (*Schedule C.9 Soil Monitoring*).

## **11. Fit & Proper Person**

### Technical Ability

The licensee has provided details of the qualifications, technical knowledge and experience of key personnel. The licence application also includes information on the

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<sup>10</sup> European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions.

on-site management structure. It is considered that the licensee has demonstrated the technical knowledge required.

### Legal Standing

Neither the licensee nor any relevant person has relevant convictions under the Environmental Protection Agency Act 1992, as amended, or under any other relevant environmental legislation.

### ELRA, CRAMP and Financial Provision

The installation was assessed for the requirements of Environmental Liabilities Risk Assessment (ELRA), Closure, Restoration and Aftercare Management Plan (CRAMP) and Financial Provision (FP), in accordance with Agency guidance. Under this assessment it has been determined that ELRA, CRAMP and FP were required.

From consultations with OEE it was determined that the ELRA and CRAMP are to be revised at the installation and Conditions in the RD are reflected accordingly. FP is currently in place and is considered satisfactory.

### Fit & Proper Conclusion

It is my view, that the licensee can be deemed a Fit & Proper Person for the purpose of this review.

## **12. Submissions**

There was one submission made on this application. While the main points raised in the submission are briefly summarised in the table below, the original submission should be referred to at all times for greater detail and expansion of particular points.

The issues raised in the submission are noted and addressed in this Inspector's Report and the submission was taken into consideration during the preparation of the Recommended Determination (RD).

<b>Submissions</b>			
1.	<p><b>Name &amp; Position</b></p> <p>Mrs Elish O'Reilly</p> <p>Principle Environmental Health Officer</p>	<p><b>Organisation:</b></p> <p>HSE</p>	<p><b>Date received:</b></p> <p>04 December 2019</p>
	<p><b>Issues raised:</b></p> <p>The submission summarises aspects of the EIAR under the headings of human health, noise, surface water, groundwater, air, odour, pest control and closure and decommissioning.</p> <p>In relation to noise, the submission summarises the assessment carried out noting aspects in relation to tonal noise and the pre-existing noise environment and makes a recommendation in relation to the following:</p> <ul style="list-style-type: none"> <li>• The licensee stated that noise complaints received from 2016 to 2018 as a result of site operations were investigated and it was established that the boundary noise levels were within the daytime noise limit set in the IE licence. The HSE recognises that adherence to specified noise limit values may not protect sensitive receptors from noise nuisance. The HSE advise that noise levels should be compared to pre-development baseline results when investigating noise complaints.</li> </ul>		

## Submissions

- There are 3 scenarios where the predicted noise levels are above the daytime noise limit at 4 receptors. These exceedances are predominantly attributed to the felling of trees and the construction of two earth berms. It is expected that the maximum noise levels predicted will be for a short duration, 1 week for tree felling and 2-3 weeks for each berm. Short term elevated noise levels may be expected during construction of the berms but these berms will ultimately protect the noise sensitive locations in the long term.

In relation to odour, the submission notes the following:

- The odour impact assessment states that the facility has permission to accept 88,000 tonnes per annum of waste and baseline Conditions were modelled on these figures. It appears that the calculations used in the odour impact assessment are not consistent with the actual waste disposal rate on site as the EIAR states that 200,000 tonnes of waste is currently accepted at the site.
- Modelling carried out to assess baseline Conditions on site show a total of 12 properties that are currently exposed to odours above the risk threshold applied for landfill. As exposure levels increase above these threshold levels, the probability of a significant impact occurring also increases. The actual level of increase is not shown in the odour impact assessment; it only states that 12 properties are currently above the threshold limit.
- The odour impact assessment concludes the total odour emissions generated from landfilling activities are predicted to decrease as a result of the proposed development; however there will still be 4 to 6 properties that will be exposed to odour levels that exceed the threshold where a potentially significant risk of odour impact could develop.
- There have been several odour complaints lodged over the past 2.5 years, it is clear that odour nuisance does impact on the lives of some residents in the vicinity of the landfill.
- The odour impact assessment states "the characteristics of the odour generated from the landfill process, in terms of intensity and offensiveness, will ultimately depend upon the age, type and quality of waste received." The waste acceptance criteria is of the utmost importance as it can have an impact on odour nuisance. In line with the recommendations of Ireland's Waste Management Policy, A resource Opportunity, 2021, and with the aim of reducing the adverse odour impact for residents, the types and quantities of waste proposed to be accepted at the facility should be reviewed and more onus placed on accepting wastes which have received pre-treatment or stabilisation processes.

### Agency response:

- Pre-development ambient noise levels taken to the north and east of the site were determined at approximately 48dB(A) and 30dB(A), as noted in the IR for planning permission reference PL17.125891. The RD requires no clearly audible tonal component or impulsive component in the noise emissions from the installation at the installation boundary (Condition 5). Additionally, in relation to noise, Condition 6 of the RD requires the licensee to provide prior notification to neighbours of high noise impacting activities.
- In relation to odour, the baseline Conditions in the odour impact assessment are correctly based on 88,000 tonnes per annum which was the quantity of MSW permitted by planning permission since 2010 as outlined in Section 1 of this report. The revised odour model received on 26 Oct 2022 contains the predicted odour exposure in  $OU_E/m^3$  at receptors in Table 12 and highlights in red where exceedances are above the ambient odour standard of  $1.5 OU_E/m^3$ . The revised odour model also shows that the proposed development has the potential to exceed the ambient odour standard at 3 receptors in year 6. However, as noted in Section 6.1.4 of this report, it is considered that the installation will be able to achieve the ambient odour standard of  $1.5 OU_E/m^3$ , taking account of the conservatism of the model and the implementation of the odour control measures outlined. The waste types to be received and their potential for odour nuisance are outlined in Section 6.1.4 of this report. A limit of 188,000 tonnes per annum is also

## Submissions

applied to residual MSW for a period of 3 years which will be reviewed thereafter. Only waste that has been subject to pre-treatment shall be accepted at the installation as per EPA guidance and a further limit of 65,000 tonnes is applied to non-stabilised biodegradable waste received at the installation.

### 13. Consultations

#### 13.1 Cross Office Consultation

I consulted OEE Inspectors, Ciaran Cuddihy, Lisa Maher and John Gibbons in relation to this site, as well as Ann Lyng in relation to enforcement fees, Stuart Huskinson in relation to financial provision, Pat Chang in relation to waste charges and Thomas Sexton in relation BMW limits. In general, the OEE have no significant concerns regarding the proposed changes to the licensable activity. OES Senior Inspector David Matthews and OEE Inspector Victor Olmos were consulted in relation to odour and air emissions modeling. Additional consultees were OEA Scientific Officers Nigel Hayes and Rebecca Quinn in relation to river monitoring and OES Inspector Ann Marie Donlon in relation to surface water emissions.

#### 13.2 Transboundary Consultations

There were no transboundary consultations undertaken as there were no transboundary impacts identified.

### 14. Appropriate Assessment

Appendix 10 lists the European Sites assessed, their associated qualifying interests and conservation objectives along with the assessment of the effects of the activities on the European Sites.

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the activities, individually or in combination with other plans or projects are likely to have a significant effect on any European Site. In this context, particular attention was paid to the European Sites at River Boyne and River Blackwater SAC (Site Code: 002299), Boyne Coast and Estuary SAC (Site Code: 001957), River Boyne and River Blackwater SPA (Site Code: 004232), Boyne Estuary SPA (Site Code: 004080) and River Nanny Estuary and Shore SPA (Site Code: 004158).

The activities are not directly connected with or necessary to the management of any European Site and the Agency considered, for the reasons set out below, that it cannot be excluded, on the basis of objective information, that the activities, individually or in combination with other plans or projects, will have a significant effect on any European Site and accordingly determined that an Appropriate Assessment of the activities was required. A Natura Impact Statement was received by the Agency on 23 October 2019.

This determination has been made in light of the following reason:

1. Due to the nature and scale of the activities and the potential impacts such

activities may have on the qualifying interests of the European Sites listed above.

An Inspector's Appropriate Assessment has been completed and has determined, based on best scientific knowledge in the field and in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, pursuant to Article 6(3) of the Habitats Directive, that the activities, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site, in particular River Boyne and River Blackwater SAC (Site Code: 002299), Boyne Coast and Estuary SAC (Site Code: 001957), River Boyne and River Blackwater SPA (Site Code: 004232), Boyne Estuary SPA (Site Code: 004080) and River Nanny Estuary and Shore SPA (Site Code: 004158), having regard to their conservation objectives and will not affect the preservation of these sites at favourable conservation status if carried out in accordance with this recommended determination and the Conditions attached hereto for the following reasons:

- Due to the distance to the River Nanny Estuary and Shore SPA (Site Code: 004158) and the mitigation measures listed below, it is considered that the potential impact on this European Site and its conservation objectives is considered negligible.
- The following European Sites: River Boyne and River Blackwater SAC (Site Code: 002299), Boyne Coast and Estuary SAC (Site Code: 001957), River Boyne and River Blackwater SPA (Site Code: 004232) and Boyne Estuary SPA (Site Code: 004080), are not located downstream of the surface water bodies adjacent to the installation. Also, these European Sites are not located downgradient of the installation. Therefore, emissions from the activity will not have a significant effect on the qualifying interests of these European Sites.
- Condition 6 of the RD includes requirements for surface water run-off and management. It requires that surface water that has the potential to become contaminated through contact with waste is physically separated and managed separately.
- Condition 5 of the RD requires that emissions from licensed emission points are subject to compliance with the Emission Limit Values specified in the relevant Schedules.
- Condition 6 and *Schedule C: Control of Monitoring*, specifies monitoring requirements and frequencies for emissions to air, water, noise and groundwater.
- Surface water emissions pass through an oil separator and are further abated in on-site constructed wetlands. Continuous on-line monitoring is in place and a slam shut valve will close to prevent contaminated surface water discharging from site.
- Landfill cells are lined in accordance with the Landfill Directive to protect groundwater.
- Condition 3 of the RD sets out the requirements for leachate management at the installation. Leachate is and will be collected from cells and stored in leachate lagoons/tanks, prior to removal off-site for disposal at an authorised wastewater treatment plant. In the event leachate will be pre-treated on-site, treatment and subsequent storage will be carried out in bunded units and tanks.
- Condition 3 of the RD sets out the requirements in relation to landfill gas management and specifies the requirements for the landfill gas infrastructure, including the collection pipework, utilisation plant and landfill gas flares. ELVs are provided for emissions to air in *Schedule B.1 Emissions to Air*.
- Condition 3 requires all tank, container and drum storage areas shall be rendered impervious to the materials stored therein. Integrity of bunds and underground

pipes are to be assessed every three years and maintenance carried out as required.

- Condition 9 of the RD requires that a documented Accident Prevention Procedure is in place that addresses hazards on-site, particularly in relation to the prevention of accidents with a possible impact on the environment.
- Condition 9 also requires the licensee to have a documented Emergency Response Procedure in place that addresses any emergency situation on-site and provision for minimising the effects of any emergency on the environment.

In light of the foregoing reasons no reasonable scientific doubt remains as to the absence of adverse effects on the integrity of those European Sites River Boyne and River Blackwater SAC (Site Code: 002299), Boyne Coast and Estuary SAC (Site Code: 001957), River Boyne and River Blackwater SPA (Site Code: 004232), Boyne Estuary SPA (Site Code: 004080) and River Nanny Estuary and Shore SPA (Site Code: 004158).

## **15. Environmental Impact Assessment**

### **15.1 EIA Introduction**

This assessment is being undertaken in accordance with the requirements of Directive 2014/52/EU amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. The application was accompanied by an Environmental Impact Assessment Report (EIAR), reference *EIAR for the proposed development at Knockharley Landfill, Volume 1, 2, 3 and 4*. Following a request from the licensee, the Agency issued a scoping opinion on the scope and level of detail to be included in the EIAR on 11 May 2018.

As part of this environmental impact assessment, I have carried out an examination, analysis and evaluation of all the information provided by the licensee (including the EIAR), the existing licence, Register Number: W0146-02, information received through consultation, the documents associated with the assessments carried out by An Bord Pleanála, and the issues that interact with the matters that were considered by that authority and which relate to the activity, written submissions, as well as considering any supplementary information, where appropriate. All of the documentation received was examined and I consider that the EIAR complies with the provisions of Article 5 of the 2014 EIA Directive when considered in conjunction with the additional material submitted with the application.

I am satisfied that the information contained in the EIAR has been prepared by competent experts and that the environmental effects arising as a consequence of the activity have been satisfactorily identified, described and assessed.

Having specific regard to EIA, this Inspector's report as a whole is intended to identify, describe and assess for the Agency the likely significant direct and indirect effects of the activity on the environment, as respects the matters that come within the functions of the Agency, for each of the following environmental factors: population and human health, biodiversity, land, soil, water, air and climate, the landscape, material assets and cultural heritage.

This Inspector's report addresses the interaction between those effects and the related development forming part of the wider project. The cumulative effects, with other developments in the vicinity of the activities have also been considered, as regards the

combined effects of emissions. In addition, the vulnerability of the activity to risks of major accidents and/or disasters has been considered. The mitigation measures proposed to address the range of predicted significant effects arising from the activity have been outlined. This Inspector's report provides conclusions to the Agency in relation to such effects.

A summary of the submissions made by third parties has been set out above in the Submissions Section of this report.

I am satisfied that the public have been given early and effective opportunity to participate in the environmental decision-making process.

## **15.2 Consultation with Planning Authorities in relation to EIA**

Consultation was carried out between An Bord Pleanála and the Agency under the relevant section of the EPA Act.

An Bord Pleanála did not provide any observations to the Agency on the licence application and EIAR.

## **15.3 Alternatives**

The matter of alternatives is addressed in Chapter 4 of the EIAR. Section 4.6.1 looks at '*Alternative Site Development Locations*'. This alternative considered two other landfill facilities in the ownership of the licensee's parent company. However, one facility is in restoration/aftercare phase and closed to waste acceptance. The other facility was assessed and compared in relation to location and accessibility, available development footprint, suitability for development and environmental considerations. The Knockharley site was deemed to be located closer to waste sources, easily accessible with access that would not result in traffic queuing, of good development footprint on land owned by the site's parent company as opposed to leased in the case of the other facility. The Knockharley site was deemed more favourable for development due to a relatively flat topography and both sites operate under EPA licences and were considered equal with regard to environmental considerations.

Section 4.6.2 examines '*Alternative Site Layout Design*' with two options considered on the Knockharley site for IBA storage facility (east or west of the landfill footprint). Taking account of operational, design and construction issues, the layout east of the landfill footprint was considered preferable.

Section 4.6.3 considers '*Alternative Treatment Technologies*' for leachate treatment and IBA storage taking account of treatment required, control of water and leachate management, protection of soil and water, gas control and nuisance and hazards. Treatment and storage options are influenced/dictated by wastewater treatment plants and the Landfill Directive respectively.

Section 4.6.4 notes the 'Do-Nothing' scenario. In this circumstance the primary objective of providing capacity for a range of wastes is described along with the resulting issues when not available. Similarly, the loss in potential resource value of IBA is noted.

In this regard I consider that the matter of the examination of alternatives has been satisfactorily addressed.



## **15.4 Likely Significant Direct and Indirect Effects**

The likely significant direct and indirect effects of the activities on the following factors as set out in Article 3 of the EIA Directive are considered in this section:

- (a) population and human health;*
- (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
- (c) land, soil, water, air and climate;*
- (d) material assets, cultural heritage and the landscape;*
- (e) the interaction between the factors referred to in points (a) to (d).*

### **15.4.1 Population & Human Health**

#### **Identification, Description and Assessment of Effects**

Population and human health are addressed in Chapter 6 of the EIAR. The potential direct and indirect effects on population and human health are associated with emissions to air, dust, odour, noise emissions, emissions to water, and accidental emissions. Should emissions exceed environmental quality standards this could have implications for population and human health. The effects identified and described above have been assessed in the following section of this report: Emissions to Air, Emissions to Water and Noise.

There is also the potential for accidental emissions to the environment. Accidental emissions to air could occur during landfill gas extraction, utilisation or flaring causing odour nuisance. Accidental emissions to water /ground could occur during fuel or leachate storage and transportation causing ground and water pollution. This is addressed in Prevention of Accidents section of this report.

Cumulative effects of the activity in relation to population and human health have been assessed and is considered that there is not likely to be a significant cumulative effect from the activity and other activities/developments. There are no likely significant direct, indirect or cumulative effects identified.

#### **Mitigation and Monitoring**

Mitigation measures and monitoring in relation to population and human health are detailed in the following sections of this report: Emissions to Air, Emissions to Water/Sewer/Ground, Noise, Waste Generation, Prevention of Accidents.

#### **Conclusions**

I have examined all the information on population and human health, provided by the licensee, received through consultations, written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed Conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of population and human health.

### **15.4.2 Biodiversity**

#### **Identification, Description and Assessment of Effects**

Biodiversity is addressed in Chapter 10 of the EIAR which describes the habitats and species at and in the vicinity of the existing installation. The site is a mix of, constructed landfill and associated facilities with some woodland and wet grassland. Dominant habitats were classified in 2010 through a field survey and a botanical survey was also carried out in each of the dominant habitats with plants recorded to species level. The habitats were re-visited in 2015 and 2016. A total of 16 habitats were identified in all including hedgerow, treeline, scrub, drainage ditches and wet grassland. The most abundant species recorded during avian surveys were Woodpigeon, Wren, Goldfinch and Willow Warbler (9-10 records each). The licensee also submitted a Natura Impact Statement which deals specifically with impacts on habitats and species within European sites. These impacts are dealt with in the Appropriate Assessment section of this report (Section 14).

The potential direct and indirect effects on biodiversity are associated with construction phase activities and in the operational stage, disturbance and effects to flora and fauna due to noise and air emissions and effects on aquatic flora and fauna and their habitats due to effects on water quality. The effects identified and described above have been assessed in the following sections of this report: Noise, Emissions to Air and Emissions to Water.

There is also the potential for accidental emissions to the environment, as described in Section 9 due to fire, spillages or malfunction of equipment. Accidental emissions to water/ground could occur in the event of a fire or spillage and potentially pollute the underlying aquifer, ground or surface water. This is addressed in Prevention of Accidents section of this report.

Cumulative effects of the activity in relation to biodiversity have been assessed and it is considered that there is not likely to be a significant cumulative effect from the activity and other activities/developments. There are no likely significant direct, indirect or cumulative effects identified.

### **Mitigation and Monitoring**

Mitigation measures and monitoring in relation to biodiversity are detailed in the following sections of this report: Emissions to Air, Emissions to Water/Ground/ Sewer, Noise, Waste Generation and Prevention of Accidents.

### **Conclusions**

I have examined all the information on biodiversity, provided by the licensee, received through consultations, written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed Conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of biodiversity.

#### **15.4.3 Land and Soil**

##### **Identification, Description and Assessment of Effects**

Land and soil are addressed in Chapter 11 of the EIAR. The site currently comprises of a landfill facility, in a mostly rural area, with waste acceptance commencing in December 2004. Prior to development as a landfill, the land was used for agriculture and a network of field drains were installed to improve the land. The site is sloped with elevations ranging from 70 mOD in the north west to 55 mOD in the south east of the

site. Site soils comprise mainly of poorly drained acidic mineral soils consisting of surface water gleys and groundwater gleys. The overburden consists of glacial till predominantly derived from the underlying Namurian shales and sandstones, with the southern part of the site being underlain by tills derived from Carboniferous limestone. An intrusive geotechnical site investigation, geophysical survey and desk study was carried out to assess soils, geology and hydrogeology. No evidence of soil contamination was noted during assessment site walkovers. A minor fuel spill occurred in 2016, adjacent to the bunded fuel storage, and was cleaned up immediately.

The potential direct and indirect effects on land and soil are associated with construction activities and emissions to water, waste generation and accidental emissions during both construction and operational activities. Should emissions exceed environmental quality standards this could have implications for land and soil. The effects identified and described above have been assessed in the following section of this report: Emissions to Water/Ground/ Sewer, Waste Generation and Prevention of Accidents.

There is also the potential for accidental emissions to the environment. Accidental emissions to water/ground could occur from leachate or fuel spills, causing pollution to soils, groundwater and surface waters. This is addressed in Prevention of Accidents section of this report.

Cumulative effects of the activity in relation to land and soil have been assessed and is considered that there is not likely to be a significant cumulative effect from the activity and other activities/developments. There are no likely significant direct, indirect or cumulative effects identified.

### **Mitigation and Monitoring**

Mitigation measures and monitoring in relation to land and soil are detailed in the following sections of this report: Emissions to Water/Sewer/Ground, Waste Generation and Prevention of Accidents.

### **Conclusion**

I have examined all the information on land and soil, provided by the licensee, received through consultations, written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed Conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects on land and soil.

#### **15.4.4 Water (including Waste Water, Emissions to Sewer, Storm Water, Emissions to Ground)**

### **Identification, Description and Assessment of Effects**

Water is addressed in Chapter 12 of the EIAR. The potential direct and indirect effects on water relate to emissions to surface water from the landfill surface, hardstanding areas and site roads. Should the emissions cause an exceedance of Water Quality Standards in the receiving water, this could have potential effects on water quality, aquatic biodiversity and human health. The effects identified and described above have been assessed in the following section of this report: Emissions to Water/Ground/Sewer.

There is also the potential for accidental emissions to water or groundwater, which could occur from leachate, fuels and other chemicals stored on site if spill as a result of site operations, causing potential pollutants to enter and affect *surface water/groundwater quality as well as aquatic habitats*. However, the likelihood of accidental emissions to water is considered low in light of the measures outlined in the "Prevention of Accidents" section above and in light of the Conditions in the RD. This is addressed in Prevention of Accidents section of this report.

Cumulative effects of the activities in relation to water have been assessed and it is considered that there is not likely to be a significant cumulative effect from the activity and other developments. There are no likely significant direct, indirect or cumulative effects identified.

### **Mitigation and Monitoring**

Mitigation measures and monitoring in relation to water are detailed in the following sections of this report: Emissions to Water/Ground/Sewer, Waste Generation and Prevention of Accidents.

### **Conclusions**

I have examined all the information on water (including emissions to surface water from current and proposed discharge points) provided by the licensee, received through consultations, written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed Conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects on water.

#### **15.4.5 Noise and Vibration**

##### **Identification, Description and Assessment of Effects**

Noise and vibration are addressed in Chapter 9 of the EIAR. The site is located adjacent to a number of residential dwellings. Accordingly, there is potential for noise and vibration arising the site activities to impact the noise sensitive locations. Additionally, noise from N2 road, which runs 100m east of the eastern site boundary, can also contribute to noise nuisance at the NSLs. The potential direct and indirect effects of noise and vibration associated with the operation of the activity are the temporary increase of noise above the daytime noise limit at four receptors, one of which is within the landownership boundary. These exceedances will be predominantly attributed to felling of trees (1week duration) and construction of earth berms A and B (2 to 3 weeks duration for the construction of each berm). Regarding vibration, it is expected that vibration arising from operational and construction activities will not be perceptible at nearby sensitive locations, and that any vibration arising from such activities will be significantly below any thresholds for structural damage to property.

Cumulative effects of the activities in relation to noise and vibration have been assessed and is considered that there is not likely to be a significant cumulative effect from the activity and other activities. There are no likely significant direct, indirect or cumulative effects identified.

### **Mitigation and Monitoring**

Mitigation measures and monitoring in relation to noise and vibration are detailed in the following sections of this report: Noise, Vibration.

### **Conclusions**

I have examined all the information on noise and vibration provided by the licensee, received through consultations, written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed Conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of noise and vibration.

#### **15.4.6 Air (including Dust and Odour)**

Air is addressed in Chapter 7 of the EIAR. The potential direct and indirect effects on air, including dust and odour are associated with the landfill and associated infrastructure, such as gas flares, gas utilisation plant, vehicles and operational processes such as storage and movement of waste. Should emissions exceed Air Quality Standards this could have implications for air quality, population and human health and biodiversity within and beyond the installation boundary. General site dust and odour emissions have the potential to impact human health and cause nuisance. The effects identified and described above have been assessed in the Emissions to Air section of this report.

There is also the potential for accidental emissions to the environment, due to e.g. fire, or explosion, etc. Accidental emissions to air could occur if malfunction of plant or equipment occurred, causing uncontrolled emissions to air. This is addressed in Prevention of Accidents section of this report.

Cumulative effects of the activities in relation to air have been assessed and it is considered that there is not likely to be a significant cumulative effect from the activity and other developments. There are no likely significant direct, indirect or cumulative effects identified.

### **Mitigation and Monitoring**

Mitigation measures and monitoring in relation to air are detailed in the following sections of this report: Emissions to Air.

### **Conclusions**

I have examined all the information on Air (including Dust and Odour) provided by the licensee, received through consultations, written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed Conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of Air (including Dust and Odour).

#### **15.4.7 Climate**

### **Identification, Description and Assessment of Effects**

Chapter 7 of the EIAR addresses Climatic Factors. Climate change is a significant global issue which affects weather and environmental Conditions (air, water and soil) which consequently affects population and human health, material assets, cultural heritage,

the landscape and biodiversity. Climate change is caused by warming of the climate system by enhanced levels of atmospheric greenhouse gases (GHG) due to human activities. GHGs are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF<sub>3</sub>) and sulphur hexafluoride (SF<sub>6</sub>).

In December 2022, the Irish Government released the 'Climate Action Plan 2023', under the Climate Action and Low Carbon Development (Amendment) Act 2021, which will support Ireland's transition to Net Zero, and achieve a climate neutral economy by no later than 2050. Landfilling of waste is specifically mentioned in the Climate Action Plan 2023, which states that an estimated one tonne of waste per home per year which is landfilled leads to GHG emissions. Table 19.5 *Key Metrics to Deliver Abatement in 'Other Emissions'* of the Climate Action Plan refers to Circular Economy and states that waste policy measures outlined in the Waste Action Plan for a Circular Economy will have a significant effect on waste minimisation, reuse and recycling rates over the next four years. It is noted that the proposed increase in annual waste intake is recommended in the RD however, the proposed development leads to a potential significant recovery of IBA waste material.

The potential direct and indirect effects on climate associated with the site are from the following sources, e.g. emissions of CH<sub>4</sub>, CO<sub>2</sub> and NO<sub>x</sub> arising from combustion of landfill gas, earthworks, forestry felling and vehicle emissions. Also, a fire at the landfill or malfunction of the landfill infrastructure such as gas flares could result in uncontrolled gas emissions. Currently landfill gas is utilised to generate electricity which is exported to the national grid, and in the future, the site will be used to generate solar power from the installation of solar panels.

The installation does not operate under a GHG Emissions Permit in accordance with the European Communities (Greenhouse Gas Emissions Trading) Regulations 2012, (S.I. 490 of 2012 and amendments). Therefore, this site is not subject to the European Communities (Greenhouse Gas Emissions Trading) Regulations 2012, (S.I. 490 of 2012 and amendments). It is therefore a requirement of the IED to investigate how direct emissions of CO<sub>2</sub> might be minimised. Indirect emissions of CO<sub>2</sub> may arise due to the use of electricity from the national grid. These emissions are covered under the EU ETS at the generating plant but the licensee is also required to address electricity usage as part of energy efficiency management.

In relation to cumulative effects, any combustion process will inevitably produce quantities of gases, including greenhouse gases (GHG), which have the potential to impact on air quality. However, it is usually the other combustion gases that negatively impact air quality as opposed to the greenhouse gases. In this assessment, it has already been determined that gas emissions from the installation will not significantly affect local air quality, individually or cumulatively. However, any discussion of GHG emissions must be extended to national and global climate impact.

Given the small quantity of climate altering substances that could be released from the activity, in a national context, I consider that the impact of any emissions from the installation on climatic considerations should be minimal.

As part of the non-ETS sector the GHG emissions from this site are covered by Ireland's commitments under the Effort Sharing Decision (Decision No 406/2009/EC) and the Effort Sharing Regulation (Regulation (EU) 2018/842) from 2021. Condition 2 and Condition 7 of the RD deal with energy efficiency matters at the installation.

It is considered that the likelihood of accidental emissions occurring which could affect climate is low in light of the measures outlined in the "Prevention of Accidents" section above and the proposed Conditions in the RD.

Therefore, there are no likely significant direct, indirect or cumulative effects identified.

### **Mitigation and Monitoring**

Mitigation measures and monitoring in relation to climate are detailed in the following sections of the licence assessment part of this report: Emissions to Air, Prevention of Accidents, Energy Efficiency and Resource Use.

### **Conclusions**

I have examined all the information on climatic factors provided by the licensee, received through consultations, written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed Conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable effects in terms of air and climatic factors.

## **15.4.8 Material Assets, Cultural Heritage and the Landscape**

### **15.4.8.1 Material Assets (including resource use and waste generation)**

Material assets are addressed in Chapter 15 of the EIAR, Cultural Heritage is addressed in Chapter 14 and the Landscape is addressed in Chapter 13.

### **Identification, Description and Assessment of Effects**

The potential direct and indirect effects on material assets are utilities infrastructure (water, electricity, gas), site infrastructure and buildings. The EIAR states that while non-renewable resources, fossil fuels and water are required during the construction and operational phases and will have a negligible residual depletion impact, it is not considered that there will be any further residual impacts associated with the infrastructural material assets. The effects identified and described above have been assessed in the following section of this report: Energy Efficiency and Resource Use.

No significant cumulative effects on material assets have been identified.

Material assets such as roads and traffic and built services are dealt with in the decision of the An Bord Pleanála to grant permission for the development. An Bord Pleanála has considered the effect to be acceptable.

Therefore, there are no likely significant direct, indirect or cumulative effects identified.

### **Mitigation and Monitoring**

There are no specific mitigation measures or monitoring proposed in the RD.

### **Material Assets Conclusions**

I have examined all the information on Material Assets provided by the licensee, received through consultations, written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed Conditions of the Recommended Determination. I am, therefore,

satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of Material Assets.

An Bord Pleanála has also identified, described and assessed the likely significant direct and indirect effects of the development on material assets concluding that “material assets have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise”.

#### 15.4.8.2 Cultural Heritage

##### **Identification, Description and Assessment of Effects**

The potential direct effect on cultural heritage is damage to/loss of any previously unrecorded archaeological remains. Any loss of archaeological or architectural heritage could impact negatively on human beings. These matters are dealt with in the decision of the planning authority to grant planning permission for the developments on site and the planning authority has considered the effect to be acceptable.

There are no Recorded Monuments either within the proposed development site or a 1 km radius. The closest Recorded Monument is approximately 1.3 km west of the site boundary and is described as a possible ringfort. It is very difficult to envisage any pathway by which emissions from the operation of the activity could impact any feature which might be present.

No significant cumulative effects on the cultural heritage have been identified. Therefore, there are no likely significant direct, indirect or cumulative effects identified.

##### **Mitigation and Monitoring**

There are no specific mitigation measures or monitoring proposed in the RD.

##### **Cultural Heritage Conclusions**

An Bord Pleanála has identified, described and assessed the likely significant direct and indirect effects of the development on cultural heritage concluding that “The only impacts that are likely to arise which would (potentially) effect the archaeological, architectural or cultural heritage resource of the area are associated with construction. This phase of the development has the potential to impact on previously unrecorded archaeological remains”. The ABP further states however, that subject to implementation of standards mitigation measures, such as pre-development geophysical surveying followed by pre-development test trenching and, if required, preservation in situ or preservation by record, it is considered that these impacts are not likely to be significant.

The Recommended Determination does not propose to include any additional mitigation measures in relation to cultural heritage.

#### 15.4.8.3 The Landscape

##### **Identification, Description and Assessment of Effects**

The potential direct and indirect effects on the landscape are the increase of the height of the landfill body from a pons settlement final contour height of 74m OD to 85m OD, the removal of the woodland boundary planting and the construction of soil berms in the west and north of the site. Any disturbance of the landscape has the potential to impact on human beings and their enjoyment of the surrounding area due to visual impacts. These matters are dealt with in the decision of An Bord Pleanála to grant



planning permission for the developments on site and it has considered the effects to be acceptable.

The installation is located within the 'Lowland Landscape'. Emissions from the operation of the activity will not affect the lowland landscape of the area.

No significant cumulative effects on the landscape have been identified.

Therefore, there are no likely significant direct, indirect or cumulative effects identified.

### **Mitigation and Monitoring**

The licensee proposes the following mitigation measures

- The contingency storage building is positioned in a naturally low area of the site to improve screening by the existing vegetation;
- Maintenance of existing screening berms and planting to the south;
- Replanting of forestry felled to facilitate construction of screening berms on the western and north eastern boundary;
- Enhancement of the planting on top of the existing berm on the eastern boundary;
- The filled landfill cells 27 and 28 will provide screening for landfilling activities south of those cells;
- The filled IBA cell 29 will provide screening for IBA weathering and storage areas west of that point; and
- Careful selection of colour finishes for elevations of the proposed buildings.

### **The Landscape Conclusions**

An Bord Pleanála has identified, described and assessed the likely significant direct and indirect effects of the development on the landscape concluding that, subject to the mitigation measures proposed, "the landscape has the capacity to absorb the proposed development without resulting in significant negative impacts on the landscape character and the visual amenities of the area" and that "potential impacts on Landscape will be mitigated by the provision of planted berms and replanting in accordance with a landscaping plan, which will provide a visual buffer between the landfill and sensitive receptors. The increase in height of the landfill body overall visual impact of the proposed development will be highly localised and confined to the environs of the site".

The Recommended Determination does not propose to include any additional mitigation measures in relation to landscape.

### **Overall Conclusions for Material Assets, Cultural Heritage and the Landscape**

I have examined all the information on material assets, cultural heritage and the landscape provided by the licensee, received through consultations, written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects in terms of Material Assets, Cultural Heritage and the Landscape.

#### 15.4.9 **Interactions Between Environmental Factors**

Interactions of effects are considered in Chapter 16. The most significant interactions between the factors as a result of the activity are summarised below:

##### Population and Human Health, Biodiversity and Air

The potential for impacts to air arising from air emissions from the operation of the installation, which could impact on residents and biodiversity, has been assessed.

There will be no significant impact on nearby receptors.

##### Population and Human Health, Biodiversity and Noise:

The activity has the potential to impact ambient noise levels, which could affect human health and biodiversity. During operation, noise impact will be consistent with existing industry levels and the ambient noise environment is dominated by the adjacent N2 road. Noise assessment indicates there will be no significant impact on nearby receptors.

##### Water, Soil, Biodiversity and Population and Human Health:

Accidental discharges or spills may directly affect surface water quality downstream, aquatic habitats and aquatic flora and fauna. As demonstrated in other sections of this report such effects are considered not to be likely or significant.

##### Population and Human Health and Traffic:

It is considered that the predicted increases in network traffic as a result of the development will be of negligible impact on air quality and human beings.

##### Water and Hydrogeology:

Landfill leachate and contaminated surface water run-off have the potential to enter soil and groundwater. Accidental discharges, or spills may directly affect hydrogeology, surface water quality downstream, aquatic habitats and aquatic flora and fauna. Implementation of appropriate control measures as outlined above will eliminate the potential for the influx of landfill leachate and surface contaminants into the underlying soil and aquifer.

#### **Conclusions**

I have considered the interaction between population and human health, biodiversity, land, soil, water, air, climate, landscape, material assets, cultural heritage and the interaction of the likely effects identified throughout this report. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed Conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable in terms of the interaction between the foregoing environmental factors.

#### 15.4.10 **Vulnerability of the Project to Risks of Major Accidents and or Disasters**

The EIAR describes the expected effects deriving from the vulnerability of the activity to risks of major accidents and/or disasters that are relevant to the activity. Natural disasters such as flooding are dealt with in Chapter 12 the EIAR and land-slides are dealt with in Chapter 11 of the EIAR. In respect of major accidents, the EIAR states that the proposed development is not close to any site, nor is the site itself regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations i.e. SEVESO.

Excavation of soils and earthworks could cause soil erosion and sediment entrainment into surface water run-off leading to siltation of stream beds with subsequent implications on fauna and flora as well as increased flood risk. Flooding could be also caused by heavy rainfall. The EIAR states that risk of an increase in flooding is however of negligible significance due to maintenance of greenfield discharge rates, the small percentage increase in run-off volumes contributing to the catchment and the attenuation capacity within the catchment to absorb increased flow volumes.

### **Mitigation and Monitoring**

Below are the mitigation and monitoring measures proposed in the EIAR in relation to the vulnerability of the project to risks of major accidents and disasters specified in the RD:

- to mitigate against erosion of the exposed soil or rock, all excavations will be carried out and be backfilled as quickly as possible. Also, excavation work will stop prior to or during heavy rainfall.
- Mitigation Measures for Flooding will include installation of a modification will across the stream in the form of a dam and culvert arrangement in order to channel extreme overbank flows into a wooded area. Additionally, construction works will not take place during extreme weather Conditions. when channel water levels/flows are high.

### **Conclusions**

I have examined all the information on major accidents and/or disasters provided by the licensee, received through consultations, written submissions, as well as considering any supplementary information, where appropriate. I am satisfied that the potential effects identified will be avoided, managed and mitigated by the measures identified and through the proposed Conditions of the Recommended Determination. I am, therefore, satisfied that the operation of the activity is not likely to have any unacceptable direct or indirect effects as a result of major accidents and/or disasters.

## **15.5 Reasoned Conclusion on the significant effects**

Having regard to the examination of environmental information contained above, and in particular to the content of the EIAR and supplementary information provided by the licensee, and the third party submission in the course of the application, it is considered that the potential significant direct and indirect effects of the activities on the environment are as follows:

- Emissions to air;
- Emissions to water;
- Noise emissions; and
- Accidental leakages or spillages into groundwater.

Having assessed those potential effects, I have concluded as follows:

- Emissions to air will be mitigated through imposing emission limit values to ensure ambient air quality standards are complied with; and implementing monitoring, maintenance and control measures;
- Noise emissions will be mitigated through imposing daytime, evening-time and night-time noise limits at noise-sensitive locations; and implementing monitoring, maintenance and control measures; and

- Accidental leakages or spills will be mitigated through the use of oil separators; inspection and maintenance of bunds and tanks; monitoring, maintenance and control measures in relation to surface water and accident and emergency requirements specified in the RD.

Having regard to the effects (and interactions) identified, described and assessed throughout this report, I consider that the monitoring, mitigation and preventative measures proposed will enable the activities to operate without causing environmental pollution, subject to compliance with the Recommended Determination. The Conditions of the RD and the mitigation measures proposed will significantly reduce the likelihood of accidental emissions occurring and limit the environmental consequences of an accidental emission should one occur.

## **16. EPA Charges**

The annual enforcement charge recommended in the RD is €13,749, which reflects the anticipated enforcement effort required and the cost of monitoring. This represents an increase when compared to the Agency's 2022 enforcement charge of €12,112.

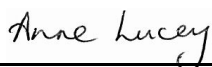
## **17. Recommendation**

The Agency, in considering an application for a licence or the review of a licence, shall have regard to Section 83 of the EPA Act 1992, as amended. The Agency shall not grant a licence or revised licence unless it is satisfied that emissions comply with relevant emission limit values and standards prescribed under regulation. In setting such limits and standards, the Agency must ensure they are established based on the stricter of both the limits and controls required under BAT, and those required to comply with any relevant environmental quality standard. The Agency shall perform its functions in a manner consistent with Section 15 of the Climate Action and Low Carbon Development Act 2015 as amended.

The RD specifies the necessary measures to provide that the installation shall be operated in accordance with the requirements of Section 83(5) of the EPA Act 1992, as amended and has regard to the AA and EIA. The assessment is consistent with Section 15 of the Climate Action and Low Carbon Development Act 2015 as amended. The RD gives effect to the requirements of the Environmental Protection Agency Act 1992, as amended and has regard to submissions made.

I recommend that a Proposed Determination be issued subject to the Conditions and for the reasons as drafted in the RD.

Signed




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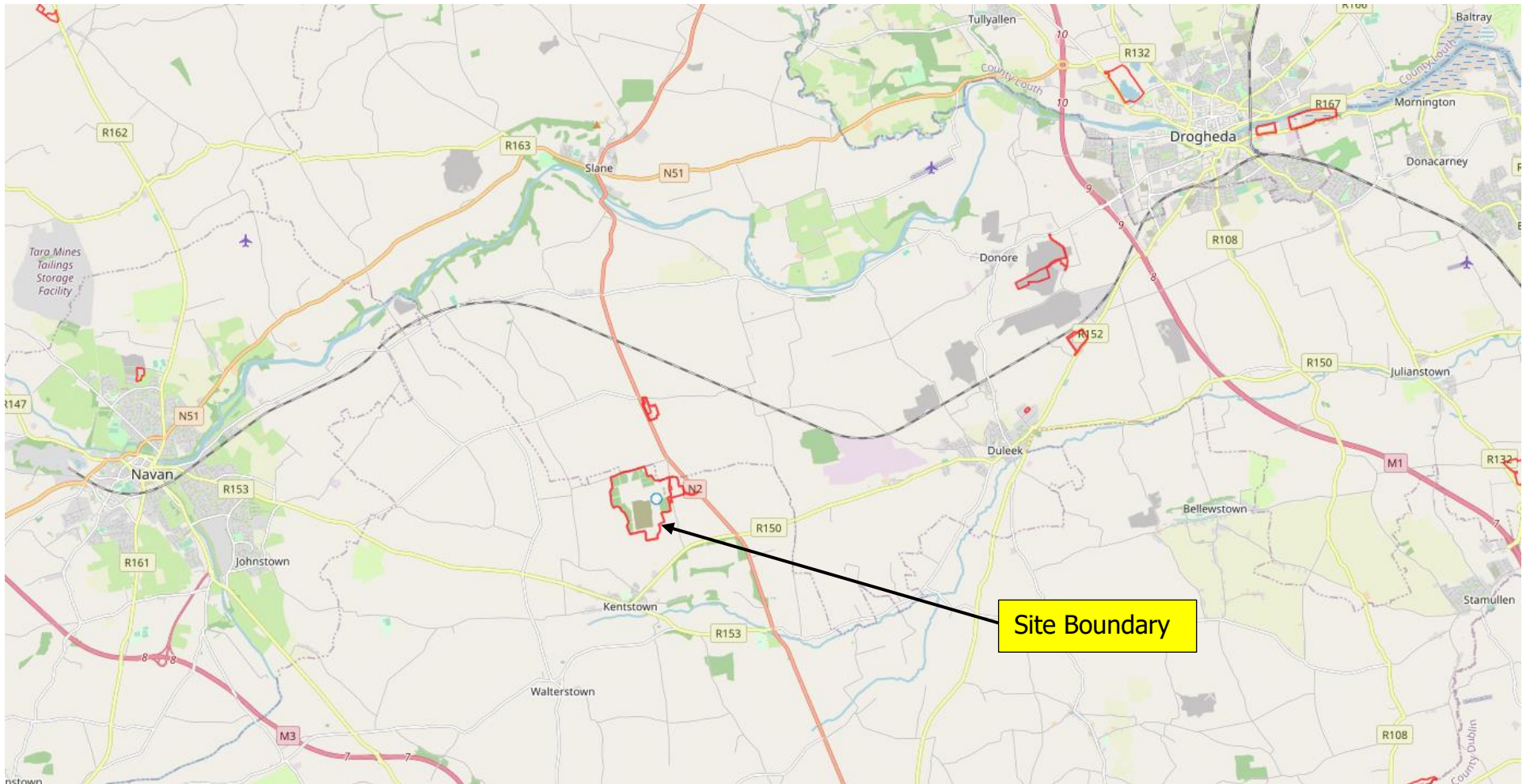
Anne Lucey

## **Procedural Note**

In the event that no objections are received to the Proposed Determination on the application, a licence will be granted in accordance with Section 87(4) of the Environmental Protection Agency Act 1992, as amended, as soon as may be after the expiration of the appropriate period.

# Appendices

## Appendix 1: Site Location

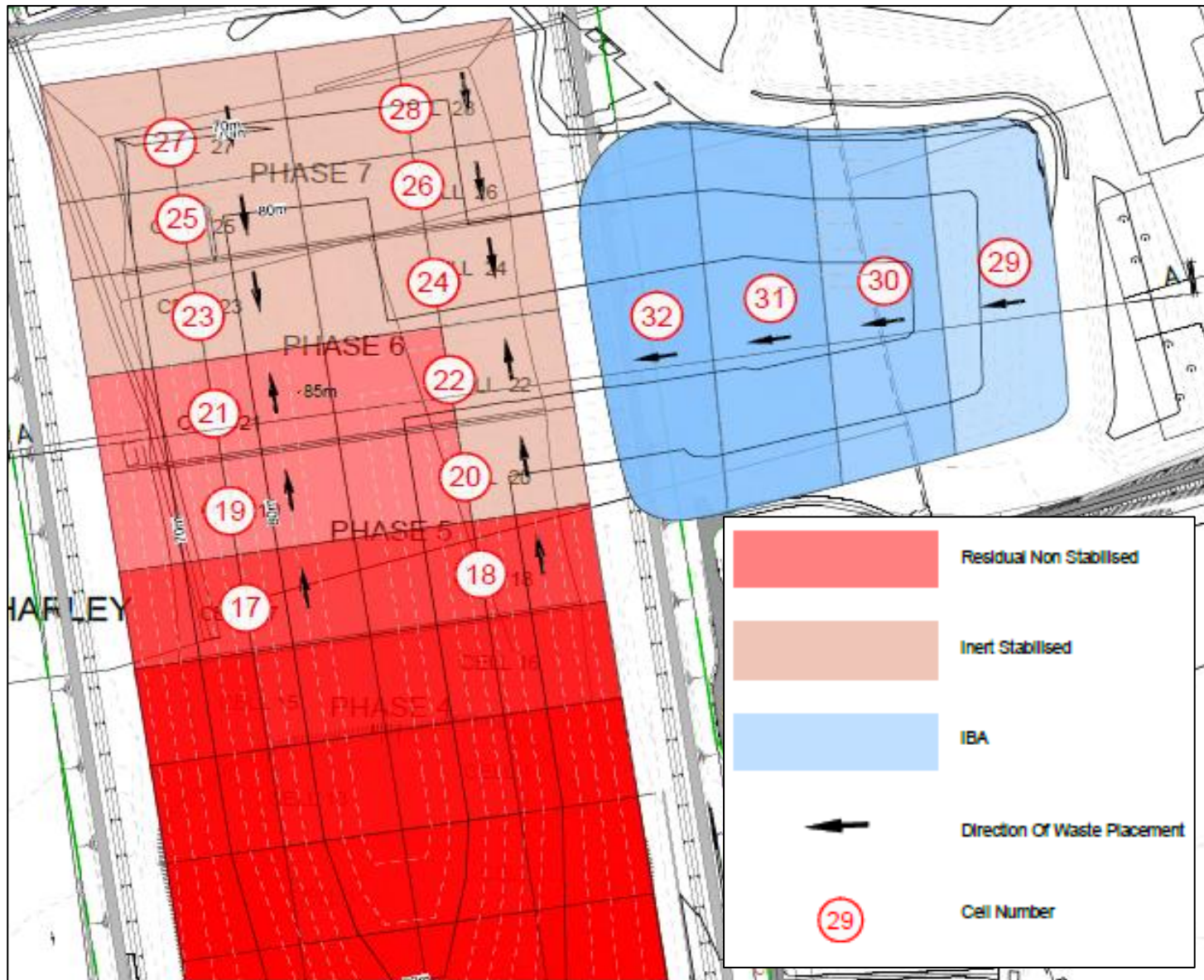




## Appendix 2: Landfill Footprint – Aerial View

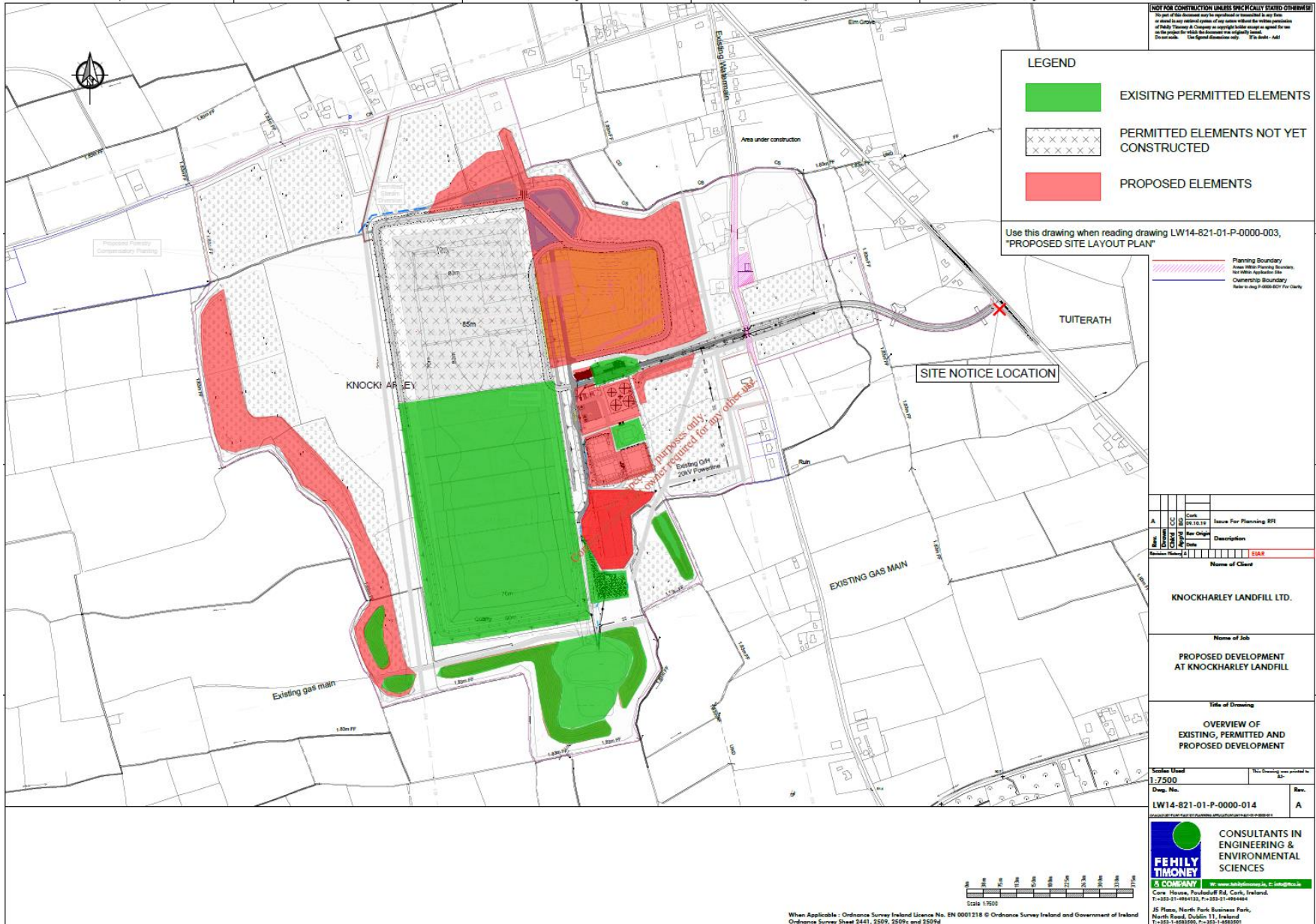


### Appendix 3: Landfill Cell No. and Waste Material Layout





**Appendix 4: Existing and Proposed Development Areas From end of doc. ABP Response Query on Biodiversity.**





## Appendix 5: Dust & PM<sub>10</sub> Monitoring Locations



## Appendix 6: Predicted Odour Exposure Results at Receptors

**Note:** Red denotes an exceedance of odour emission standard 1.5 OU<sub>E</sub>/m<sup>3</sup>. (Ref. Table 12. of Updated Odour Impact Assessment, Dated October 21, 2022)

Receptor	Sc0: 2018 baseline	Sc1: Yr 4 without development	Sc2: Yr 4 with development	Sc3: Yr 6 with development
1	2.42	1.50	1.48	1.41
2	2.26	1.11	1.27	1.18
3	2.01	0.98	1.17	1.04
4	2.04	1.06	1.18	1.09
5	2.01	0.85	1.07	0.97
6	1.32	0.51	0.69	0.61
7	0.86	0.43	0.52	0.49
8	0.87	0.41	0.49	0.51
9	0.63	0.33	0.39	0.39
10	0.61	0.34	0.39	0.39
11	0.85	0.88	0.60	0.76
12	0.83	0.83	0.56	0.73
13	0.93	0.94	0.68	0.79
14	0.98	1.06	0.68	0.82

Receptor	Sc0: 2018 baseline	Sc1: Yr 4 without development	Sc2: Yr 4 with development	Sc3: Yr 6 with development
15	1.00	1.12	0.67	0.86
16	1.34	1.45	0.96	1.14
17	1.15	1.16	0.78	0.93
18	1.59	1.78	1.15	1.46
19	1.68	1.80	1.17	1.52
20	1.71	1.87	1.18	1.60
21	1.78	1.75	1.24	1.49
22	1.92	1.65	1.25	1.45
23	1.61	1.32	1.06	1.21
24	1.57	1.32	1.01	1.16
25	1.52	1.28	0.98	1.12
26	1.48	1.20	0.93	1.06
27	1.24	0.99	0.77	0.90
28	1.19	0.97	0.77	0.87
29	1.16	0.93	0.78	0.85
30	1.29	0.95	0.78	0.85
31	1.16	0.88	0.72	0.79

Receptor	Sc0: 2018 baseline	Sc1: Yr 4 without development	Sc2: Yr 4 with development	Sc3: Yr 6 with development
32	1.11	0.92	0.71	0.81
33	1.19	0.91	0.72	0.86
34	1.23	0.95	0.77	0.86
35	1.34	1.04	0.80	0.96
36	1.37	1.07	0.83	0.97
37	1.22	1.01	0.81	0.89
38	1.30	1.11	0.87	0.99
39	1.64	1.34	1.03	1.19
40	1.47	1.24	0.93	1.04
41	1.13	0.94	0.74	0.83
42	2.37	1.50	1.60	1.53
43	1.01	0.88	0.68	0.75
44	1.25	0.97	0.78	0.89
45	1.17	0.90	0.73	0.87
46	1.29	0.92	0.79	0.94
47	1.30	0.92	0.80	0.92
48	1.19	0.83	0.74	0.81

Receptor	Sc0: 2018 baseline	Sc1: Yr 4 without development	Sc2: Yr 4 with development	Sc3: Yr 6 with development
49	1.23	0.77	0.74	0.76
50	1.34	0.75	0.76	0.78
51	1.23	0.72	0.72	0.73
52	1.15	0.65	0.67	0.67
53	1.08	0.63	0.61	0.63
54	0.53	0.43	0.35	0.41
Max	2.42	1.87	1.60	1.60



## Appendix 7: Isopleths for Odour Exposure at Discrete Receptors

Figure: Odour Exposure Isopleth for Scenario 0 (baseline) and Scenario 1 (Year 4 without development)

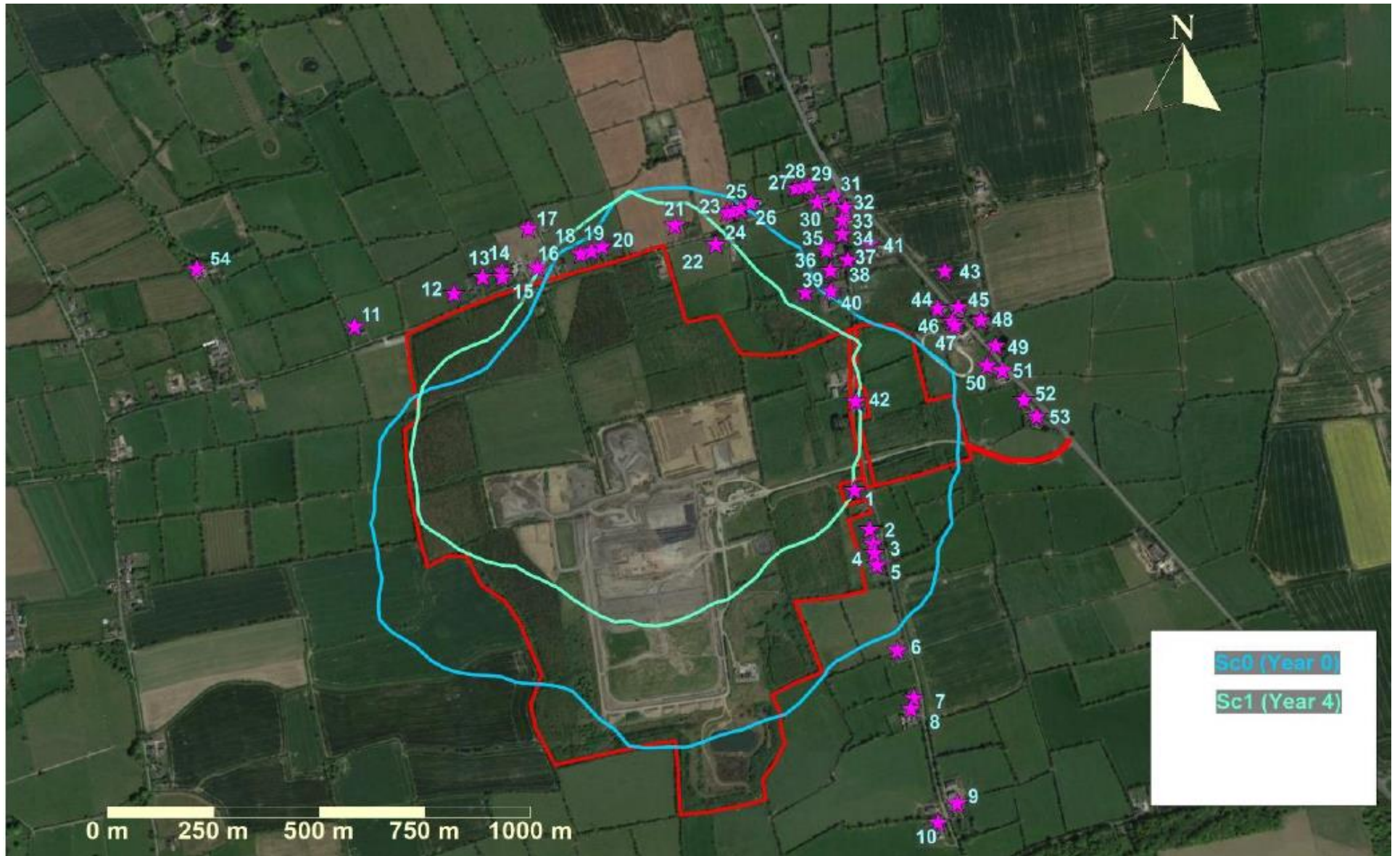




Figure: Odour Exposure Isopleth for Scenairo 1 (Year 4 without development) and Scenario 2 (Year 4 with development)

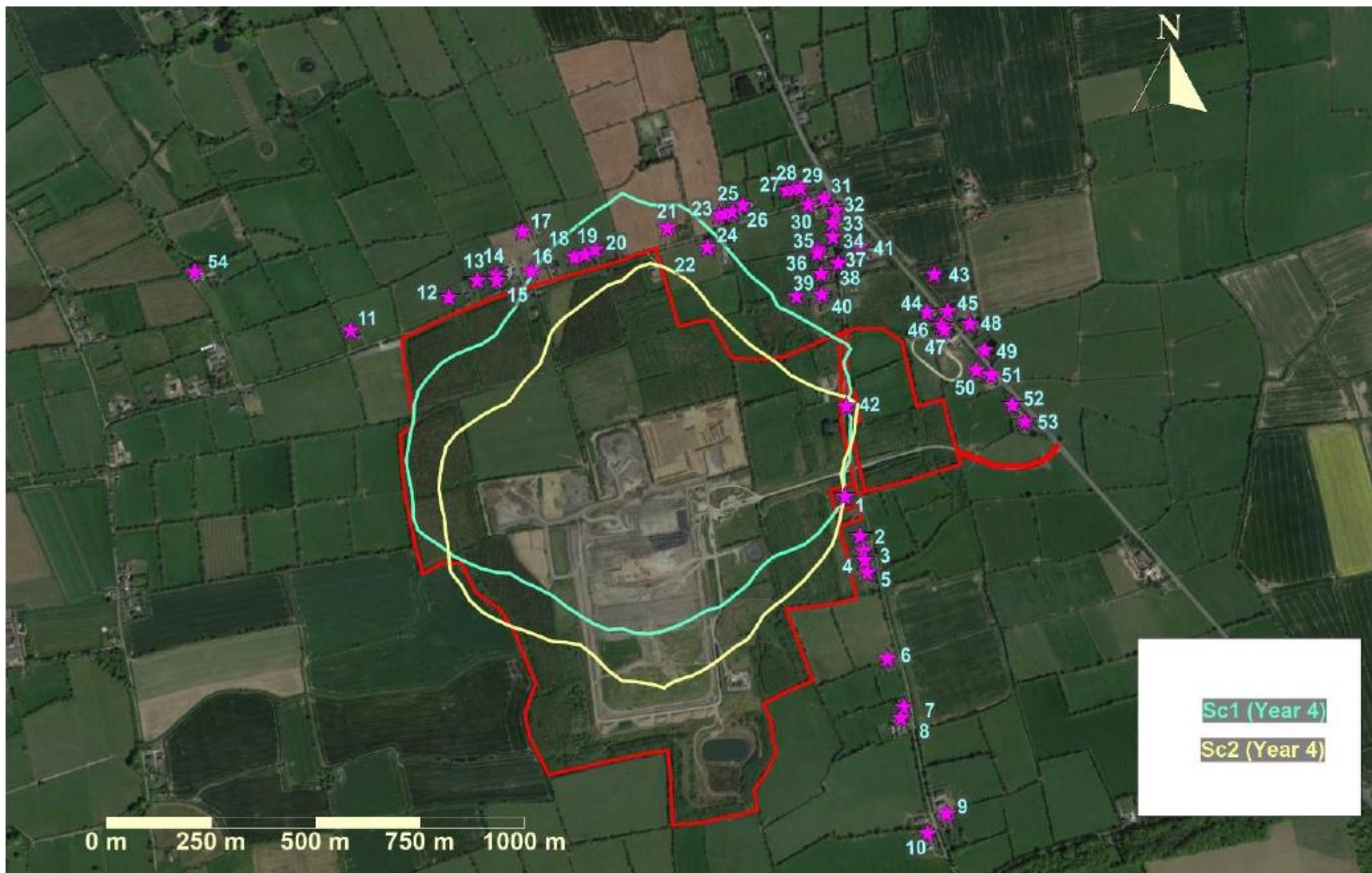
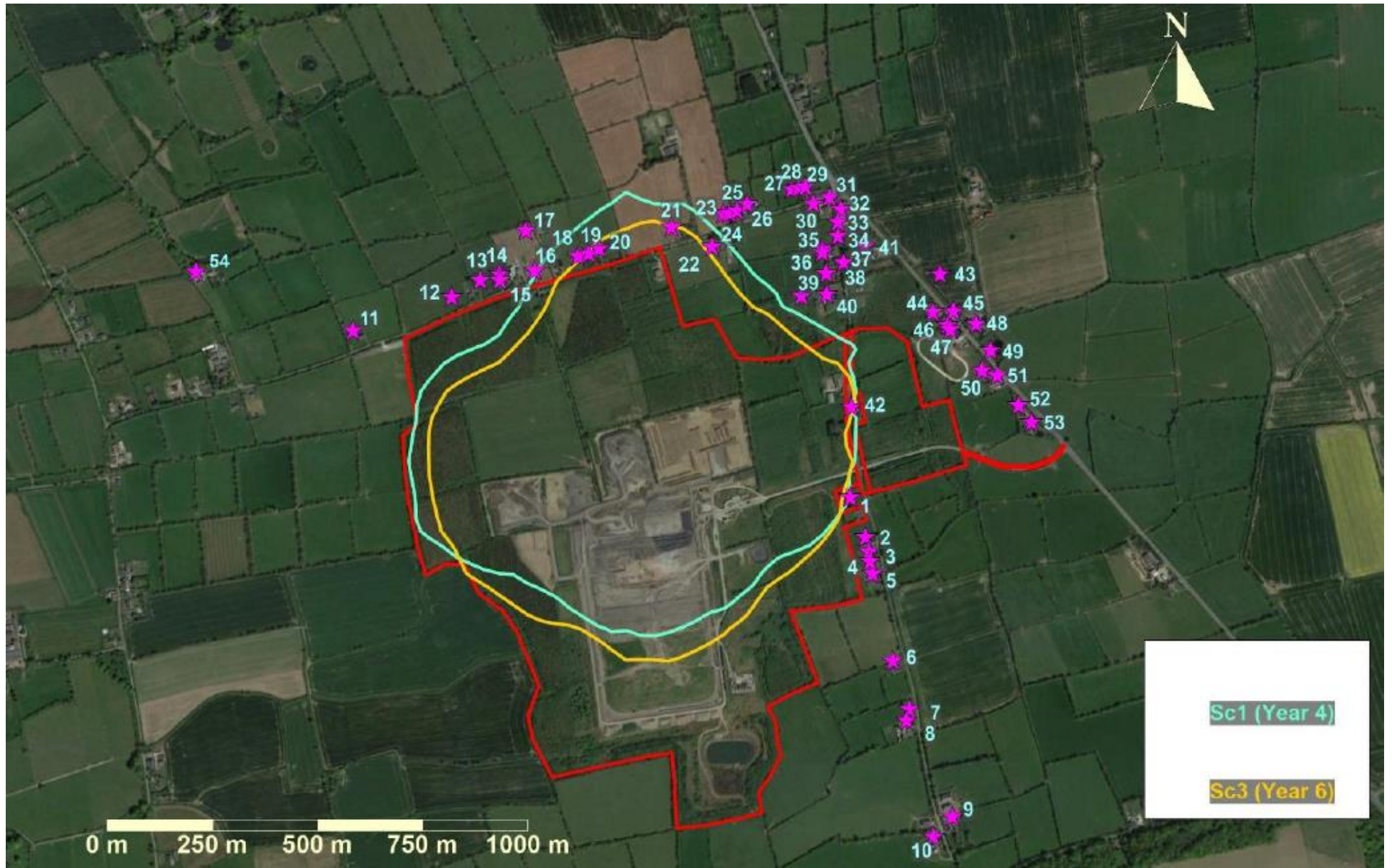




Figure: Odour Exposure Isopleth for Scenairo 1 (Year 4 without development) and Scenario 3 (Year 6 with development)

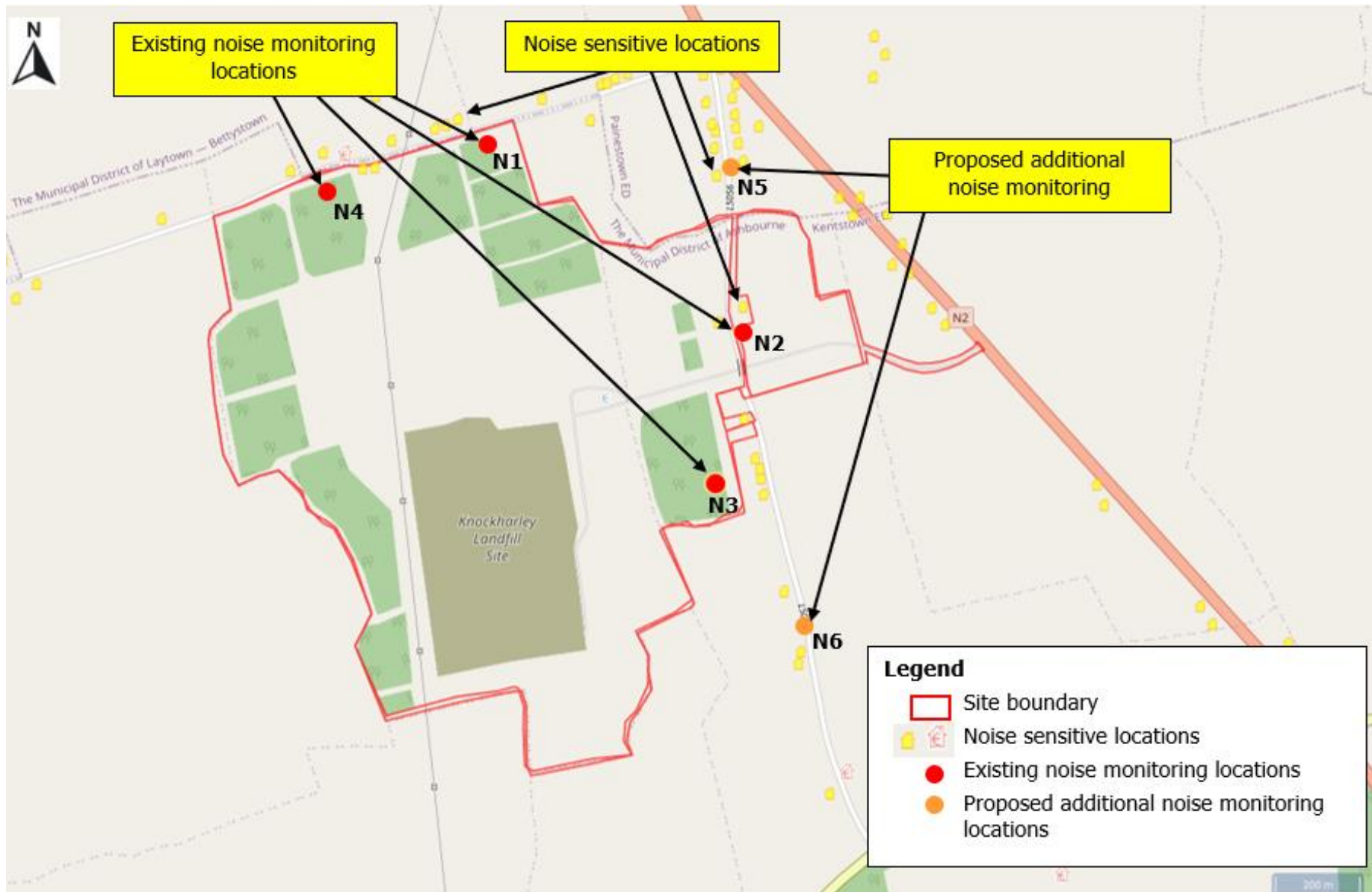




## Appendix 8: Surface Water Discharge Points



## Appendix 9: Existing and proposed noise monitoring locations



## Appendix 10: Appropriate Assessment

Site Code	Site Name	Qualifying Interests (* denotes priority habitat)	Conservation Objectives
004158	River Nanny Estuary and Shore SPA	<p><b>Birds</b></p> <p>A184 Herring Gull (<i>Larus argentatus</i>)  A140 Golden Plover (<i>Pluvialis apricaria</i>)  A137 Ringed Plover (<i>Charadrius hiaticula</i>)  A143 Knot (<i>Calidris canutus</i>)  A144 Sanderling (<i>Calidris alba</i>)  A130 Oystercatcher (<i>Haematopus ostralegus</i>)</p> <p><b>Habitats</b></p> <p>A999 Wetlands</p>	NPWS (2012) Conservation Objectives: River Nanny Estuary and Shore SPA [004158]. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht (dated: 21 <sup>st</sup> September 2012).

### Assessment

#### Emissions to Surface Water

There is a potential that surface water runoff from the installation could become contaminated from contact with leachate and waste. This potentially contaminated surface water could have an impact on the receiving surface water, which in turn could potentially have a significant effect on the European Site. Furthermore, there is a potential link between the surface water and groundwater in the area, therefore, any contaminated surface water could also have a potential impact on groundwater dependent qualifying interests.

#### *Mitigation*

- Condition 6 of the RD includes requirements for surface water run-off and management. It requires that all surface waters that have a potential to become contaminated through contact with the waste are physically segregated and managed separately. All contaminated surface water will be collected and tankered offsite along with leachate which is/will be collected and stored in lined lagoons/tanks.
- Condition 3 of the RD sets out the requirements for leachate management at the installation.
- Condition 5 of the RD requires that no specified emissions from the installation shall exceed the emissions limit values set out in Schedule B of the RD. Condition 6 and Schedule C of the RD sets out the monitoring requirements for emissions to water.
- Surface water emissions pass through an oil separator and are further abated in constructed wetlands. Continuous on-line monitoring is in place for pH, TOC and electrical conductivity and trigger values are established. In the event TOC exceeds the trigger value, a slam shut valve will close to prevent surface water discharging from site.
- Condition 2 of the RD requires a Construction and Environmental Management Plan. The plan is required to cover all aspects of construction and incorporate measures to mitigate the potential effects on the environment during construction phases. The plan shall include controls related to surface water management which has the potential to be impacted by silt and sedimentation run-off. Condition 3 of the RD also requires silt protection controls during construction stages.
- In relation to discharges to groundwater, the landfill cells are lined and the groundwater flow is predominately towards the south-east. Therefore, any groundwater emissions from the activity will not have a significant effect on the qualifying interests of the European Site.

### **Emissions to Air**

Landfill gas from the installation could have a potential impact on air quality, which in turn could have a potential impact on the air quality sensitive qualifying interests of the European Site.

#### *Mitigation*

- Condition 3 of the RD sets out the requirements in relation to landfill gas management. This Condition specifies the requirements for the landfill gas infrastructure to be maintained including the collection pipework and landfill gas flares. Schedule B and C also set emission limit values for air emissions and minimum monitoring frequencies.
- Condition 6 of the RD requires the licensee to maintain a programme for the identification and reduction of any diffuse emissions using an appropriate combination of best available techniques.

### **Noise**

Given the distance of the European Site to the Installation (approx. 17 km), the noise emissions from the activity will not impact on the European Site.

### **Potentials for Accidents to Arise**

There is a potential for accident and emergency situations arising from the activities of the installation. Such accident and emergency situations could potentially impact the qualifying interests of the European Site. The RD, as proposed, requires that the following controls are in place:

- Condition 9 of the RD requires the licensee, to ensure that a documented Accident Prevention Procedure is in place that addresses hazards on-site, particularly in relation to the prevention of accidents with a possible impact on the environment. Condition 9 of the RD also requires the licensee to have a documented Emergency Response Procedure in place that addresses any emergency situation on-site which should include provision for minimising the effects of any emergency on the environment.
- Condition 3 of the RD sets out the requirements for the management of tank, container and drum storage areas.
- Condition 11 of the RD specifies requirements for the licensee in the event of an incident.

<b>Site Code</b>	<b>Site Name</b>	<b>Qualifying Interests (* denotes priority habitat)</b>	<b>Conservation Objectives</b>
<b>002299</b>	<b>River Boyne and River Blackwater SAC</b>	<b>Habitats</b> 7230 Alkaline fens 91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)*  <b>Species</b> 1106 Salmon ( <i>Salmo salar</i> ) 1355 Otter ( <i>Lutra lutra</i> ) 1099 River Lamprey ( <i>Lampetra fluviatilis</i> )	NPWS (2021) Conservation Objectives: River Boyne and River Blackwater SAC [002299]. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage (dated 3 <sup>rd</sup> December 2021).

<b>Assessment</b>	The European Site is not located downstream of the surface water bodies adjacent to the installation. Also, the European Site is not located downgradient of the installation. Therefore, emissions from the activity will not have a significant effect on the qualifying interests of the European Site.		
<b>Site Code</b>	<b>Site Name</b>	<b>Qualifying Interests (* denotes priority habitat)</b>	<b>Conservation Objectives</b>
<b>001957</b>	<b>Boyne Coast and Estuary SAC</b>	<b>Habitats</b> 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)*	NPWS (2012) Conservation Objectives: Boyne Coast and Estuary SAC [001957]. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht (dated 31 October 2012).
<b>Assessment</b>	The European Site is not located downstream of the surface water bodies adjacent to the installation. Also, the European Site is not located downgradient of the installation. Therefore, emissions from the activity will not have a significant effect on the qualifying interests of the European Site.		
<b>Site Code</b>	<b>Site Name</b>	<b>Qualifying Interests (* denotes priority habitat)</b>	<b>Conservation Objectives</b>
<b>004232</b>	<b>River Boyne and River Blackwater SPA</b>	<b>Birds</b> A229 Kingfisher ( <i>Alcedo atthis</i> )	NPWS (2022) Conservation objectives for River Boyne and River Blackwater SPA [004232]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage (dated 12 <sup>th</sup> October 2022).

<b>Assessment</b>	The European Site is not located downstream of the surface water bodies adjacent to the installation. Also, the European Site is not located downgradient of the installation. Therefore, emissions from the activity will not have a significant effect on the qualifying interests of the European Site.		
<b>Site Code</b>	<b>Site Name</b>	<b>Qualifying Interests (* denotes priority habitat)</b>	<b>Conservation Objectives</b>
<b>004080</b>	<b>Boyne Estuary SPA</b>	<p><b>Birds</b></p> <p>A162 Redshank (<i>Tringa totanus</i>)  A140 Golden Plover (<i>Pluvialis apricaria</i>)  A142 Lapwing (<i>Vanellus vanellus</i>)  A143 Knot (<i>Calidris canutus</i>)  A169 Turnstone (<i>Arenaria interpres</i>)  A130 Oystercatcher (<i>Haematopus ostralegus</i>)  A141 Grey Plover (<i>Pluvialis squatarola</i>)  A156 Black-tailed Godwit (<i>Limosa limosa</i>)  A048 Shelduck (<i>Tadorna tadorna</i>)  A144 Sanderling (<i>Calidris alba</i>)  A195 Little Tern (<i>Sterna albifrons</i>)</p> <p><b>Habitats</b></p> <p>A999 Wetlands</p>	NPWS (2013) Conservation Objectives: Boyne Estuary SPA [004080]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht (dated 26 <sup>th</sup> February 2013).
<b>Assessment</b>	The European Site is not located downstream of the surface water bodies adjacent to the installation. Also, the European Site is not located downgradient of the installation. Therefore, emissions from the activity will not have a significant effect on the qualifying interests of the European Site.		

## Appendix 11: Relevant Legislation & Other CIDs/BREF/BAT documents relevant to this assessment

The following European instruments are regarded as relevant to this application assessment and have been considered in the drafting of the Recommended Determination.
Industrial Emissions Directive (IED) (2010/75/EU)
Environmental Impact Assessment (EIA) Directive (2011/92/EU as amended by 2014/52/EU)
Habitats Directive (92/43/EEC) & Birds Directive (79/409/EC)
Water Framework Directive [2000/60/EC]
Waste Framework Directive (2008/98/EC)
Groundwater Directive (80/68/EEC) and 2006/118/EC
Medium Combustion Plant Directive (EU) 2015/2193
Air Quality Directives (2008/50/EC and 2004/107/EC)
Energy Efficiency Directive (2018/2002/EU)
Environmental Liability Directive (2004/35/CE)
Landfill Directive (1999/31/EC as amended)

Commission Implementing Decisions	Publication Date
COMMISSION IMPLEMENTING DECISION of 12 November 2019 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration ((EU) 2019/2010)	December 2019
Horizontal BREF	Publication date
Reference Document on the Best Available Techniques on Emissions from Storage	July 2006
Reference Document on the Best Available Techniques for Energy Efficiency	February 2009
National BAT notes	Publication date
Final Draft BAT Guidance Note on Best Available Techniques for the Waste Sector: Landfill Activities	December 2011

## Appendix 12: Inclusion of Relevant BAT Conclusions and other BREFs

### A: Conclusions for Commission Implementing Decision for Waste Incineration, CID (EU) 2019/2010 (12 November 2019)

BAT No.	BAT Requirement	Condition/Schedule or Inclusion
1	Implement an environmental management system (EMS).	Incorporated into Condition 2.2.
2	Determine efficiencies related to incineration plant.	Not applicable.
3	Monitor key process parameters for emissions to water.	Monitoring of Treated Leachate as per Schedule C.
4	Monitoring of channelled emissions to air.	Not applicable.
5	Monitoring of channelled emissions to air from incineration plant during OTNOC.	Not applicable.
6	Monitor emissions to water from bottom ash treatment at specified frequencies and in accordance with EN Standards.	Monitoring of Treated Leachate as per Schedule C.
7	Monitor the content of unburnt substances in slags & bottom ashes at the incineration plant.	Not applicable.
8	Determine the POP content in output streams for the incineration of hazardous waste.	Not applicable.
9	Waste stream management at incineration plants.	Not applicable.
10	To improve the overall environmental performance of the bottom ash treatment plant, BAT is to include output quality management features in the EMS.	Incorporated into Condition 2.2 and Condition 11.
11	Incineration plant environmental performance.	Not applicable.
12 (a)	Reduce environmental risks associated with the reception, handling and storage of waste using impermeable surfaces with an adequate drainage infrastructure.	Condition 3.
12 (b)	Reduce environmental risks associated with the reception, handling and storage of waste using adequate waste storage capacity techniques.	Condition 3.
13	Storage and handling of clinical waste at incinerator.	Not applicable.
14	Environmental performance of waste incineration.	Not applicable.
15	Environmental performance of waste incineration.	Not applicable.
16	Environmental performance of waste incineration.	Not applicable.
17	Reduce emissions from waste incineration plant.	Not applicable.
18	Implementation of a risk based OTNOC management plan.	Not applicable.
19	Increase the resource efficiency of the incineration plant.	Not applicable.
20	Increase the energy efficiency of the incineration plant.	Not applicable.
21	Prevent diffuse/odour emissions from the incineration plant.	Not applicable.
22	Prevent diffuse volatile emissions from the incineration plant.	Not applicable.



23	Include the following dust emissions management features into the EMS: (a) Identification of diffuse emission sources and (b) implementation of appropriate actions and techniques to prevent or reduce diffuse emissions over a given time frame.	Incorporated into Condition 2.2. and Condition 3.
24	To prevent or reduce diffuse dust emissions to air from the treatment of bottom ashes, BAT is to use an appropriate combination of specified techniques.	Condition 3.
25	Channelled emissions to air from incineration plant.	Not applicable.
26	Reduce channelled dust emissions to air from enclosed treatment of slags and bottom ashes.	Not applicable.
27	Reduce channelled emissions from incineration plant.	Not applicable.
28	Reduce channelled emissions from incineration plant.	Not applicable.
29	Reduce channelled emissions from incineration plant.	Not applicable.
30	Reduce channelled emissions from incineration plant.	Not applicable.
31	Reduce channelled emissions from incineration plant.	Not applicable.
32	To prevent the contamination of uncontaminated water, to reduce emissions to water, and to increase resource efficiency, BAT is to segregate waste water streams and to treat them separately, depending on their characteristics.	Condition 3.
33	Reduce water usage and waste water at incineration plant.	Not applicable.
34	In order to reduce emissions to water from the storage and treatment of bottom ashes, BAT is to use an appropriate combination of specified techniques, and to use secondary techniques as close as possible to the source in order to avoid dilution.	Condition 3.
34	BAT-AELs for indirect emissions to a receiving water body.	Schedule B for Treated Leachate Limits
35	Handle and treat incinerator bottom ash separately from FGC.	Not applicable.
36	To increase resource efficiency for the treatment of slags and bottom ashes, BAT is to use an appropriate combination of specified techniques based on a risk assessment depending on the hazardous properties of the slags and bottom ashes.	Condition 3.
37	To prevent or reduce noise emissions, BAT is to use one or a combination of specified techniques.	Condition 6.

**B: Other BREFs, techniques and provisions in the Recommended Determination.**

<b>BAT Reference Document (BREFs)</b>	<b>Key BAT employed at the installation</b>	<b>Condition/Schedule or Inclusion</b>
Energy Efficiency 02.2009	<ul style="list-style-type: none"> <li>• Energy efficiency management, benchmarking and continuous improvement is incorporated into the EMS.</li> <li>• An energy efficiency audit is required at the installation.</li> </ul>	Incorporated into Condition 2.2, 3 and 7.

	<ul style="list-style-type: none"> <li>• Opportunities to optimise energy recovery are and will be carried out through the current utilisation of landfill gas and intended installation of solar panels for electricity generation.</li> </ul>	
Emissions from Storage 07.2006	<ul style="list-style-type: none"> <li>• Dust control measures relating to the storage of bulk solid materials (IBA and waste) including covering and moistening are incorporated at the installation. Regular visual inspections along with dust monitoring are also carried out. Additionally, IBA treatment will incorporate a roofed structure and optimised cell and IBA placement.</li> <li>• Cleaning of vehicle tyres is required leaving site and roads are cleaned.</li> <li>• Transfer and handling of liquids incorporates leak detection and repairs.</li> <li>• Liquid fuels and chemicals are/will be stored in closed tanks or containers and leachate in covered ponds with accident prevention measures in place.</li> <li>• Organisational measures and training and instruction of employees for operation procedures takes place at the installation.</li> </ul>	Incorporated into Condition 2.2, 3, 6 and 8.