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

Signed: Warren Phelan **Date:** 25 August 2022

OFFICE OF ENVIRONMENTAL SUSTAINABILITY

REPORT OF THE TECHNICAL COMMITTEE ON REPRESENTATIONS MADE ON A DRAFT CERTIFICATE OF AUTHORISATION	
TO:	Board of Directors
FROM:	Technical Committee Circular Economy Programme
DATE:	01 September 2022
RE:	Representation on draft Certificate of Authorisation issued to Kildare County Council for a closed landfill at Greenhills, Athy, Co. Kildare. Certificate of Authorisation Register Number **H0208-01**

APPLICATION DETAILS	
Type of facility:	Closed landfill as defined in the Regulations[1].
Application received:	9 October 2020
Draft Certificate issued:	22 July 2021
First party representation received:	20 August 2021

1. Background to this report

The site is located within the townlands of Athy and Townparks (Narragh and Reban West), 150m north of the N78 road in the centre of Athy town and covers an area of 4.09ha. A sports and leisure facility and associated carpark have been built on the site which is surrounded by an open spaced grassed amenity area. There is an Irish Water water main crossing under the site. There are residential properties immediately adjacent to the western boundary of the site, with the closest property located 15m from the site boundary. A shopping centre and carpark adjoins the south-eastern boundary of the site. The River Barrow flows immediately adjacent to the eastern boundary of the site and there is a school and a number of residential properties located on the

[1] Waste Management (Certification of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008 (S.I. No. 524 of 2008).

eastern bank of the river. A field with football pitches is located to the north of the site. The landfill was operational from 1980 – 1985 and comprises of approximately 68,040 tonnes of municipal solid waste (MSW), construction and demolition waste (C&D), commercial and industrial waste. The extent of the waste body is 1.62 ha with waste deposited in a few areas within the site.

The River Barrow and River Nore SAC (site code:002162) is located immediately adjacent to the eastern boundary of the landfill site.

Post remedial works, Kildare County Council intends to continue to use the site as an open space grassed amenity and a sports and leisure facility.

The risk assessment has categorised the site as moderate risk (Class B) with the pollutant linkages identified as:

- Migration of leachate to private wells (SPR3);
- Migration of leachate into Groundwater Protected Areas (GWDTE) (SPR4);
- Migration of leachate to the underlying aquifer (SPR5);
- Migration of leachate to public water supplies (SPR6); and
- Migration of leachate, via groundwater migration, to surface water bodies (SPR7).

2. Consideration of the Representation

This report considers one valid first party representation from Kildare County Council in relation to a number of requirements set out in the draft certificate of authorisation (CoA) which 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 Michelle Reddy (Chair) has considered all the issues 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, minimum 1m, with 1mm thick low permeability geomembrane, or equivalent, to achieve a hydraulic conductivity of less than or equal to 1 x10^{-9} m/s. The cap shall be installed over all areas where waste is deposited excluding the hardstanding areas".

The applicant states that the existing capping material encountered during the site investigations was identified as brown gravelly clay with a thickness of 0.5 to 1.1m and a low permeability of 2.3x10^{-8} m/s. The applicant contends that the low permeability of the current capping material overlying the imported material would impede rainfall infiltration and therefore reduce the generation of leachate. The applicant notes that the Environmental Risk Assessment (ERA) carried out states that any remedial measures are proposed depending on the results of the Qualitative Risk Assessment, which concluded that no landfill cap was deemed necessary or required.

The applicant contends that "any potential environmental risk to the underlying aquifer or potential receptors could be managed by the proposed monitoring of leachate monitoring boreholes, groundwater monitoring boreholes and the River Barrow as specified in Condition 3.8 of the draft CoA".

Technical Committee's Evaluation:

It is considered that rainwater ingress is not being prevented by the existing cover sufficiently enough to reduce the generation of leachate. The TC considers that the existing cap does not achieve the required hydraulic conductivity standard ($1x10^{-9}$m/s) due to the nature and variable depth (0.5 to 1.1m) of the existing material. The existing material, at a permeability of $2.3x10^{-8}$m/s, will not prevent rainwater ingress to the standard required and will lead to an increased volume of leachate being generated.

The TC notes that the risk assessment categorised the site as moderate risk in relation to the migration of leachate into the aquifer, private wells, public water supplies, groundwater and subsequently, into surface water bodies. Leachate with high nitrogen and ammoniacal nitrogen concentrations has the greatest potential to adversely impact upon surface waters and groundwaters. Ammoniacal nitrogen concentrations ranged from 6.06mg/l N at leachate monitoring location L1 to 40.56 mg/l N at leachate monitoring location L3, which when compared, exceed the maximum groundwater regulation value of 0.065mg/l and surface water regulation of 0.040mg/l.

The TC further notes that a number of other parameters (including BOD, manganese, potassium & PAHs) in the landfill leachate also exceeded relevant standards; the leachate sampling results obtained from L1 and L3 show that the concentration of manganese 3,546 µg/l (L1), 2,425 µg/l (L3) and potassium 8.7 mg/l (L1), 24.7 mg/l (L3) exceeded the guideline values of 0.05mg/l and 5 mg/l respectively, when compared to the EPA publication 'Towards setting guideline values for the protection of groundwater in Ireland-Interim Report' 2003. Biochemical Oxygen Demand (BOD) concentrations ranged from 16mg/l (L1) to 24mg/l (L3) which also exceeded the relevant surface water regulation value of 2.2mg/l.

Leachate sampling results also show elevated polycyclic aromatic hydrocarbons (PAHs), at L1 and L3 including, but not limited to fluoranthene, benzo(bk)fluoranthene and benzo(ghi)perylene in the landfill leachate. The leachate sampling results obtained show that the concentrations of fluoranthene (1.7µg/l (L1), 17.4 µg/l (L3)) exceeded the environmental quality standard (EQS) of 0.0063 µg/l for groundwater and the concentration of benzo(bk)fluoranthene (2 µg/l (L1), 22 µg/l (L3)) and benzo(ghi)perylene (0.8µg/l (L1), 10.5 µg/l (L3)) exceeded the EQS of 0.075 µg/l for surface water.

The TC notes that there is limited data available on the impacts of the leachate to groundwater, as the downgradient well is not located in a position to assess the impact of deposited waste. It is also noted that the available surface water monitoring results (excluding PAHs, as the analytical limit of detection appears to be above the EQS) show that the landfill is not having a significant impact on downstream water quality. However, the closed landfill is located in a regionally important aquifer and is within a groundwater source protection zone. The aquifer vulnerability is determined as moderate and there are a number of private water boreholes located east of the Barrow River, which borders the site, and which may be impacted by groundwater which flows into the Barrow.

Taking account of the leachate monitoring results and the potential impact to the underlying aquifer, the TC considers, that the existing capping material will not impede rainfall infiltration and the generation of leachate sufficiently. The TC therefore recommends no change to Condition No. 3.1 (b).

Furthermore, the TC considers that the monitoring required under Condition 3.8 provides information to assess the impacts of the closed landfill on the underlying aquifer and potential

receptors. However, the monitoring activities will not prevent leachate being generated and in this regard cannot be used to proactively manage the environmental risk identified.

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 and human health from leachate migration to groundwater, surface water, private wells and public water supplies.

Recommendation: No change

2.2 Condition No. 3.1 (c) "Install Gas management system in all areas where waste is deposited within six months of the date of grant of this Certificate of Authorisation…"

The applicant states that "the very low flow rates and VOC monitoring surveys on and off-site and within the building demonstrated that the imported material is not actively generating landfill gas and that it is therefore not migrating vertically or laterally and would not affect any potential receptors (on or off-site)". The applicant further states "the linkages of most concern in the preliminary conceptual site model includes the risk of landfill migration to off-site receptors (SPR10) and the risk of landfill gas migration to onsite receptors (SPR11)". The applicant contends that "the observed landfill gas concentrations do not pose a risk to human health or the environment and that the pollutant linkages SPR10 and SPR11 are no longer valid" and that "a gas venting system is not deemed necessary for the site".

Technical Committee's Evaluation:

The TC notes that the Tier 3 assessment determined the overall risk score for the closed landfill as low due to the risk of migration of landfill gas to off-site receptors i.e. the shopping centre and residential houses (SPR10) and the risk of landfill gas migration to onsite receptors i.e. the sports and leisure facility (SPR11). It is further noted that landfill gas is still being generated within the waste body as demonstrated by methane levels detected at monitoring points L1 (3.2% v/v), which is located only 15m from the sports and leisure facility, and L3 (20.4% v/v) which is located 60m south from the sports and leisure facility, and carbon dioxide levels measured at L1, L2, L3 (11.6% v/v, 12.7% v/v and 12% v/v). The TC also notes that the risk assessment stated that very low gas flow was detected in the gas monitoring locations (maximum gas flow rate recorded at well GW2 at 0.2l/h). However, it is considered that landfill gas is migrating outside the waste body as evidenced by methane levels exceeding the trigger value of 1% v/v at location GW1 (1.9%v/v) and carbon dioxide levels exceeding the trigger value of 1.5% v/v, at location GW2 (3.5%), as shown in Figure 1 & 2 of the Appendix. This poses a potential risk to the sports and leisure facility and off-site receptors and needs to be managed.

Also, once the waste body has been capped, the pressure caused by the cap may result in increased lateral movement and flow of gas towards the sports and leisure facility and off-site receptors. This may result in further exceedances of carbon dioxide trigger levels (1.5% v/v) and methane trigger levels (1.0% v/v) outside the waste body. The TC therefore considers it necessary that Condition 3.1 (c) is retained. In the absence of proposed remedial actions for landfill gas by the applicant, a gas venting system is deemed appropriate to manage landfill gas

at the reported levels and prevent lateral gas migration into the sports and leisure facility and adjacent buildings.

Reason for Decision:

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

- In the interest of the protection of the environment and human health from potential migration of landfill gas off-site and to on-site receptors.

Recommendation: No change

3. 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; River Barrow and Nore SAC (site code:002162) and Ballyprior Grassland SAC (site code:002256) in light of their conservation objectives.

4. 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 reasons set out in this report.

Signed

Michelle Reddy

Date: 25 August 2022

Michelle Reddy

Inspector

for and on behalf of the Technical Committee

Appendix:

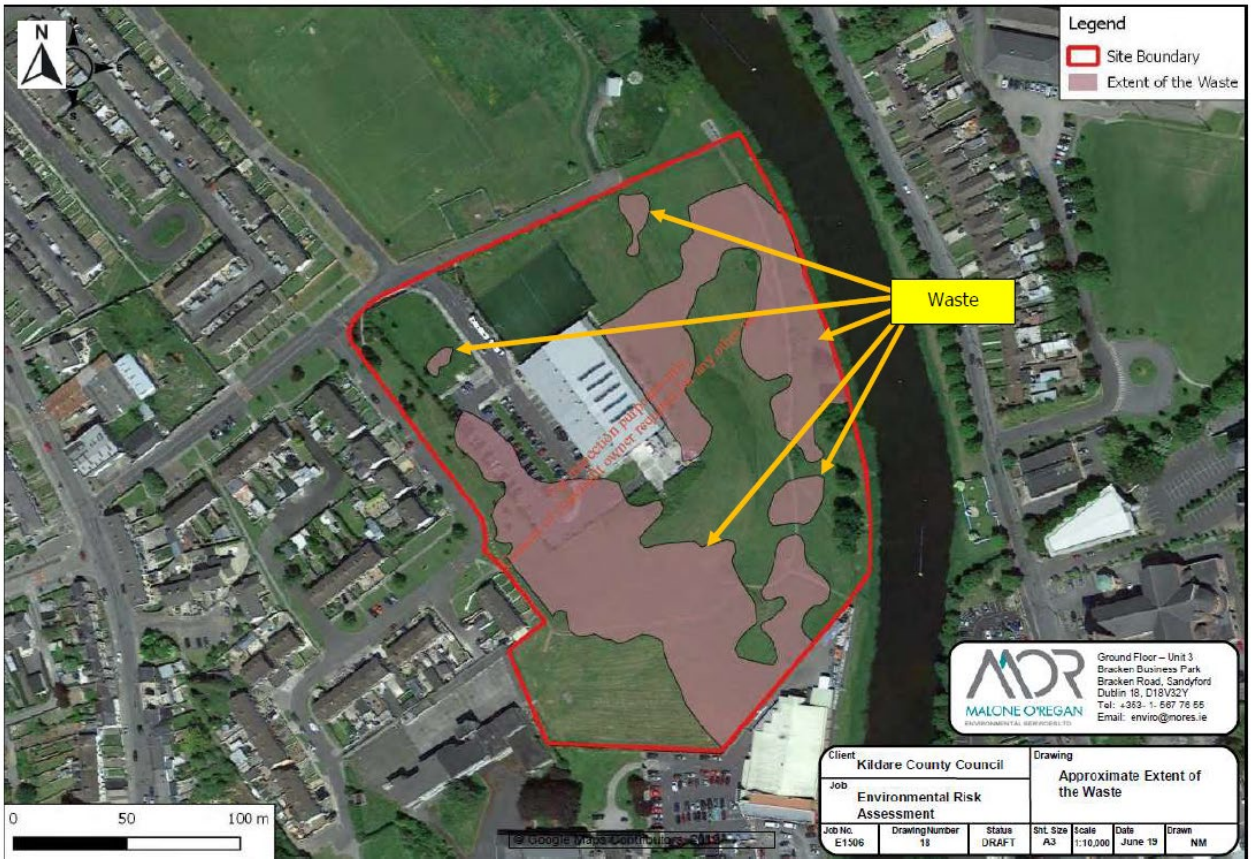

Figure 1: Approximate extent of deposited waste

Figure 2: Monitoring and trial pit location points