

This Report has been cleared for submission to the Director by Warren Phelan, Programme Manager, on 17 June 2024.

Signed:  Date: 18 June 2024



**OFFICE OF ENVIRONMENTAL
SUSTAINABILITY**

**INSPECTOR'S REPORT ON AN APPLICATION
FOR A CERTIFICATE OF AUTHORISATION
FOR A CLOSED LANDFILL**

TO:	David Flynn, Director	
FROM:	Seán Byrne, Inspector	Circular Economy Programme
DATE:	18 June 2024	
RE:	Application by Kerry County Council for a Certificate of Authorisation for a closed landfill at Dingle Historic Landfill, Kilfountan, Dingle, Co. Kerry . Certificate of Authorisation Register Number H0203-01 .	

1. Application details

Type of facility:	Closed landfill as defined in the Regulations ¹ .
Original site ownership	Kerry County Council
Current site ownership	Private ownership.
Operator of closed landfill	Kerry County Council has operated this site since c.1980.
Proposed use post remedial works	The site is intended to be used for agricultural purposes.
Risk category of closed landfill:	High risk (class A) due to <ul style="list-style-type: none">leachate migration into surface waters, through surface water pathway (SPR8). The principal risk identified on the site is the risk from migration of leachate into the Kilfountan river.
Historic landfill register number:	S22-02662
Grid Reference	42598 E and 101900 N (ING)
Application received:	17 September 2021

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

AA screening determination:	20 June 2022
Regulation 7(4) notice:	20 June 2022
Additional information received:	Regulation 7(4) Reply received on 13 December 2022.
Name of Qualified Person:	Chris Cronin, Credentials provided by Engineers Ireland.
EPA site inspection:	No inspection was required.

2. Information on the closed landfill

Location of facility	The closed landfill site is located in the townland of Kilfountain approximately 1.8km north-west of Dingle town. The location of the landfill site is shown in Figure 1.
Period of landfilling	c.1980 to 1996.
Surrounding area	The site is primarily surrounded by agricultural fields, with some industrial usage and sparse single dwellings, as shown in Figure 2. Agricultural lands are located to the north and south of the site. The site is bounded along the south-western boundary by the Kilfountain river (waterbody code: IE_SW_22M030400, segment code: 22_1196) and by the R559 regional road along the north-eastern site boundary. The Milltown River (waterbody code: IE_SW_22M030400, segment code: 22_4629) is located approximately 174m east of the site. The closest dwellings are located 40m north and 200m south-east of the site.
Area of the closed landfill	The site covers an area of approximately 2.6 ha.
Quantity of waste at the facility	Approximately 105,728 tonnes (75,520 m ³).
Characterisation of waste deposited	The waste comprises of predominantly municipal solid waste, domestic waste, commercial and industrial (C&I) waste and construction and demolition (C&D) waste. Waste was deposited in a single infill area estimated to be 23,600m ² as shown in Figure 3.

3. Site investigations

<p>Current condition and appearance of closed landfill:</p>	<p>The surface of the closed landfill site is slightly raised above ground level (from 8 to 13m AOD). The site slopes to the north, south and east at its boundaries. There are surface water land drains along the north-western and south-eastern boundaries of the site which run into the Kilfountan river as shown in Figure 4. Landfill leachate breakouts were observed in a few locations during the site walkover on 14th February 2019, as also shown in Figure 4. Furthermore, the Tier 3 assessment states that leachate was observed to be present in adjacent surface water drains and that although leachate was not observed to be present within the adjacent river, this was likely due to 'dilution of surface drainage flows'. The applicant's Tier 3 Assessment recommends capping of the landfill to limit rainwater ingress into the waste body, thus limiting the generation of leachate. This is included in Condition 3.1(c).</p> <p>Invasive species (Japanese Knotweed and Montbretia) were observed within the site, along the south-western boundary, during the site walkover in February 2019. Condition 3.19 requires implementation of an invasive species prevention and eradication plan.</p> <p>There is a small block shed structure which is the only on-site building. This building is located within the eastern boundary of the site, as shown in Figure 2, and is proposed to be used for agricultural purposes.</p>
<p>Site investigations</p>	<p>The site investigations carried out as part of Tier 1, 2 and 3 assessments established the following facts:</p> <ul style="list-style-type: none"> • The landfill site is unlined; • The site is underlined by sand and gravel glacial till; • There is no engineered cap; • The landfill cover comprises of a 0.1m to 0.6m thick soil layer. The average thickness of this layer is 0.29m; • Rainwater infiltrates through the existing cover material into the waste body; • The average thickness of waste is c.3m; • The maximum depth of waste encountered during site investigations is 5m bgl (borehole BH02); • Static groundwater level is below the waste body however, parts of the landfill are saturated with groundwater; • Landfill leachate is being generated and migrates outside the waste body; and • Landfill gas is being generated and migrates outside the waste body.
<p>Monitoring and analysis of samples (water, gas, waste):</p>	<p>The following site investigations were carried out as part of Tier 1, 2 and 3 assessments by the applicant:</p> <ul style="list-style-type: none"> • A desk study including, but not limited to, studying Geological Survey Ireland (GSI) maps, National Parks and Wildlife Service maps and Local Authority maps;

	<ul style="list-style-type: none"> • Site walkovers were carried out in 2011, 14 February 2019 and 23 October 2019; • Topographical survey was carried out in 2019; • Geophysical survey to estimate the extent and depth of the waste body was carried out in 2019; • Surface water monitoring at two locations over two rounds was carried out in 2019; • Trial pit investigation was carried out at five locations in total in 2019; • Waste analysis of one sample from a trial pit was carried out in 2019; • In-situ permeability testing was carried out at two locations in 2019; • Groundwater monitoring at two locations over two rounds was carried out 2019; • Dispersion modelling of leachate contaminants in groundwater; • Assimilative capacity assessment and mass balance calculations to estimate impact of potential leachate breakouts on the adjacent river; and • LandGEM gas generation modelling was carried out in 2019.
Hydrology	<p>The site is located within the Laune-Maine-Dingle Bay catchment (Catchment Identification Number: 22) and the Ballynahow Commons sub-catchment (Sub-Catchment Id: 22_19).</p> <p>The surface water land drains along the north-western and south-eastern boundaries discharge into the Kilfountain river (waterbody code: IE_SW_22M030400, segment code: 22_1196) which flows in a south-easterly direction, as shown in Figures 1, 2 and 4. The Kilfountain river discharges into the Milltown river (waterbody code: IE_SW_22M030400, segment code: 22_4629) c.470m downstream of the site. The Milltown river discharges into Dingle harbour approximately 1.1km downstream of the site.</p> <p>The Water Framework Directive (WFD) status assigned to both the Kilfountain and Milltown rivers is Moderate. Anthropogenic pressures are classified as significant pressures impacting the Milltown river¹. Other identified pressures are urban run-off, urban waste water discharges, Section 4 discharges, invasive species and channelisation. The WFD Status assigned to Dingle Harbour (European code: IE_SW_240_0000) is High.</p> <p><i>Surface water monitoring</i></p> <p>Two rounds of surface water monitoring were carried out on 17 July 2019 and on 4 September 2019 at two monitoring locations, SW01 and SW02, on the Kilfountain river, as shown in Figure 4. Upstream</p>

¹ Source: Water Framework Directive (WFD) website available at https://wfd.edenireland.ie/waterbody/ie_sw_22m030400/characterisation?charIt=CI000002 (accessed 29th November 2023).

monitoring point SW01 is located adjacent to the western corner of the site and downstream monitoring point SW02 is located adjacent to the southern corner of the site. Table 1 below shows the monitoring results for manganese which exceeded the relevant parametric value and ammoniacal nitrogen for which the limit of detection was above the environmental quality standard (EQS).

Table 1: Surface water monitoring results, July and September 2019

Parameter	EQS/ Parametric value ^{2,3}	Monitoring Locations			
		SW01 upstream		SW02 downstream	
		July	Sept	July	Sept
Ammoniacal Nitrogen as N [mg/l]	0.140 mg/l ² Good status, 95%ile, for Total Ammonia	<0.2	<0.2	<0.2	<0.2
Manganese [µg/l]	50 ³	59.6	62.3	97.7	59.4

The tabled results show exceedances of the parametric value for manganese at both locations, with the downgradient concentrations being higher than the upstream concentrations. The exceedances at the upstream location SW01 indicate that other sources may also be affecting water quality in the Kilfountain river.

The monitoring results also showed that the upstream concentration of suspended solids in July 2019 (21mg/l) were lower than the downstream location (71.6mg/l), indicating that the landfill is potentially affecting surface water quality. No other significant differences between the upstream and downstream concentrations for other monitored parameters were noted. Overall, the monitoring results indicate that the landfill may be impacting on water quality, however the impact is considered not to be significant. The Tier 3 assessment states that although the surface water monitoring doesn't suggest the site is actively causing a deterioration in downstream water quality, there is still a potential pathway for leachate to migrate to the river.

Condition 3.9(d) and Schedule A.3 require quarterly monitoring of surface water as outlined in Section titled 'Proposed remedial actions' below. In addition, Condition 3.9(g) requires that the limit of detection of the monitoring methods utilised shall be below the relevant standard reference values and parametric values.

Hydrogeology

The closed landfill site lies within the Dingle ground waterbody (GWB Code: IE_SW_G_033). This ground waterbody has Good WFD Status and is Not at risk. The site is underlain by a bedrock aquifer which is classified as a Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones (LI). The aquifer vulnerability beneath the site is Moderate. Groundwater flows in a south-easterly direction, as shown in Figure 5.

² Environmental Quality Standard (EQS), as set out in European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I No. 272 of 2009) as amended, 2019.

³ European Union (Drinking Water) Regulations 2023.

Drinking water abstractions

There are two water boreholes south-west of the site and five boreholes north-east of the site within 1.5km of the site, as shown in Table 2 below. Due to the fact that groundwater beneath the site flows towards the south-east, there will be no impact from the landfill leachate on these water boreholes.

Table 2: Private water wells within 1.5km of the site

Well/Borehole GIS Name	Location	Use
0209NEW002	0.5km south-west of the site	Agri & domestic
0209NEW006	0.8km south-west of the site	Agri & domestic
0209NEW001	0.27km north-east of the site	Agri & domestic
0209NEW003	0.3km north-east of the site	Agri & domestic
0209NEW010	0.9km north-east of the site	Industrial
0209NEW009	1.2km north-east of the site	Industrial
0209NEW022	1.3km north-east of the site	Agri & domestic

Leachate and water quality:

Trial pit investigation

Trial pit investigation was carried out at five trial pits (TP01 to TP05) on 4 June 2019, as shown in Figure 4. The trial pits were excavated to depths of between 2.6m and 3.5m bgl. Made ground with waste materials was encountered in all trial pits. The Tier 2 assessment states that the waste encountered was typically described as black bag type waste with 40% to 60% plastic and 20% glass bottles, shoes and cutlery. Other encountered waste included building blocks and clothing. Groundwater was encountered in trial pits TP02, TP03 and TP04.

Permeability testing of the existing capping material

Bulk disturbed soil samples of the capping material were collected from trial pits TP02 and TP03 in August 2019. This testing was carried out to assess the ability of the existing capping material to minimise rainfall ingress to the waste body and leachate generation. Both soil samples were described as 'Brown slightly gravelly sandy SILT'. Table 3 below shows the testing results.

Table 3: Permeability testing

Sample ID	Sample Depth [m]	Vertical Permeability K [m/s]
TP02	0.50	6.0×10^{-10}
TP03	0.30	5.6×10^{-10}

The Tier 2 assessment states that the results demonstrate that the existing capping achieves a hydraulic conductivity of less than or equal to 1×10^{-9} m/s, as recommended in the EPA Landfill Manuals – Landfill Site Design.

Waste analysis

A disturbed bulk waste sample was obtained from trial pit TP02 on 4 June 2019. This sample was analysed for a number of parameters in accordance with the waste acceptance criteria at landfills¹, as shown in Table 4 below.

Table 4: Waste analysis results

Parameter	Landfill Waste Acceptance Criteria Limits ¹			Sample
	Inert	Non-haz	Haz	TP02 at 2.5m bgl
Total Organic Carbon [%]	3	5	6	5.5
Sulphate [mg/kg]	1,000	20,000	50,000	2,800
Total Dissolved Solids [mg/kg]	4,000	60,000	100,000	4,500

The results show that the concentration of total organic carbon meets the non-hazardous landfill waste acceptance criteria. The results also show the concentrations of sulphates and total dissolved solids meet the non-hazardous landfill waste acceptance criteria.

Groundwater monitoring

Two groundwater monitoring boreholes were installed, as shown in Appendix 1.

Groundwater monitoring was carried at boreholes BH01 and BH02 on 17 July 2019 and on 4 September 2019, as outlined in Table 5 below and shown in Figures 3, 4, 5 and 7. Borehole BH02 is located within the waste body however groundwater in this borehole was measured at 3.7m below waste, as outlined in Appendix 1.

Table 5: Groundwater monitoring results, July and September 2019

Parameter	GTV/ Limit ^{2,3}	Monitoring locations			
		BH01 Up-gradient		BH02 Within the waste body	
		July	Sept	July	Sept
Ammoniacal Nitrogen as N [mg/l]	0.065 ¹ Ammonium as N	<0.2	<0.2	<0.2	0.402

¹ Waste Acceptance Criteria (WAC) as set out in Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.

² Groundwater Threshold Values from European Communities Environmental Objectives (Groundwater) Regulations, 2010, as amended.

³ Interim Guideline Values (IGV) as set out in the EPA publication 'Towards setting guideline values for the protection of groundwater in Ireland – Interim Report', 2003.

Orthophosphate [$\mu\text{g/l}$]	Molybdate Reactive Phosphorus (MRP) 35 $\mu\text{g/l}$ ¹	<50	<50	<50	<50	
Cyanide [$\mu\text{g/l}$]	37.5 ¹	<50	<50	<50	<50	
Lead [$\mu\text{g/l}$]	7.5 ¹	0.344	32.3	0.888	<0.2	
Manganese [mg/l]	0.05 ²	0.016	0.506	3.62	3.69	
Iron [mg/l]	0.2 ²	<0.019	4.94	<0.019	0.086	
Anthracene (aq) [$\mu\text{g/l}$]	Sum of total Polycyclic Aromatic Hydrocarbons (PAHs) 0.075 ¹	<20	<1	<1	<1	
Benzo(b)fluoranthene (aq) [$\mu\text{g/l}$]		<20	<1	<1	<1	<1
Benzo(k)fluoranthene [$\mu\text{g/l}$]		<20	<1	<1	<1	<1
Benzo(ghi)perylene [$\mu\text{g/l}$]		<20	<1	<1	<1	<1
Indeno(1,2,3-cd)pyrene (aq) [$\mu\text{g/l}$]		<20	<1	<1	<1	<1
Naphthalene [$\mu\text{g/l}$]		<20	<1	<1	<1	<1
<p>The monitoring results show exceedances of the GTV for ammoniacal nitrogen and the IGV for manganese at the downgradient location. The monitoring results for manganese also show that the downgradient concentrations exceed the upgradient concentrations on both monitoring events. The monitoring results further show exceedances of the GTV for lead and IGVs for manganese and iron at the upgradient location BH01, indicating that other sources may also be affecting groundwater quality. The Tier 2 assessment states that elevated concentrations of manganese can partially be caused by the local bedrock hydrochemistry, however, the Tier 2 assessment further states that, as they are relatively high, they could also be caused by the landfill. Similarly, the assessment states that elevated lead could be due to the localised groundwater hydrochemistry but adds that it may also be attributed to the landfill. In respect of elevated iron, the Tier 2 assessment states that this is likely the result of leachate. It is also noted that the limits of detection used for ammoniacal nitrogen, orthophosphate, cyanide and PAHs were above the relevant GTVs.</p> <p>Condition 3.9(e) requires groundwater monitoring in accordance with Schedule A.4. Also, based on the monitoring results above and as the waste contains municipal waste and industrial waste, it is considered that monitoring for trace organic compounds in the groundwater is appropriate. Additionally, Condition 3.9(f) requires screening of groundwater on an annual basis for trace organic substances.</p> <p><u>Leachate monitoring</u></p> <p>No leachate monitoring boreholes were installed within the waste body. Condition 3.1(i) requires installation of one or more leachate monitoring boreholes with the waste body, if required by the Agency in the event</p>						

further investigations are required. Schedule A.1 sets out the leachate monitoring required if the boreholes are installed.

Modelling of leachate contaminants dispersion in groundwater

The applicant used the UK EA Remedial Targets Worksheet model to examine the potential impacts of leachate on aquifer/groundwater quality. The model predicted concentrations of manganese at 15m, 75m, 150m and 300m downstream of the site after 25, 50, 100, 250 and 1,000 years of dispersion. The model assumes no mitigation in place in respect to reducing infiltration of rainfall into the waste body and the subsequent generation of leachate. The model also assumes a worst-case scenario of a non-depleting source concentration where there is no dilution or dispersion of contaminants. The initial plume concentration (3.69 mg/l) was taken from the groundwater monitoring event at location BH02 in September 2019. Table 6 below shows modelling results.

Table 6: Modelled downstream concentration results

Manganese [mg/l]		Interim Groundwater Value (IGV) = 0.05 mg/l ¹			
Years of dispersion	Initial plume conc. [mg/l]	Conc. at 15m [mg/l]	Conc. at 75m [mg/l]	Conc. at 150m [mg/l]	Conc. at 300m [mg/l]
25	3.69	0.729	0	0	0
50		1.212	0.001	0	0
100		1.711	0.035	0	0
500		2.857	1.131	0.165	0.0001
1,000		3.273	1.893	0.772	0.0336

The modelling results show that the predicted concentrations of manganese exceed the IGV of 0.05 mg/l at 15m, 75m and 150m from the site. The concentrations greatly exceed the IGV at a 15m distance from the site whereas at 500 years, manganese is shown to be in exceedance at 75m and 150m from the site. The Tier 3 assessment states that the model suggests '*pollutant dispersion is likely to be a local issue and that the historic landfill is unlikely to influence groundwater quality regionally*'. The Tier 3 assessment further states that contamination of groundwater locally may potentially impact surface water quality. The installation of a landfill cap is recommended by the Tier 3 assessment, as outlined in Section titled 'Proposed remedial actions' below.

Impact of potential leachate breakouts on surface water

The applicant carried out assimilative capacity and mass balance calculations to estimate the impact of potential leachate breakouts on the Kilfountain river and, subsequently, on the Milltown river. Ammonia was chosen as a representative potential pollutant. The assimilative

¹ IGV - Interim Guideline Values, EPA; Towards Setting Guideline Values for the Protection of Groundwater in Ireland (2003).

capacity calculations concluded that the available assimilative capacity for ammonia in the Milltown river is 0.17kg/day.

The daily mass emission decided upon was the maximum recorded concentration measured at borehole BH02 in 2019 of 0.40 mg/l. The calculations estimated how leachate breakouts, with flow rates varying from 1l/s to 5l/s, contribute to an increase in concentration of ammonia downstream of the landfill and the impact of such breakouts on the available assimilative capacity. Table 7 below shows the calculations results.

Table 7: Assimilative capacity and mass balance calculations results

Leachate Breakout Flow [l/s]	Leachate breakout flow [m ³ /day]	Leachate mass emission assuming NH ₄ at 0.40 mg/l [kg/day]	Impact of the breakout on assimilative capacity of 0.17 kg/day [%]	Downstream conc. of NH ₄ [mg/l]
1	86	0.035	20	0.053
2	173	0.069	40	0.070
3	259	0.104	60	0.085
4	346	0.138	80	0.098
5	432	0.173	100	0.111

The calculations show that the breakouts varying from 1 l/s to 5 l/s, will result in downstream concentrations of ammoniacal nitrogen in the Milltown river being higher than the upstream concentration (based on 2014 EPA river monitoring data) of 0.035mg/l by 51% to 217%, but still in compliance with the EQS of 0.140mg/l (Good status; 95%ile) for this parameter. The calculations further show that 100% of the assimilative capacity will be consumed at the breakout discharge rate of 5l/s.

Landfill gas:

There is a low risk of landfill gas migration to the on-site and off-site buildings. The most likely pathway for the migration of the landfill gas is laterally through the underlying soils and vertically through the existing capping.

Gas monitoring

Gas monitoring was carried out on 23 October 2019 at two monitoring locations, BH01 and BH02, as shown in Figures 3, 4, 5 and 7. Table 8 below shows the measured concentrations of methane and carbon dioxide.

Table 8: Landfill gas monitoring results, October 2019

Monitoring Location Id	Monitoring event on 23/10/2019		Trigger levels outside the waste body ¹	
	CH ₄ (% v/v)	CO ₂ (% v/v)	CH ₄ (% v/v)	CO ₂ (% v/v)
BH01 outside the waste body	0.4	0.6	1	1.5

¹ As set out in the EPA Landfill Manuals - Landfill Monitoring, 2nd Edition, 2003.

BH02 within the waste body	0.6	0.9	-	-
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The monitoring results show that concentrations of CO₂ and CH₄ at both monitoring boreholes are below the threshold values set out in *EPA Landfill Manuals – Landfill Monitoring*. Although in low concentrations, landfill gas is being generated within the waste body.

Along with BH01 and BH02, the applicant proposes gas monitoring at additional gas boreholes within the waste body at GW01, GW02, GW03 and GW04, as shown in Figure 7. The applicant also proposes installing three additional gas monitoring boreholes, LG01, LG02 and LG03, outside the waste body along the northern, eastern and southern boundary, as shown in Figure 7. Monitoring at all proposed boreholes is required under Condition 3.9(c) for the parameters identified in Schedule A.2.

Given the close proximity of domestic dwellings (40m) and the potential of lateral gas migration following the installation of the cap, Condition 3.11 requires gas monitoring on a quarterly basis for a period of one year, beginning immediately after the installation of the cap, and thereafter if required by the Agency, at all relevant buildings including domestic dwellings adjacent to the landfill, subject to owner’s permission. Condition 3.12 enables changes to monitoring requirements, with the agreement of the Agency following evaluation of test results and/or relevant proposals.

Gas modelling

LandGEM gas modelling was carried out in 2019. The modelling shows that gas will continue to be generated for several years. Table 9 below shows the predicted gas generation results to 2029.

Table 9: Estimated landfill gas generation (2019 to 2029)

Gas/ pollutant	Tonnes/year		Tonnes/hour		m ³ /hr	
	2019	2029	2019	2029	2019	2029
Total landfill gas	490	297	0.06	0.03	45	27
Methane	131	79	0.01	0.01	22	14
Carbon dioxide	359	218	0.04	0.02	22	14
Non-methane organic compounds (NMOC)	6	3	0.00	0.00	0.18	0.11

The LandGEM model predicted that the landfill site was generating 22m³/hr of both methane and carbon dioxide which will both reduce to 14m³/hr by 2029. The modelled gas rates fall within the gas rate ranges for which technologies like passive venting or biofiltration are recommended in EPA ‘Management of Low Levels of Landfill Gas’ publication.

Conceptual site model:	Tier 1 Assessment determined that the overall risk score for the closed landfill was High (Class A). This classification was due to the risk of migration of landfill leachate into surface waters (SPR 8).
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	<p>Following Tier 2 and Tier 3 investigations this risk classification remains High (Class A), due to the risk of leachate migration through surface water pathway, particularly into the adjacent surface water body, the Kilfountan river.</p> <p>The conceptual site model is shown in Figure 6.</p>
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4. SPR linkages and remedial actions

<p>SPR linkage scenarios (applicable ones only):</p>	<p>Leachate and gas migration scores:</p> <p><u>High scores:</u></p> <p>One pathway was identified as High Risk:</p> <ul style="list-style-type: none"> • Migration of leachate, via surface water drainage/runoff, to surface water bodies (SPR 8); <p><u>Moderate scores:</u></p> <p>No pathways were identified as Moderate Risk.</p> <p><u>Low scores:</u></p> <p>Six pathways were identified as Low Risk:</p> <ul style="list-style-type: none"> • Migration of leachate, via groundwater flowing to water drainage/runoff, into to surface waterbodies (SPR 1); • Migration of leachate to private wells (SPR 3); • Migration of leachate to the underlying aquifer (SPR 5); • Migration of leachate, via groundwater migration, to surface water bodies (SPR 7); • Human health exposure pathway of off-site lateral migration of landfill gas into the nearby buildings (SPR 10); and • Vertical landfill gas migration (SPR 11).
<p>Proposed remedial actions:</p>	<p>The Tier 3 assessment recommends the following remedial measures:</p> <p><i>1. <u>Engineered Landfill cap, water drainage system and gas management system</u></i></p> <p>The applicant's Tier 3 assessment recommends that a cap is to be put over the existing cover material. The area to be capped is shown in Figure 7. The Tier 3 assessment recommends the landfill cap comprises of:</p> <p>(i) 200mm topsoil and 800mm subsoil;</p> <p>(ii) Sub-surface and Surface water system;</p> <p>The Tier 3 assessment recommends a sub-surface drainage layer with hydraulic conductivity equal to or greater than $1 \times 10^{-4} \text{m/s}$ and thickness of 500mm, or equal approved geocomposite, which is in accordance with the EPA Landfill Manuals - Landfill Site Design. The Tier 3 assessment further states that the drainage layer shall discharge to a sub-surface pipework collection system and thence to the surface drainage system. The Tier 3 assessment also</p>

recommends *'surface drainage layouts using grassed waterways or similar'* to collect and direct surface water runoff, including sub-surface drainage outfall flows to one or more dedicated surface drainage outfalls, into the existing surface water perimeter drain(s).

Condition 3.1(c)(ii) requires a water drainage layer as proposed to be incorporated into the cap. Condition 3.8(e) requires the applicant to provide a drawing denoting the location of the discharge points from the site drainage system and from the subsequent perimeter drains.

- (iii) Linear low-density polyethylene (LLDPE) barrier including vertical cut-offs on all boundaries;

The Tier 3 Assessment states that the barrier system will comprise of a 1mm LLDPE layer or similar approved and vertical, also LLDPE, cut-offs on all boundaries. The Tier 3 assessment further states that the vertical cut-offs will mitigate the risk from lateral landfill gas migration, and the risk of lateral groundwater migration, and will terminate a minimum of 3 m below ground level.

Condition 3.1(g) requires vertical LLDPE cut-off barrier around the waste body. Condition 3.1(g) further requires that the base of the cut-offs be at the maximum depth of waste where possible.

- (iv) Gas management system

The applicant's Tier 3 assessment recommends a landfill gas collection system comprising of an under-liner gas collection geocomposite or similar approved stone drainage layer. The Tier 3 assessment further recommends that the gas collection layer makes provision for passive venting of gas above the liner with methane oxidation if required. The Tier 3 assessment states that gas vents, if required, shall terminate at least 3m above ground surface and be detailed to prevent rainfall ingress and insertion of ignition sources such as cigarettes or other and that biological methane oxidation filters, if used, shall be excavated into the cap, fenced and isolated from pedestrian, vehicular or animal activities. It is noted that the applicant recommends one gas vent within the north-western corner of the site, as shown in Figure 7.

The Tier 3 assessment further states that the gas collection system design will require *'a gas pump test to define gas flow rate and gas quality, a gas management risk assessment to mitigate environmental pollution in accordance with best practice, measures to mitigate risk of asphyxiation and explosion and an updated gas prediction model.....to facilitate selection of the most appropriate landfill gas management solutions be venting and/or oxidation as may be required.'* The Tier 3 assessment further states that the existing wells on site shall be capped and retained for future monitoring as may be required and the vertical wells used for the gas pump test shall be used for future landfill gas monitoring and or extraction as may be required.

Condition 3.1(d) requires carrying out a gas risk assessment, including gas pumping trial if required, to inform the final design of the gas management system at the facility. Condition 3.1(e) requires that the final design shall be in accordance with the EPA Landfill Manuals – Landfill Site Design and shall be submitted to the Agency for approval prior to implementation. Condition 3.1(e) further requires the installation, operation and maintenance of a gas management system. This system shall include vertical gas vents, and any infrastructure, including a biological methane oxidation filter, as may be recommended by the findings of the gas risk assessment, as per Condition 3.1(d). Condition 3.10 requires the local authority to carry out a biannual review of the gas management system.

2. Environmental monitoring

2.1. Surface water monitoring

The applicant's Tier 3 assessment recommends surface water monitoring on an annual basis at the proposed surface water discharge outfall in the north-western corner of the site and a new downstream location proposed by the applicant to be referred to as SW1. There was no drawing submitted showing the locations of the proposed surface water monitoring points.

It is further noted that the existing monitoring points are referenced SW01 and SW02 therefore, it is recommended that the additional downstream monitoring point is referenced SW03 and the monitoring point at the surface water discharge outfall is referenced SW04.

Additionally, monitoring at a quarterly, and not annual frequency, is considered appropriate initially to monitor the impact of remediation given the high risk status assigned for leachate migration to surface waters, the monitoring exceedance set out in Table 1 above and due to the limit of detection being above the relevant standard for total ammonia. Accordingly, the requirements for monitoring are set out in Condition 3.9(d) and Schedule A.3. Condition 3.12 provides for changes to be made to the monitoring scope, including the monitoring frequency, with the approval of the Agency following evaluation of test results and/or relevant proposals.

2.2. Groundwater monitoring

The Tier 3 assessment recommends groundwater monitoring at the existing boreholes BH01 and BH02 on an annual basis.

It is considered however that a quarterly monitoring frequency is appropriate initially given the groundwater monitoring exceedances set out in the Table 5 above and/or due to the limits of detection being above the relevant GTVs for a number of parameters. Accordingly, Condition 3.9(e) requires groundwater monitoring in accordance with Schedule A.4, which requires a quarterly monitoring of groundwater at the locations recommended by the applicant.

2.3. Landfill gas

The applicant's Tier 3 assessment recommends gas monitoring on an annual basis at the existing boreholes BH01 and BH02, the four

	<p>proposed boreholes within the waste body GW01 to GW04, the three proposed perimeter gas monitoring wells (LG01 to LG03) outside the waste body, as shown in Figure 7, and at any future oxidation or venting outlet.</p> <p>Due to the fact that gas remedial measures have not been finalised and the applicant is requesting a gas pumping trial, it is considered that quarterly rather than annual gas monitoring is carried out. Accordingly, Condition 3.9(c) requires quarterly monitoring of landfill gas, at the locations requested by the applicant, in accordance with Schedule A.2. Additionally, Condition 3.1(l) requires continuous gas monitoring, gas vents and gas alarms in the on-site building. The recommended certificate of authorisation allows for the importation and use of soil and stone to complete the works.</p>
Proposed aftercare monitoring and assessment:	<p>Monitoring as specified in Condition 3.9 and Schedule A of the recommended certificate of authorisation.</p> <p>Validation report to be submitted within 6 years.</p>
Adequacy of risk assessment:	<p>Regulation 7(7) of the Regulations states that the EPA must be satisfied with the risk assessment before proposing to grant a certificate of authorisation. The risk assessment and additional information received is adequate as it has identified, assessed and adequately addressed the associated risks inherent with the landfill site.</p>

5. Appropriate assessment

There are five European Sites within the vicinity of the facility. These are listed in the Appendix 2.

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the activity, individually or in combination with other plans or projects is likely to have a significant effect on any European Site. In this context, particular attention was paid to the European Sites at Dingle Peninsula SPA (site code: 004153), Blasket Islands SAC (site code: 002172), Blasket Islands SPA (site code: 004008), Mount Brandon SAC (site code: 000375) and Tralee Bay and Magharees Peninsula, West to Cloghane SAC (site code: 002070).

The activity is 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 activity, 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 activity was required. A Natura Impact Statement was not requested as it was considered that there was sufficient information available to allow Appropriate Assessment to be carried out.

The reason for this determination is as follows:

- There is a hydrological connection between the closed landfill and the Dingle Peninsula SPA (site code: 004153), via the adjacent Kilfountain River (waterbody code: IE_SW_22M030400, segment code: 22_1196) which discharges into the Milltown River (waterbody code: IE_SW_22M030400, segment code: 22_3998), which in turn flows into the Dingle Harbour (waterbody code: IE_SW_240_0000). Parts of the Dingle Peninsula SPA (site code: 004153) are located immediately adjacent to the Dingle Harbour.

- There is a hydrological connection between the closed landfill and the Blasket Islands SAC (site code: 002172), Blasket Islands SPA (site code: 004008), the Mount Brandon SAC (site code: 000375) and the Tralee Bay and Magharees Peninsula, West to Cloghane SAC (site code: 002070) via the adjacent Kilfountain River (waterbody code: IE_SW_22M030400, segment code: 22_1196). The Kilfountain River discharges into the Milltown River (waterbody code: IE_SW_22M030400, segment code: 22_3998), which flows into the Dingle Harbour (waterbody code: IE_SW_240_0000), which discharges into the Outer Dingle Bay (waterbody code: IE_SW_230_0000), which in turn discharges into the Southwestern Atlantic Seaboard.

The Southwestern Atlantic Seaboard forms parts of the Blasket Islands SAC (site code: 002172) and Blasket Islands SPA (site code: 004008). The Mount Brandon SAC (site code: 000375) and Tralee Bay and Magharees Peninsula, West to Cloghane SAC (site code: 002070) are located immediately adjacent to the Southwestern Atlantic Seaboard. However, given the distance from the site, via the said waterbodies, the closed landfill does not present a risk to the qualifying interests of these four European Sites.

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 activity, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site, in particular, Dingle Peninsula SPA (site code: 004153), Blasket Islands SAC (site code: 002172), Blasket Islands SPA (site code: 004008), Mount Brandon SAC (site code: 000375) and Tralee Bay and Magharees Peninsula, West to Cloghane SAC (site code: 002070), 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 the application, risk assessment and recommended certificate of authorisation and the Conditions attached hereto for the following reasons:

- The closed landfill is not located within a European site.
- No waste is permitted to be accepted at the site and only greenfield soil and stone, including greenfield soil and stone that meets by-product criteria, or soil and stone of equivalent nature and character, can be accepted for use in the remediation works.
- The landfill will have an engineered cap installed to prevent ingress of rainwater into the waste body to minimise generation of leachate and its ingress into the surface water and groundwater. The recommended Certificate of Authorisation further requires a vertical LLDPE cut-off barrier around the waste body to prevent leachate migration off-site.
- The recommended Certificate of Authorisation requires that the closed landfill and the remedial works shall not cause environmental pollution or deterioration in the status of the receiving surface water body or groundwater body.
- It is considered that there will be no adverse effects on the integrity of any European site due to emissions to air from the landfill gas. Landfill gas was detected at low levels and did not exceed trigger level values applicable to methane and carbon dioxide outside the waste body. The recommended Certificate of Authorisation requires monitoring of landfill gas and comparison of results to these trigger level values. Any exceedance is deemed to be an incident and appropriate actions must be taken.
- The recommended Certificate of Authorisation requires that no emissions, including landfill gas, leachate, odour, dust and noise, or litter, mud, vermin and birds, shall result in an impairment of, or an interference with amenities or the environment at the facility or beyond the facility boundary, or any other legitimate uses of the environment beyond the facility boundary.

- The recommended Certificate of Authorisation requires implementation of an invasive species prevention and eradication plan.
- No in-combination effects are predicted, therefore no additional mitigation measures are required.

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: Dingle Peninsula SPA (site code: 004153), Blasket Islands SAC (site code: 002172), Blasket Islands SPA (site code: 004008), Mount Brandon SAC (site code: 000375) and Tralee Bay and Magharees Peninsula, West to Cloghane SAC (site code: 002070).

6. Recommendation

This report has been prepared by Seán Byrne and Ewa Babiarczyk.

I recommend granting the certificate of authorisation as proposed.

Signed



Seán Byrne

Date: 18 June 2024

Procedural Note

Any representations received by the Agency within 30 days of the draft certificate of authorisation being made available will be considered by the Agency.

As soon as practicable after the expiry of the 30-day period the Agency will determine the certificate of authorisation, which may vary from the draft certificate, and shall issue an appropriately validated certificate of authorisation in accordance with the Waste Management (Certificate of Historic Unlicensed Waste Disposal and Recovery Activity) Regulations 2008.

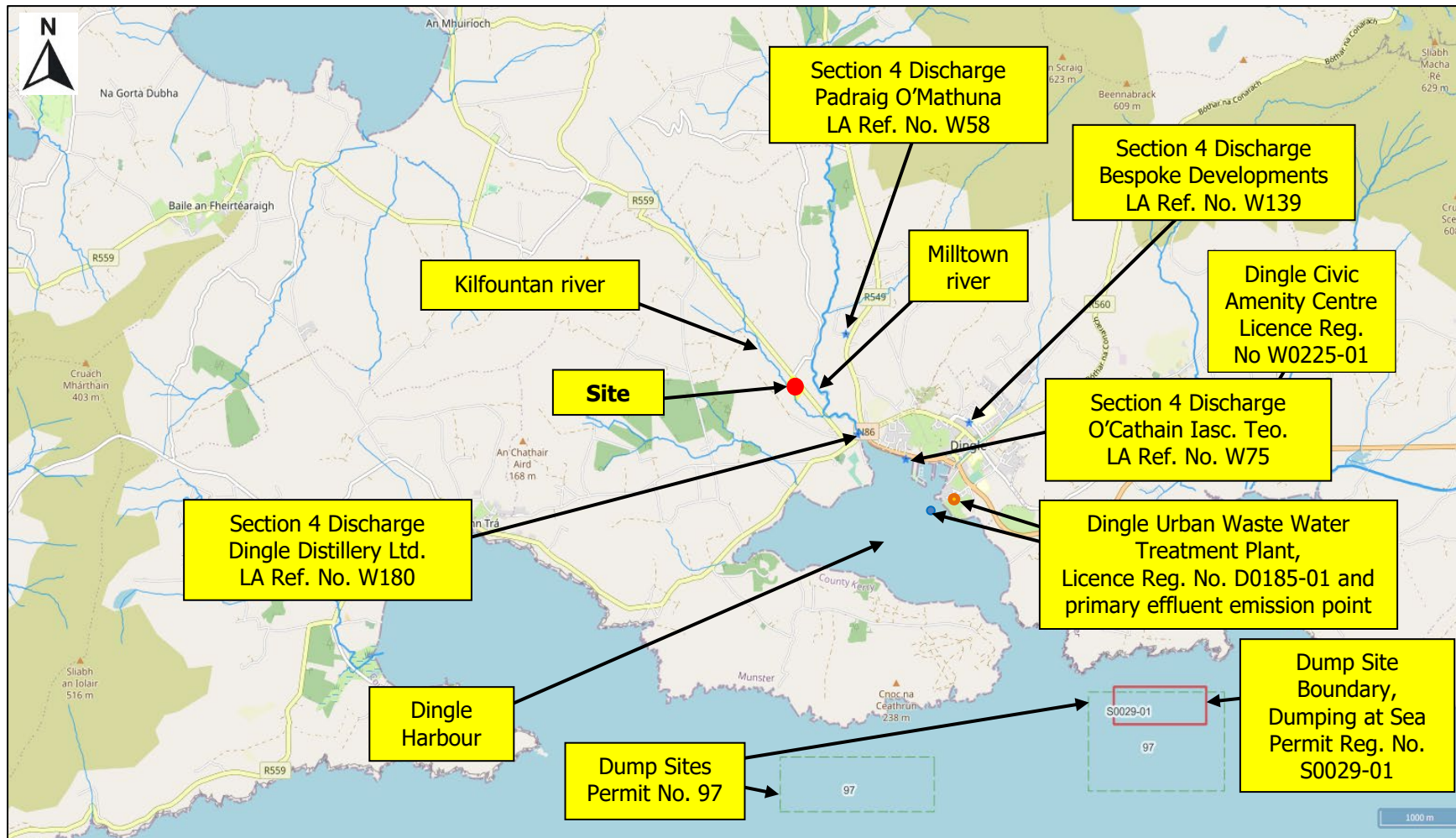


Figure 1: Location of Dingle Historic Landfill

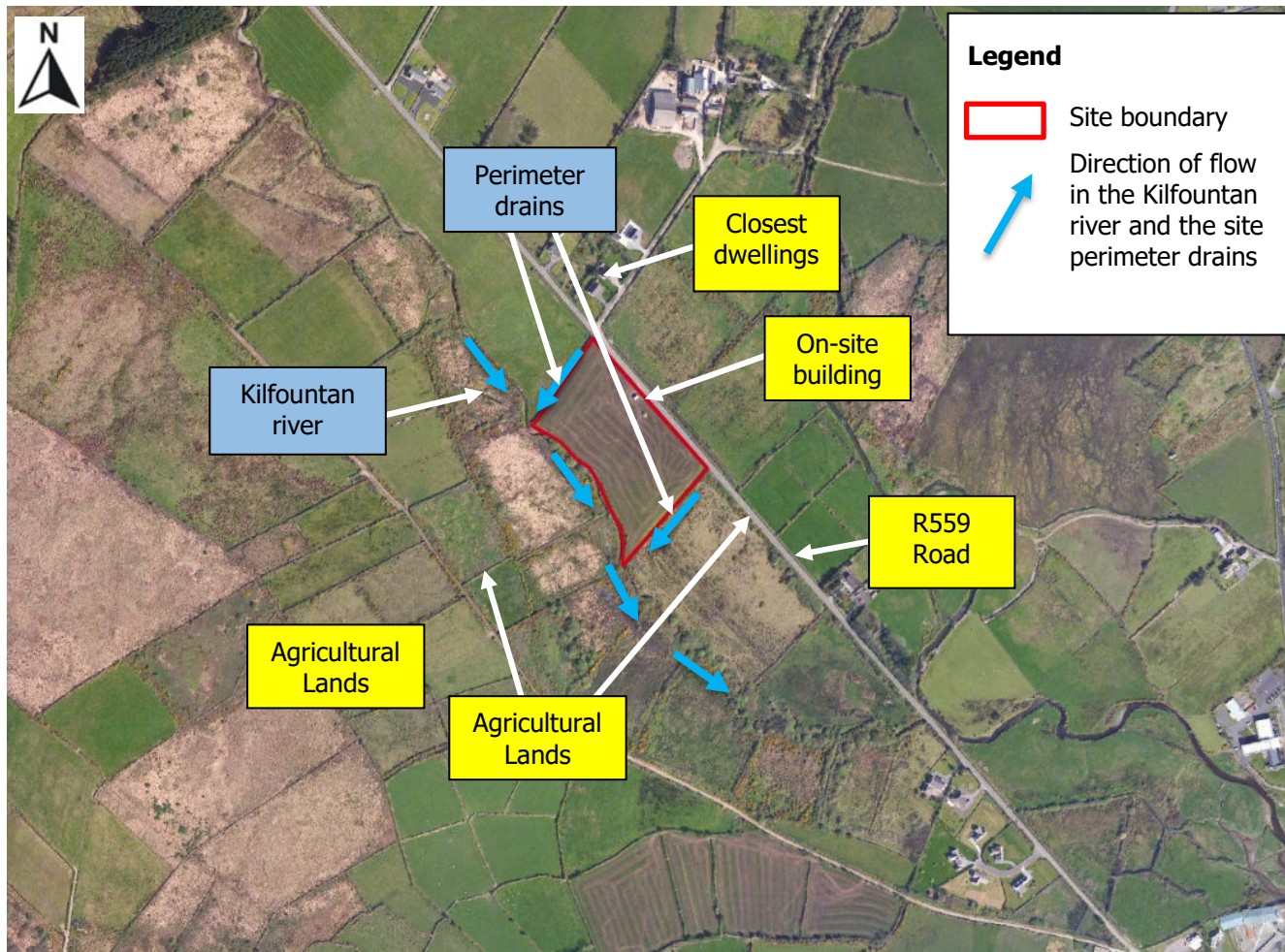


Figure 2: Site layout and site surroundings

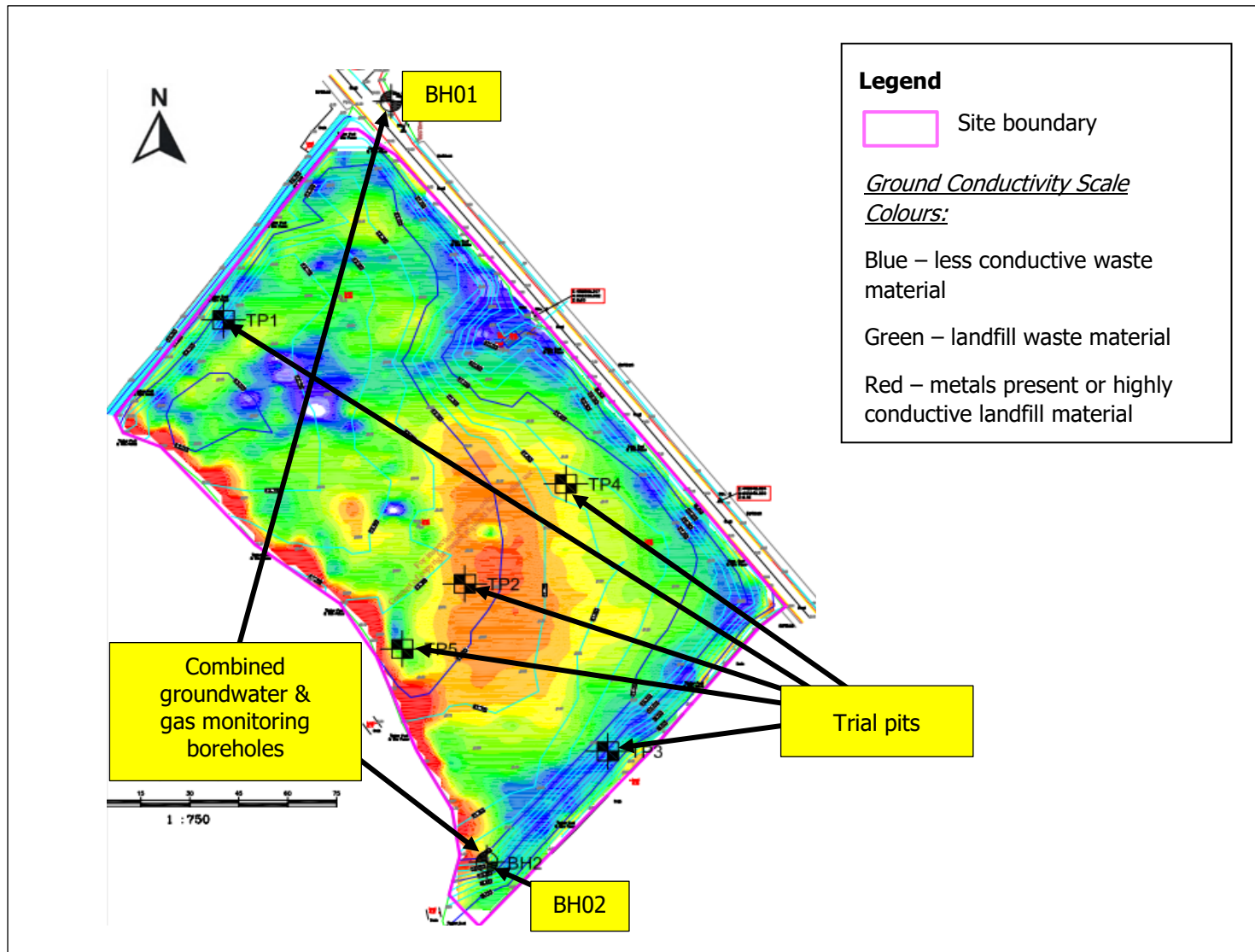


Figure 3: Extent of deposited waste

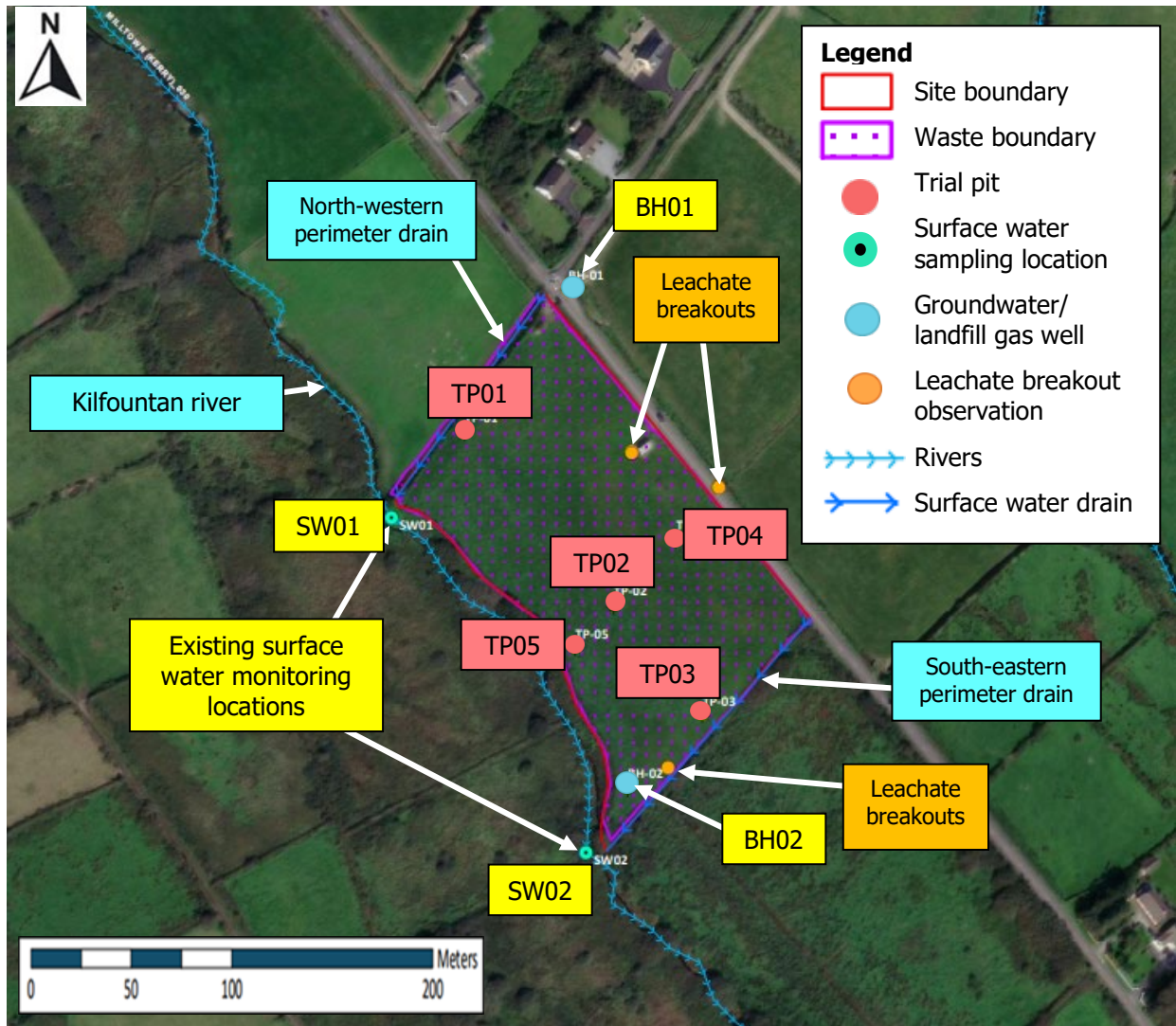


Figure 4: Surface water (SW) monitoring, groundwater & gas (BH) monitoring and trial pit (TP) locations

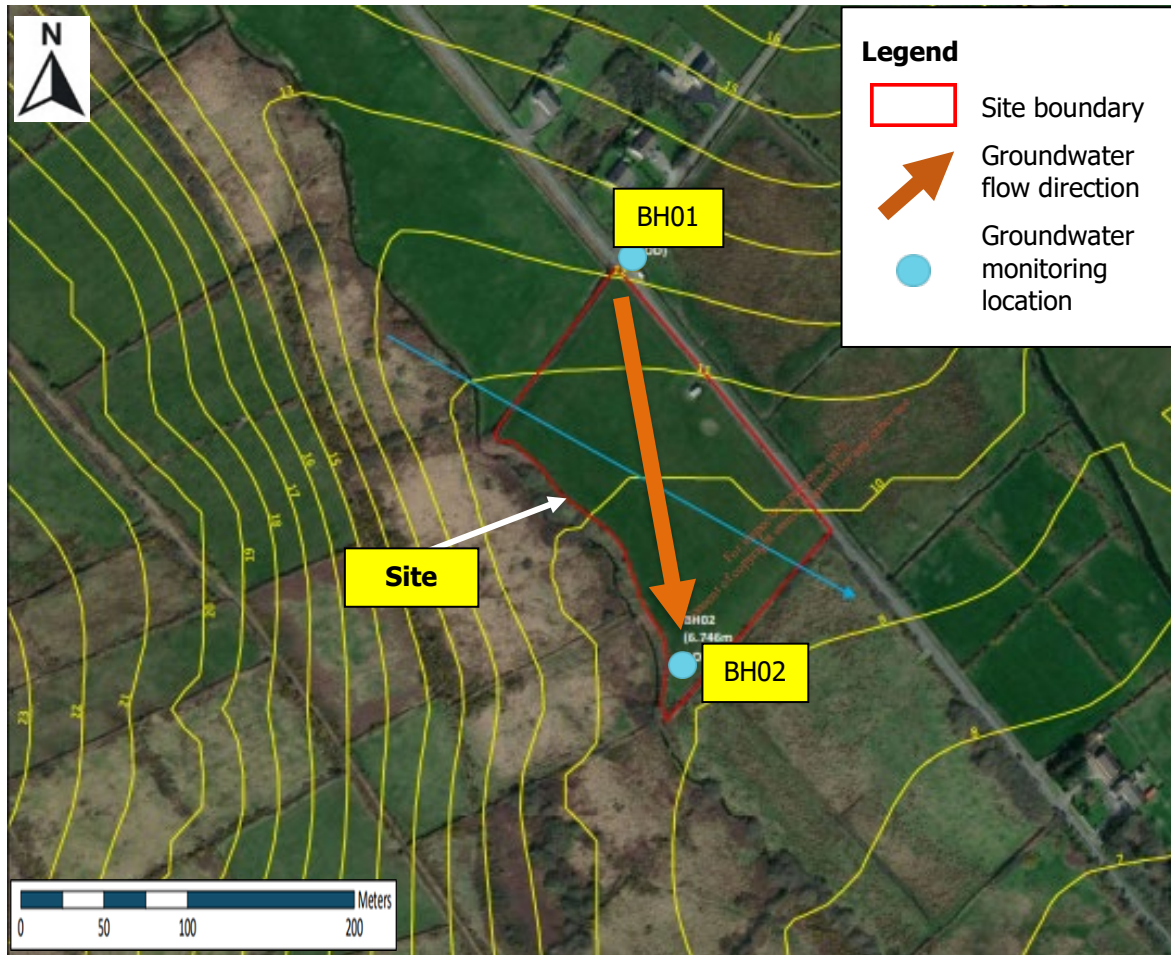


Figure 5: Groundwater flow direction and groundwater borehole (BH) locations

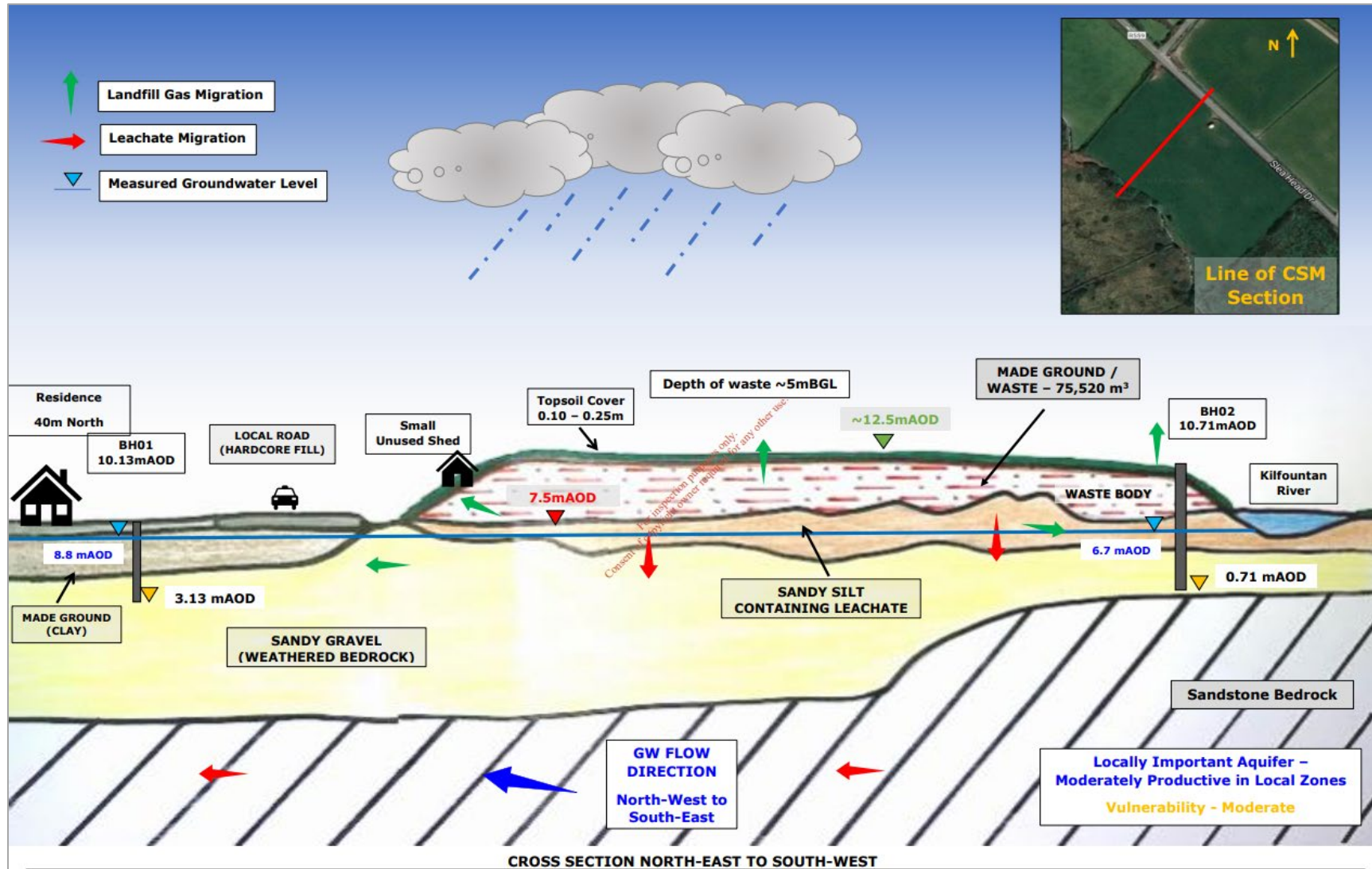


Figure 6: Conceptual site model for Dingle Historic Landfill site

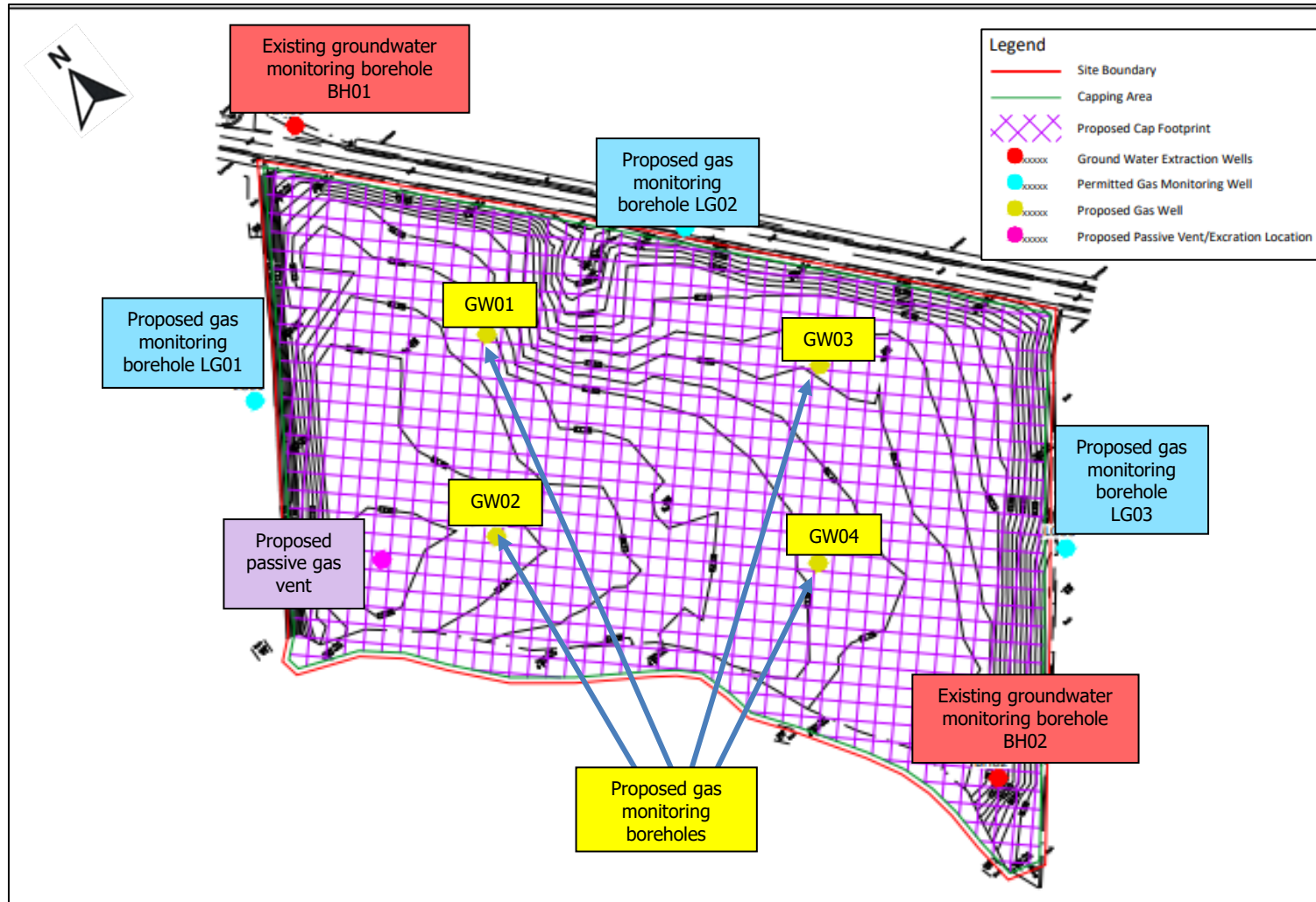


Figure 7: Area to be capped, the proposed gas vent and proposed gas monitoring boreholes

Appendix 1: Groundwater monitoring boreholes

Borehole & depth [m bgl]	Location	Stratum (m bgl)
BH01 7m bgl	Upgradient c. 15m of the waste body.	0m – 0.5m Made ground: hardcore fill; 0.5m – 2.8m Made ground: brown CLAY fill; 2.8m – 4.4m Grey silty fine SAND; Groundwater strike at 4.4m; 4.4m – 7.0m, SAND and GRAVEL.
BH02 10m bgl	Within the waste body near the southern corner of the site.	0m – 2.0m Made ground: brown CLAY; 2.0m – 5.0m Waste ; 5.0m – 7.8m, very sandy GRAVEL; 7.8 – 8.7, brown sandy gravelly CLAY; Water strike at 8.7m; 8.7 – 10.0m Brown sandy GRAVEL.

Appendix 2: Assessment of the effects of activity on European sites and proposed mitigation measures.

European Site	Distance from the facility (km)	Qualifying Interests (* denotes priority habitat)	Conservation Objectives	Assessment
Dingle Peninsula SPA (Site code: 004153)	3km south of the site	<p>Species:</p> <p>[A009] Fulmar <i>Fulmarus glacialis</i></p> <p>[A103] Peregrine <i>Falco peregrinus</i></p> <p>[A346] Chough <i>Pyrhocorax pyrrhocorax</i></p>	<p>(2022) First Order Site-specific Conservation objectives for Dingle Peninsula SPA [004153]. Version 1.</p> <p>Department of Housing, Local Government and Heritage.</p> <p>[12th October 2022]</p>	<p>The main potential for impact on the Qualifying interests of this SPA would arise from changes in air quality, which could affect species directly or indirectly, disturbance to the habitat and other human activities that could affect the bird populations.</p> <p>There is a potential risk from migration of landfill leachate into surface waters and groundwater and from migration of passive landfill gas into atmosphere.</p> <p>The recommended certificate of authorisation specifies conditions to protect the surface waters and groundwater and in turn the qualifying interests of this European Site.</p> <p>The capping, as required under Condition 3.1, will limit ingress of rainwater into the waste body thus limiting the generation of leachate.</p> <p>Condition 3.9 requires monitoring of leachate, groundwater upgradient and downgradient of the landfill and surface water upstream and downstream of the landfill and at the outfall from the surface water drainage system.</p> <p>Additionally, Condition 3.1(e) requires installation, operation and maintenance of a gas management system to accommodate passive gas venting.</p> <p>Condition 3.9 and Schedule A require gas monitoring at the existing monitoring locations,</p>

				<p>the proposed gas vent and monitoring locations, the biological filter if required and installed and, if required, the relevant adjacent buildings, including domestic dwellings.</p> <p>Furthermore, Condition 3.3 requires that the closed landfill and the remedial works shall not cause environmental pollution or deterioration in the status of the receiving surface water body or groundwater body.</p> <p>In addition, Condition 3.14 requires that no emissions arising from activities carried on at the site, including, amongst others, leachate, gas, litter and mud shall result in an impairment of, or an interference with amenities or the environment beyond the facility boundary or any other legitimate uses of the environment beyond the facility boundary.</p> <p>Conclusion:</p> <p>The controls in the recommended certificate of authorisation will ensure that the activity will not negatively impact on water or air quality and that the qualifying interests of this European Site are protected.</p>
Blasket Islands SAC (Site code: 002172)	11.1km west of the site	<p>Habitats:</p> <p>[1170] Reefs</p> <p>[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts</p> <p>[4030] European dry heaths</p> <p>[8330] Submerged or partially submerged sea caves</p> <p>Species:</p>	<p>NPWS (2014) Conservation objectives for Blasket Islands SAC [002172]. Version 1.0.</p> <p>Department of Arts, Heritage and the Gaeltacht.</p> <p>[dated 7th April 2014].</p>	<p>The main potential for impact on the Qualifying interests of this SAC would arise from changes in surface water quality and air quality, which could affect the habitats, and cause disturbance to the habitats of marine animals.</p> <p>There is a potential risk from migration of landfill leachate into surface waters and groundwater and from migration of passive landfill gas into atmosphere.</p> <p>However, due to the distance of the landfill from the SAC (over 11km) and the SAC being located</p>

		<p>[1351] Harbour Porpoise <i>Phocoena phocoena</i></p> <p>[1364] Grey Seal <i>Halichoerus grypus</i></p>	<p>within the Southwestern Atlantic Seaboard, means that there will be no negative impacts from the facility to the qualify interests of the European Site.</p> <p>The recommended certificate of authorisation specifies conditions to protect the surface waters and groundwater and in turn the qualifying interests of this European Site.</p> <p>The capping, as required under Condition 3.1, will limit ingress of rainwater into the waste body thus limiting the generation of leachate.</p> <p>Condition 3.9 requires monitoring of leachate, groundwater upgradient and downgradient of the landfill and surface water upstream and downstream of the landfill and at the outfall from the surface water drainage system.</p> <p>Additionally, Condition 3.1(e) requires installation, operation and maintenance of a gas management system to accommodate passive gas venting.</p> <p>Condition 3.9 and Schedule A require gas monitoring at the existing monitoring locations, the proposed gas vent and monitoring locations, the biological filter if required and installed and, if required, the relevant adjacent buildings, including domestic dwellings.</p> <p>Furthermore, Condition 3.3 requires that the closed landfill and the remedial works shall not cause environmental pollution or deterioration in the status of the receiving surface water body or groundwater body.</p> <p>In addition, Condition 3.14 requires that no emissions arising from activities carried on at the site, including, amongst others, leachate, gas, litter and mud shall result in an impairment of, or an interference with amenities or the environment</p>
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				<p>beyond the facility boundary or any other legitimate uses of the environment beyond the facility boundary.</p> <p>Conclusion:</p> <p>The controls in the recommended certificate of authorisation will ensure that the activity will not negatively impact on water or air quality and that the qualifying interests of this European Site are protected.</p>
<p>Blasket Islands SPA (Site code: 004008)</p>	<p>13.5km south-west of the site</p>	<p>Species:</p> <p>[A009] Fulmar <i>Fulmarus glacialis</i></p> <p>[A013] Manx Shearwater <i>Puffinus puffinus</i></p> <p>[A014] Storm Petrel <i>Hydrobates pelagicus</i></p> <p>[A018] Shag <i>Phalacrocorax aristotelis</i></p> <p>[A183] Lesser Black-backed Gull <i>Larus fuscus</i></p> <p>[A184] Herring Gull <i>Larus argentatus</i></p> <p>[A188] Kittiwake <i>Rissa tridactyla</i></p> <p>[A194] Arctic Tern <i>Sterna paradisaea</i></p> <p>[A200] Razorbill <i>Alca torda</i></p> <p>[A204] Puffin <i>Fratercula arctica</i></p> <p>[A346] Chough <i>Pyrrhocorax pyrrhocorax</i></p>	<p>(2022) First Order Site-specific Conservation objectives for Blasket Islands SPA [004008]. Version 1.</p> <p>Department of Housing, Local Government and Heritage.</p> <p>[12th October 2022]</p>	<p>The main potential for impact on the Qualifying interests of this SPA would arise from changes in surface water quality, which could affect the species, and cause disturbance to the habitats of marine animals.</p> <p>There is a potential risk from migration of landfill leachate into surface waters and groundwater and from migration of passive landfill gas into atmosphere.</p> <p>However, due to the distance of the landfill from the SPA (over 13km) and the SPA being located within the Southwestern Atlantic Seaboard, means that there will be no negative impacts from the facility to the qualify interests of the European Site.</p> <p>The recommended certificate of authorisation specifies conditions to protect the surface waters and groundwater and in turn the qualifying interests of this European Site.</p> <p>The capping, as required under Condition 3.1, will limit ingress of rainwater into the waste body thus limiting the generation of leachate.</p> <p>Condition 3.9 requires monitoring of leachate, groundwater upgradient and downgradient of the landfill and surface water upstream and</p>

				<p>downstream of the landfill and at the outfall from the surface water drainage system.</p> <p>Additionally, Condition 3.1(e) requires installation, operation and maintenance of a gas management system to accommodate passive gas venting.</p> <p>Condition 3.9 and Schedule A require gas monitoring at the existing monitoring locations, the proposed gas vent and monitoring locations, the biological filter if required and installed and, if required, the relevant adjacent buildings, including domestic dwellings.</p> <p>Furthermore, Condition 3.3 requires that the closed landfill and the remedial works shall not cause environmental pollution or deterioration in the status of the receiving surface water body or groundwater body.</p> <p>In addition, Condition 3.14 requires that no emissions arising from activities carried on at the site, including, amongst others, leachate, gas, litter and mud shall result in an impairment of, or an interference with amenities or the environment beyond the facility boundary or any other legitimate uses of the environment beyond the facility boundary.</p> <p>Conclusion:</p> <p>The controls in the recommended certificate of authorisation will ensure that the activity will not negatively impact on water quality and that the qualifying interests of this European Site are protected.</p>
Mount Brandon SAC (Site code: 000375)	1.2km east of the site and 42km via	<p>Habitats:</p> <p>[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts</p>	NPWS (2016) Conservation objectives for Mount Brandon SAC [000375]. Version 1.0.	The main potential for impact on the Qualifying interests of this SAC would arise from changes in water quality and air quality, which could affect habitats and water-dependent species directly or

	hydrological connection	<p>[3110] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</p> <p>[3130] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i></p> <p>[4010] Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>[4030] European dry heaths</p> <p>[4060] Alpine and Boreal heaths</p> <p>[6230] Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)</p> <p>[7130] Banket bogs</p> <p>[8110] Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)</p> <p>[8210] Calcareous rocky slopes with chasmophytic vegetation</p> <p>[8220] Siliceous rocky slopes with chasmophytic vegetation</p> <p>Species:</p> <p>[1029] Freshwater Pearl Mussel <i>Margaritifera margaritifera</i></p> <p>[1421] Killarney Fern <i>Trichomanes speciosum</i></p>	<p>Department of Arts, Heritage and the Gaeltacht.</p> <p>[dated 6th July 2016].</p>	<p>indirectly, disturbance to the habitats and spread of invasive species.</p> <p>Mount Brandon SAC is a very vast European Site. Part of it is located 1.2km east of the landfill however the hydrological connection is via sea reaching this European Site on the northern coast of the Dingle Peninsula.</p> <p>The distance, via sea, between the landfill and the SAC (over 40km) means that there will be no negative impacts from the facility to the qualify interests of the European Site.</p> <p>There is a potential risk from migration of landfill leachate into surface waters and groundwater and from migration of passive landfill gas into atmosphere.</p> <p>The recommended certificate of authorisation specifies conditions to protect the surface waters and groundwater and in turn the qualifying interests of this European Site.</p> <p>The capping, as required under Condition 3.1, will limit ingress of rainwater into the waste body thus limiting the generation of leachate.</p> <p>Condition 3.9 requires monitoring of leachate, groundwater upgradient and downgradient of the landfill and surface water upstream and downstream of the landfill and at the outfall from the surface water drainage system.</p> <p>Additionally, Condition 3.1(e) requires installation, operation and maintenance of a gas management system to accommodate passive gas venting.</p> <p>Condition 3.9 and Schedule A require gas monitoring at the existing monitoring locations, the proposed gas vent and monitoring locations, the biological filter if required and installed and, if</p>
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				<p>required, the relevant adjacent buildings, including domestic dwellings.</p> <p>Additionally, Condition 3.19 requires an Invasive Species Prevention and Eradication Plan.</p> <p>Furthermore, Condition 3.3 requires that the closed landfill and the remedial works shall not cause environmental pollution or deterioration in the status of the receiving surface water body or groundwater body.</p> <p>In addition, Condition 3.14 requires that no emissions arising from activities carried on at the site, including, amongst others, leachate, gas, litter and mud shall result in an impairment of, or an interference with amenities or the environment beyond the facility boundary or any other legitimate uses of the environment beyond the facility boundary.</p> <p>Conclusion:</p> <p>The controls in the recommended certificate of authorisation will ensure that the activity will not negatively impact on water or air quality and that the qualifying interests of this European Site are protected.</p>
<p>Tralee Bay and Magharees Peninsula West to Cloghane SAC (Site code: 002070)</p>	<p>12.3km north-east of the site and 60km over hydrological connection</p>	<p>Habitats:</p> <p>[1130] Estuaries</p> <p>[1140] Mudflats and sandflats not covered by seawater at low tide</p> <p>[1160] Large shallow inlets and bays</p> <p>[1170] Reefs</p> <p>[1210] Annual vegetation of stony banks</p>	<p>NPWS (2014) Conservation Objectives: Tralee Bay and Magharees Peninsula, West to Cloghane SAC [002070]. Version 1.</p> <p>National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.</p>	<p>The main potential for impact on the Qualifying interests of this SAC would arise from changes in water quality and air quality, which could affect the species, disturbance to the habitats and activities that could affect population trends.</p> <p>Tralee Bay and Magharees Peninsula West to Cloghane SAC is located on the on the northern coast of the Dingle Peninsula. The distance of 60km, via sea, between the landfill and the SAC means that there will be no negative impacts</p>

		<p>[1220] Perennial vegetation of stony banks</p> <p>[1310] <i>Salicornia</i> and other annuals colonising mud and sand</p> <p>[1330] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</p> <p>[1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</p> <p>[2120] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)</p> <p>[2170] Dunes with <i>Salix repens ssp. argentea</i> (<i>Salicion arenariae</i>)</p> <p>[2190] Humid dune slacks</p> <p>[6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)</p> <p>[91E0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)</p> <p>Species:</p> <p>[1355] Otter <i>Lutra lutra</i></p> <p>[1395] Petalwort <i>Petalophyllum ralfsii</i></p>	<p>[dated 11th February 2014]</p>	<p>from the facility to the qualify interests of the European Site.</p> <p>There is a potential risk from migration of landfill leachate into surface waters and groundwater and from migration of passive landfill gas into atmosphere.</p> <p>The recommended certificate of authorisation specifies conditions to protect the surface waters and groundwater and in turn the qualifying interests of this European Site.</p> <p>The capping, as required under Condition 3.1, will limit ingress of rainwater into the waste body thus limiting the generation of leachate.</p> <p>Condition 3.9 requires monitoring of leachate, groundwater upgradient and downgradient of the landfill and surface water upstream and downstream of the landfill and at the outfall from the surface water drainage system.</p> <p>Additionally, Condition 3.1(e) requires installation, operation and maintenance of a gas management system to accommodate passive gas venting.</p> <p>Condition 3.9 and Schedule A require gas monitoring at the existing monitoring locations, the proposed gas vent and monitoring locations, the biological filter if required and installed and, if required, the relevant adjacent buildings, including domestic dwellings.</p> <p>Furthermore, Condition 3.3 requires that the closed landfill and the remedial works shall not cause environmental pollution or deterioration in the status of the receiving surface water body or groundwater body.</p> <p>In addition, Condition 3.14 requires that no emissions arising from activities carried on at the</p>
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				<p>site, including, amongst others, leachate, gas, litter and mud shall result in an impairment of, or an interference with amenities or the environment beyond the facility boundary or any other legitimate uses of the environment beyond the facility boundary.</p> <p>Conclusion:</p> <p>The controls in the recommended certificate of authorisation will ensure that the activity will not negatively impact on water or air quality and that the qualifying interests of this European Site are protected.</p>
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