


**This Report has been cleared for submission to the Board by Programme Manager, Warren Phelan.**

Signed: Warren Phelan

Date: 10th of March 2022

	<b>OFFICE OF ENVIRONMENTAL SUSTAINABILITY</b>
<b>REPORT OF THE TECHNICAL COMMITTEE ON REPRESENTATIONS MADE ON A DRAFT CERTIFICATE OF AUTHORISATION</b>	
<b>TO:</b>	Board of Directors
<b>FROM:</b>	Technical Committee Circular Economy Programme
<b>DATE:</b>	10th of March 2022
<b>RE:</b>	Representation on draft Certificate of Authorisation issued to <b>Fingal County Council</b> for a closed landfill at Barnageeragh Cove, Skerries, County Dublin. Certificate of Authorisation Register Number <b>H0167-01</b> .
<b>APPLICATION DETAILS</b>	
Type of facility:	Closed landfill as defined in the Regulations <sup>1</sup> .
Application received:	28 August 2020
Draft Certificate issued:	15 April 2021
First party representation received:	14 May 2021

## 1. Background to this report

The certificate of authorisation application from Fingal County Council relates to a closed landfill located in a former sand and gravel pit in Barnageeragh Cove to the north-west of the town of Skerries in Co. Dublin. The site is adjacent to a housing estate along the north-western boundary of the site while to the east is an Irish Water wastewater treatment plant (WWTP) which serves the Balbriggan Skerries Agglomeration (Licence Register No. D0023-01). The Barnageeragh Road runs along the north of the site and the Dublin-Belfast railway line borders the southern boundary, beyond which are agricultural fields. The landfill was operational from the 1950s – 1983 and covers an area of 1.4ha. Landfilled waste comprises of approximately 44,516 tonnes of municipal and construction and demolition (C&D) waste. The site is currently in private ownership and post remedial works, the owner intends to use the site as an open space which will consist of a multi-use games area (MUGA), car park, pathways, a cycleway and associated infrastructure.

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<sup>1</sup> Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008).

The Tier 1 risk assessment categorised the site as moderate risk (Class B), due to SPR linkages for landfill gas migration, and following Tier 2 and Tier 3 site investigations, this categorisation was revised to low risk by the applicant. The revision was based on the re-classification of the type of subsoil/bedrock material, through which landfill gas can migrate, on-site. However, owing to the type of material on-site, the Inspector considered that the moderate risk scoring for gas migration was more reflective and recommended that the risk category of the landfill remained as moderate risk. The pollutant linkages for the moderate risk classification are identified as:

- Human health exposure pathway of off-site lateral migration of landfill gas into nearby buildings (SPR 10); and
- Vertical landfill gas migration (SPR 11);

## **2. Consideration of the Representation**

This report considers one valid first party representation from Fingal County Council. The applicant has made four main points of representation relating to specific conditions of the draft certificate of authorisation (CoA) and three main points relating to the inspector's report. The main points of the representation are summarised below.

The representation should be referred to at all times for greater detail and expansion of particular points.

The Technical Committee (TC) comprising of Anne Lucey (Chair) has considered all the points raised in the representation and this report details the Committee's comments and recommendations following the examination of the representation.

### **2.1 Condition No. 3.1 (b) "Install a low permeability landfill cap..."**

The applicant requests that the requirement to install a cap over the grassed area of Area 1, in front of the adjacent houses numbered 27 – 32, is removed from the CoA. Refer to Appendix 1 for Site Map. The applicant considers that a cap for this area of the site is not a sustainable solution given the age of the waste and the environmental risks. Alternatively, if this request is not acceptable to the Agency, the applicant requests a reduced thickness of soil (subsoil and topsoil) of 0.5m in order to limit the depth of excavation required and the potential to cause significant disturbance to a national monument located in the grassed area.

The applicant also notes that the main waste body area of Area 1 already has a landfill capping system constructed.

#### Technical Committee's Evaluation:

The following aspects are noted by the Technical Committee in relation to this request:

- Waste within the grassed area of Area 1, as shown in Appendix 1, consists of a mix of C&D and municipal waste. Hazardous waste (identified as soil & stone containing hazardous substances) was also found in trial pits in the grassed area.
- Source-pathway-receptor linkages for leachate migration and drainage/runoff to all receptors are classified as low risk for the site.
- There is evidence of groundwater contamination resulting from the leaching of contaminants from the waste body into the groundwater and from there into surface water receptors.
- Soil leachate results for samples taken from the grassed area show exceedances of the Generic Assessment Criteria (GAC) for antimony, chloride, sulphate and total dissolved solids.
- The closed landfill lies within the Balrothery Groundwater Body (GWB Number: IE\_EA\_G\_043). The status of this groundwater body is good. The aquifer vulnerability

beneath the site is classified as high. The site is underlain by a poor aquifer in bedrock which is generally unproductive except for local zones (PI).

- The site is hydrologically connected to a number of European Sites.
- There is no identified impact from the site to private water wells or public water supplies.

In relation to the hazardous waste found within the grassed area, the Tier 2 and Tier 3 Assessment Report states that "the green area and the pavement provide an effective barrier to dermal contact and rainfall infiltration". However, in relation to rainfall infiltration, the TC considers that this can only be demonstrated effectively through monitoring the impact to groundwater within the area. In this context, the TC notes that groundwater borehole BH2, as per Appendix 2, is located at the edge of the grassed area and represents an upgradient borehole for the area and overall site. The nearest downgradient boreholes to BH2, are BH1 and BH3. However, these boreholes are located within the main waste body of Area 1 and cannot provide a downgradient representation of groundwater for the grassed area alone.

Taking account of the aspects noted above and the difficulties that capping may present in relation to the national monument, the TC recommends that an additional groundwater monitoring borehole is installed in the grassed area to assess the impact of the deposited waste on groundwater from this specific area. The borehole should be positioned downgradient of BH2 and in an optimum location to monitor groundwater from the area of maximum waste depth within the grassed area, as shown in drawing number MGE0755-RPS-01-XX-DR-C-DG0004. It is recommended that capping is carried out unless the applicant can demonstrate to the Agency that groundwater beneath the grassed area is not being impacted by the deposited waste, following groundwater monitoring for a period of 12 months. If required, the appropriate capping can then be determined in accordance with the EPA Landfill Manuals and a proposal submitted to the Agency for approval prior to installation.

The TC recommends that Condition No. 3.1(b) is amended into two parts, to take account of capping for the main waste body area of Area 1 and the groundwater monitoring and capping requirements for the grassed area of Area 1.

Reason for Decision:

The TC has reached its conclusion on the basis of the following consideration:

- In the interest of the protection of the environment from groundwater and surface water contamination.

**Recommendation:** Amend Schedule No. 3.1(b) to read as follows:

3.1(b) **(i)** Install a low permeability landfill cap, minimum 1m, with 1mm thick low permeability geomembrane having a hydraulic conductivity of less than or equal to  $1 \times 10^{-9} \text{m/s}$ ; The landfill cap shall be installed over the waste body, as shown on Drawing No. MGE0755-RPS-00-XX-DR-C-DG0001-02 (Revision F01 dated 13/11/20) titled 'Barnageeragh historical landfill site location map - contour map'.

**(ii) Groundwater monitoring should be carried out on a monthly basis from the existing monitoring borehole BH2 and a new borehole, installed within the grassed area and downgradient of BH2, for the parameters required under Condition 3.9(e). Following groundwater monitoring for a period of twelve months, and assessment of results, install an appropriate landfill cap over the grassed area opposite Houses No. 27 to No. 32, in accordance with the Agency's Landfill Manuals "Landfill Restoration and Aftercare", unless otherwise agreed by the Agency. Proposals on the design of the cap shall be submitted to the Agency for approval prior to installation.**

## **2.2 Condition No. 3.1(c) "Install passive gas venting system..."**

Condition 3.1(c) requires the installation of a passive gas venting system within a number of specified areas. The applicant contends that the installation of a gas venting system within Area 1 (outside of the existing capped area) and Area 2, as well as gas cut-off trenches, is excessive in terms of the risk posed from the landfill gas. The applicant makes a number of points and requests in relation to the requirements of Condition 3.1(c), as follows:

- A. Area 1: The applicant considers that the installation of 6m high passive vents in the grassed area of Area 1 will create a significant visual intrusion to the adjacent houses. The applicant requests that the Agency consider only conditioning the installation of a gas cut-off trench opposite the adjacent houses, "unless otherwise agreed with the Agency" and not the gas venting system.
- B. Area 2: The applicant contends that the installation of a passive gas venting system is excessive and unsustainable given the nature of the waste material (made ground) in this area. The applicant also states that the installation of 6m high gas vent stacks would preclude the development of the multi-use games area and associated works and landscaping. The applicant requests that the Agency consider only conditioning the installation of the passive gas venting system in the area along the boundary between Area 1 and Area 2, with 12 months of monitoring to be undertaken, and that a gas cut-off trench or similar may be installed in Area 2 following 12 months of monitoring.
- C. Any area outside of Area 1 and Area 2 where elevated gas concentrations were recorded in the Tier 2 assessment: The applicant requests that the Agency considers amending this condition to state that it is only required where, following 12 months of monitoring, it is demonstrated that elevated gas concentrations persist.
- D. Passive gas venting system elements: The applicant requests that the text of condition 3.1(c), listing the required elements of the gas system, is amended to include "unless otherwise agreed with the Agency" to provide the option to explore alternative solutions that may achieve the same goal. In this context, the applicant notes that virtual gas curtains may be an alternative to gas cut-off trenches which have the potential to create significant disturbance to local residents. The applicant further notes that any gas venting system will have to be designed to avoid the Irish Water sewer which traverses the site.

Technical Committee's Evaluation:

- A. In relation to point A. above, the Technical Committee acknowledges the visual intrusion 6m high passive vents may impose in the grassed area adjacent to the houses and therefore considers it appropriate to amend the condition to remove the 6m high requirement. This allows the applicant to install vents that are more suitable for the area. The TC also recommends amending the requirement (Condition 3.1(c)(i)) that the gas vent pipes incorporate cowls, as this may not be suitable for other vent designs.

The TC does not recommend removing the condition requiring the gas venting system in the grassed area but considers it prudent to incorporate "unless otherwise agreed by the Agency" into the overall condition to allow flexibility on the requirement. Following installation of the gas cut-off trench (or equivalent, as per point D above), gas monitoring can be completed as per condition 3.9(c) to determine if gas vents are required in the grassed area in addition to the gas cut-off trench. To support this, the TC also recommends that the following boreholes in Area 1 are included for gas monitoring under condition 3.9(c)(ii); BH2, BH3 and BH5.

Additionally, the TC recommends including the text "unless otherwise agreed by the Agency" in relation to the elements required for the gas venting system, including the gas cut-off trenches. The TC considers that this option will allow the applicant to submit alternative measures such as "virtual gas curtains" as outlined in point D above. Up to-date monitoring of landfill gas in and around the adjacent houses can then also be utilised to determine whether gas cut-off trenches are required between the waste body and adjacent houses.

- B. In relation to point B. above, the Technical Committee acknowledges that the nature and age of the waste material deposited in Area 2 (sand and gravel waste deposition activities with C&D waste found in two trial pit locations) is likely not to generate significant landfill gas emissions. However, monitoring results for Area 2 show that gas levels exceeding the trigger values for methane and carbon dioxide are being generated (1% v/v and 1.5% v/v, respectively). The TC further notes that exceedances for carbon dioxide, ranging from 6.6 – 20.9%, were recorded in all boreholes across Area 2 and exceedances for methane, ranging from 4.7 – 73.6%, were recorded in four Area 2 boreholes located close to the waste body in Area 1. The TC therefore considers that the need for gas venting cannot be discounted. However, the TC acknowledges that alternative solutions (or combination of solutions) such as a gas cut-off trench within parts of Area 2 may adequately vent and limit gas migration whilst also enabling the area to be utilised for the development of the proposed MUGA. Accordingly, the TC proposes to incorporate the requirement for 12 months consecutive monitoring to be undertaken prior to installing a gas venting system in Area 2. Additionally, it is proposed to increase the timeline requirement from six to 18 months, within the overall condition, to account for this additional monitoring. The TC does not recommend conditioning that the gas venting system is only installed along the boundary of Area 1 and Area 2 when taking account of the gas monitoring levels throughout Area 2 and considering the flexibility of the proposed inclusion of "unless otherwise approved by the Agency" into the overall condition for gas venting, as per section A. above. The TC also notes that an amendment to 6m high vents has already been proposed in section A. above.
- C. In relation to point C. above, the Technical Committee notes that carbon dioxide levels of 2.5% and 4.5%, above the trigger value of 1.5% v/v, were recorded in two shallow gas wells between the grassed area of Area 1 and the adjacent houses. Considering the proximity of these shallow wells to the houses, the TC does not recommend removing the requirement for venting in this area. The TC further notes that the condition is required "unless otherwise agreed by the Agency". Therefore, in the event that gas control measures in all of Area 1 are successful and it is demonstrated through monitoring that gas is no longer migrating to the

area adjacent to the houses, a proposal demonstrating that venting is not required can be submitted by the applicant to the Agency for approval.

D. In relation to point D. above, the Technical Committee has already recommended the inclusion of "unless otherwise approved by the Agency" in relation to the elements required for the gas venting system, as per section A. above. The TC also acknowledges that any gas venting system will have to be designed to avoid the Irish Water sewer which traverses the site.

E. The TC recommends Condition No. 3.1(c) is amended as outlined in the discussion above.

Reason for Decision:

The TC has reached its conclusion on the basis of the following consideration(s):

- In the interest of the protection of human health from potential migration of landfill gas off-site.
- In the interest of protecting the receiving environment in the event of an incident relating to landfill gas on-site.
- To provide for the recommended timeframe for the implementation of measures.

**Recommendation:** Amend Condition No. 3.1(c) to read as follows:

3.1(c) Install passive gas venting system in the following areas, **unless otherwise agreed by the Agency**, within **18** months of the date of grant of this Certificate of Authorisation:

- Area 1 where waste is deposited;
- In the made ground of Area 2, **following gas monitoring for a period of twelve consecutive months from the existing Area 2 boreholes**; and
- ~~Unless otherwise agreed by the Agency, a~~ Any area outside of the above, where elevated gas concentrations were recorded in the Tier 2 Assessment (>1.0% methane, >1.5% carbon dioxide).

The passive gas venting system shall include the following elements, **unless otherwise agreed by the Agency**:

- (i) Gas vent pipes for gas extraction. The gas vent pipes shall not be perforated above the ground level;
- (ii) Associated underground gas collection pipe(s);
- (iii) Gas cut-off trench in the following areas:
  - Between the waste body in Area 1 and Houses No. 25 to No. 32 adjacent to Area 1;
  - If required by the Agency, following gas monitoring for a period of twelve months as required under Condition 3.9(c), between the waste body in Area 1 and House No. 52; and
  - If required by the Agency, following gas monitoring for a period of twelve months as required under Condition 3.9(c), between the made ground in Area 2 and Houses No. 24 to No. 25.

The gas cut-off trench shall include the following elements:

- The base of the gas cut-off trench shall be constructed at the maximum depth of the deposited waste; and
- The gas cut-off trench shall be filled with gravel and have a high-density polyethylene (HDPE) liner installed on the houses side of the gas cut-off trench, unless otherwise agreed by the Agency.

Amend Condition No. 3.9(c)(ii) to read as follows:

3.9(c)(ii) The existing monitoring boreholes BH1, **BH2, BH3**, BH4, **BH5**, BH7, BH12, BH14, BH15, BH16, BH17, GSO1, GS02, GS03 and GS04;

### **2.3 Condition No. 3.6 "...install an engineered landfill cap in Area 2, if required by the Agency..."**

The applicant states that the installation of a cap will serve no significant purpose over Area 2 and requests that the Agency considers deleting this condition from the final CoA. The applicant further states that the waste in Area 2 can be largely characterised as soil and stones and taking a worse-case scenario into consideration, Area 2 could be deemed an inert landfill. The applicant considers that the combination of landscaping already in place and the proposals for the multi-use games area will effectively meet the requirement for inert landfill capping as set out in the relevant EPA Landfill Manual. The applicant also notes that Condition 3.6 will delay completion of the MUGA works for at least 12 months if not longer.

#### Technical Committee's Evaluation:

The following aspects are noted by the Technical Committee in relation to this request:

- Source-pathway-receptor linkages for leachate migration and drainage/runoff to all receptors are classified as low risk for the site.
- Area 2 was subject to sand and gravel extraction and deposition activities in the past and site investigations show that the area is composed of 2 – 5.5m of sandy gravelly silt/clay with cobbles and 1-1.5m of sand overlying 1m of clay on gravelly sand.
- C&D waste was found in two trial pit locations.
- Mineral oil and TPH (Total Petroleum Hydrocarbons) were detected in 1 of a total of 4 soil samples taken from Area 2. Cadmium was also detected in one sample.
- There were no exceedances of the Generic Assessment Criteria (GAC) in the soil leachate samples taken from Area 2. Soil leachate results are within the Waste Acceptance Criteria limits for an inert landfill.
- Groundwater samples in Area 2 exceeded relevant assessment criteria /Threshold Values (EU Environmental Objectives (Groundwater) (Amendment) Regulations 2016) for several parameters: ammoniacal nitrogen, chloride, potassium, iron and manganese on multiple occasions. There were some exceedances for selenium, mercury and arsenic and one exceedance event for nickel, aluminium, antimony, arsenic and boron.

The TC acknowledges that Area 2 may not be impacting groundwater quality to the same extent as Area 1 but nonetheless the area is contributing to a deterioration in groundwater quality as evidenced by the monitoring results. The TC also notes that Condition 3.6 only requires the installation of the cap *if required by the Agency* following monitoring (stated as gas monitoring) for a period of 12 months. The TC considers this to be a flexible and prudent option to ensure that the cap is only installed if needed. Furthermore, the condition also requires proposals on the

design of the cap to be submitted to the Agency for approval prior to installation, which will allow the applicant to incorporate aspects of the existing landscaping and MUGA proposals into the landfill cap design if appropriate.

The TC recommends that Condition 3.6 is retained in the CoA but amended to more appropriately refer to leachate and groundwater rather than gas monitoring.

Reason for Decision:

The TC has reached its conclusion on the basis of the following consideration:

- In the interest of the protection of the environment from leachate migration to groundwater and surface water.

**Recommendation:** Amend Condition No. 3.6 to read as follows:

3.6 The local authority shall, following **leachate and groundwater** monitoring for a period of twelve months from date of grant of this Certificate of Authorisation, as required under Condition **3.9(b) and 3.9(e)**, install an engineered landfill cap in Area 2, if required by the Agency. Proposals on the design of the cap shall be submitted to the Agency for approval prior to installation.

**2.4 Condition No. 3.16 "There shall be no planting of trees over the capped areas of the site".**

The applicant requests that the Agency considers deleting this condition from the final CoA owing to the benefits of tree planting in public amenity areas and in the design of green spaces. The applicant references the minimum requirements of soil depth for tree planting from the EPA Landfill Manuals for inert landfills and non-inert landfills where a synthetic barrier is utilised. The specification of the existing cap at the site is detailed and indicates that it meets the requirement for non-inert landfills.

Technical Committee's Evaluation:

The Technical Committee acknowledges the benefits of tree planting outlined by the applicant and, taking account of the planned use of the site as a public space, considers it appropriate that tree planting is not prohibited by the CoA. The TC also notes the references in relation to tree planting from the EPA Landfill Manuals and considers it appropriate that the guidance is utilised to ensure that any tree planting carried out does not result in a breach of the capping system. It is therefore recommended that the condition is amended to take account of the EPA Landfill Manuals guidance in order to protect the integrity of the landfill cap and to carry out repairs in the event breaches occur.

Reason for Decision:

The TC has reached its conclusion on the basis of the following consideration:

- In the interest of the protection of the remediation measures put in place to safeguard the environment.



**Recommendation:** Replace Condition No. 3.16 with the following:

**3.16 Tree planting shall be carried out in accordance with the Agency's Landfill Manuals "Landfill Restoration and Aftercare" in order to protect the integrity of the landfill cap. Repairs shall be carried out on any identified breaches.**

### **3. Comments on Inspector's Report by Applicant:**

The applicant requests that the Agency clarifies and/or amends a number of statements within the inspector's report as follows:

- Page 3: "Hazardous waste was also deposited across the entire waste body in Area 1, as shown in Figure 3". The applicant considers that this statement could be misleading to readers not familiar with the report details and references from the application that hazardous waste was detected within 10 of 41 soil samples.
- Page 7: "The sampling results show that leachate is typical of leachate generated in a non-hazardous landfill with the exception of ten soil samples within Area 1 that returned a hazardous classification. The applicant assigned a waste code of 17 05 03\* for these samples: soil and stones containing hazardous substances". The applicant considers that this statement could be misleading to readers and references from the application that results for landfill WAC (waste acceptance criteria) testing exceed inert limits but not non-hazardous limits. The applicant further states that the results of WAC testing (leachate) and soil testing should not be conflated.
- Page 13: "Accordingly, it is considered that the Moderate Risk scoring for lateral and vertical gas migration, as stated in Tier 1 assessment, is reflective of the actual conditions on site. It is therefore recommended that the risk category of the landfill remains as Moderate Risk (Class B) due to the risk for lateral and vertical gas migration." The applicant states that a highly conservative approach based on peak gas concentrations, rather than average concentrations, was taken with the assessments therefore, the low to very low risk from landfill gases is representative of the conditions measured on-site.

#### Technical Committee's Evaluation:

The Technical Committee wish to clarify that any representation made to the Agency in relation to a closed landfill application, can only be made to the draft certificate of authorisation, as approved by the Agency. Therefore, the points raised by the applicant in relation to the inspector's report have been taken into consideration when evaluating representations in this Technical Committee Report but are not discussed in detail in this report.

### **4. Appropriate Assessment – Technical Committee Review**

The TC has reviewed the Inspector's Appropriate Assessment in the Inspector's Report and, taking into account all representations received, and the content of this TC report, the TC is satisfied that the Inspector's Report provides an adequate examination and evaluation of the effects of the activity on the European Sites concerned, Skerries Islands SPA (Site code: 004122), Rockabill to Dalkey Island SAC (Site code: 003000), Rockabill SPA (Site code: 004014), River Nanny Estuary and Shore SPA (Site code: 004158), Boyne Coast and Estuary SAC (Site code:

001957), Boyne Estuary SPA (Site code: 004080), Lambay Island SAC (Site code: 000204), Lambay Island SPA (Site code: 004069), Rogerstown Estuary SAC (Site code: 000208), Rogerstown Estuary SPA (Site code: 004015), Malahide Estuary SAC (Site code: 000205) and Malahide Estuary SPA (Site code: 004025), in the light of their conservation objectives.

The TC notes that updated Conservation Objectives have been issued by the National Parks and Wildlife Service for European Site(s), Skerries Islands SPA (Site code: 004122), Lambay Island SPA (Site code: 004069), as per Table 1 below since completion of the Inspector's Report. These updated Conservation Objectives have been reviewed and considered and the TC is satisfied that the Inspector's Report provides an adequate examination and evaluation of the effects of the activity on the European Sites concerned, in light of their updated conservation objectives.

<b>Table 1. Updated Conservation Objectives</b>
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NPWS (2021) Conservation objectives for Skerries Islands SPA [004122]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
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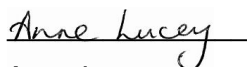
NPWS (2021) Conservation objectives for Lambay Island SPA [004069]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
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## 5. Overall Recommendation

It is recommended that the Board of the Agency grant a certificate of authorisation to the applicant

- (i) for the reasons outlined in the draft certificate of authorisation and
- (ii) subject to the conditions and reasons for same in the draft certificate of authorisation, and
- (iii) subject to the amendments proposed and the reasons set out in this report.

Signed



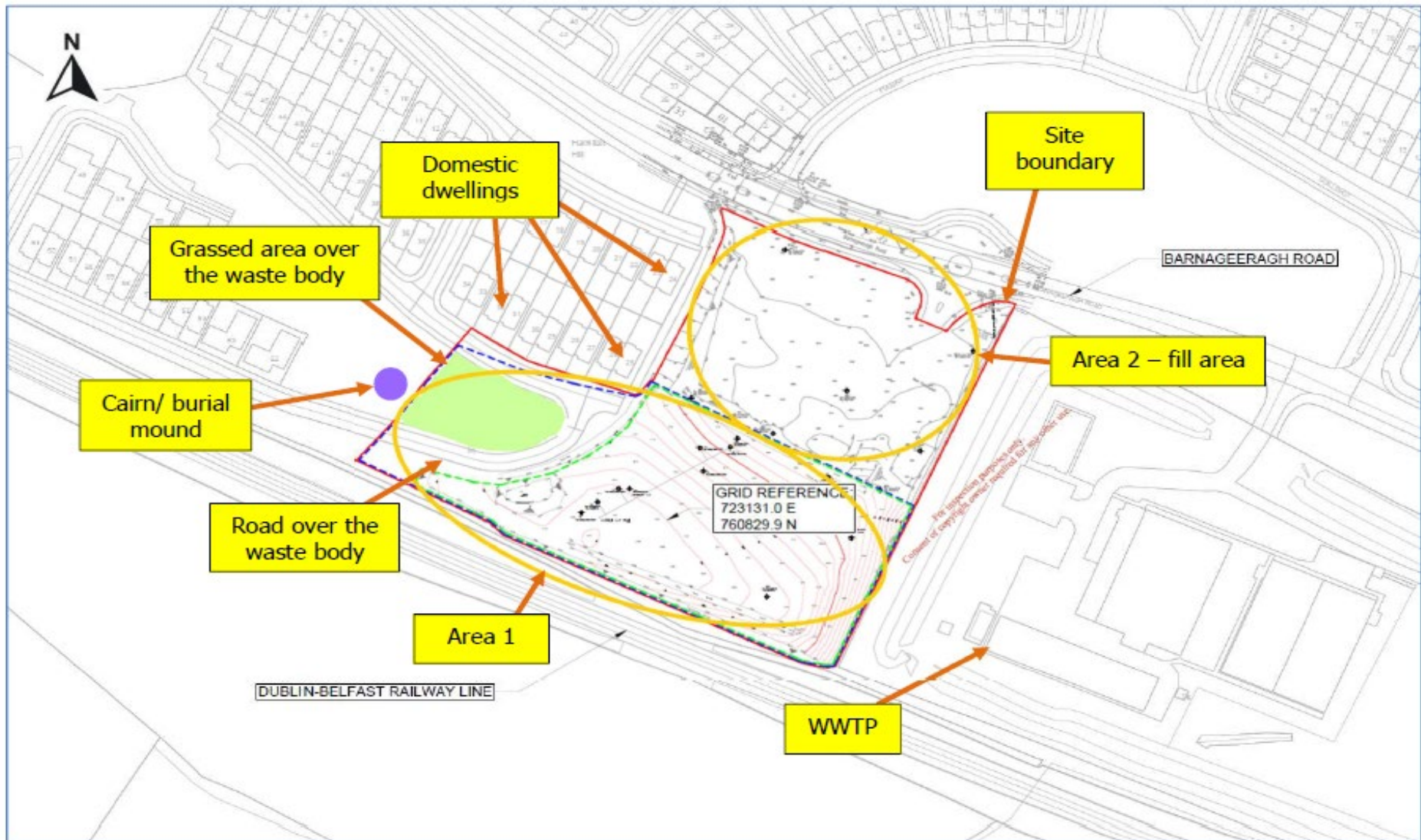
Anne Lucey

Inspector

for and on behalf of the Technical Committee

Date 21 February 2022

**Appendix 1: Site Map Showing Waste Areas**



## Appendix 2: Site Borehole and Trial Pit Locations

