APPENDIX 3

CODE OF PRACTICE
ENVIRONMENTAL RISK ASSESSMENT
FOR UNREGULATED WASTE DISPOSAL SITES:

- TABLE A3.1 RESULTS OF S-P-R LINKAGE PRIORITISATION ON FORMER LANDFILL AT BARNAGEERAGH COVE, SKERRIES, CO.DUBLIN

- TIER 1 RISK SCREENING & SITE PRIORITIZATION AT SKERRIES HOUSING DEVELOPMENT REPORT

Table A3.1. Results of S-P-R Linkage Priortisation on Former Landfill at Barnageeragh Cove, Skerries, Co.Dublin

SOURCE		PATHWAYS					RECEPTORS					
LEACHATE	*LANDFILL GAS*	*GROUNDWATER VULNERABILITY (VERTICAL)*	*GROUNDWATER FLOW REGIME (HORIZONTAL)*	*SURFACE WATER DRAINAGE*	*LANDFILL GAS LATERAL MIGRATION*	*LANDFILL GAS VERTICAL MIGRATION*	*LEACHATE - HUMAN PRESENCE*	*LEACHATE - PROTECTED AREAS*	*LEACHATE - AQUIFER CLASS*	*LEACHATE - PUBLIC WATER*	*LEACHATE - SURFACE WATER*	*LANDFILL GAS - HUMAN PRESENCE*
1A	**1B**	**2A**	**2B**	**2C**	**2D**	**2E**	**3A**	**3B**	**3C**	**3D**	**3E**	**3F**
5	5	2	1	0	3	0	3	0	1	0	3	5

Source Pathway Receptor Linkage	Formula	Score	% Score	Linkages
SPR 1	1a * (2a + 2b + 2c) * 3e	45	15.0	Leachate to SW
SPR 2	1a * (2a + 2b + 2c) * 3b	0	0.0	Leachate to GWDTE
SPR 3	1a * (2a + 2b) * 3a	45	18.8	Leachate to Private Well
SPR 4	1a * (2a + 2b) * 3b	0	0.0	Leachate to GWDTE
SPR 5	1a * (2a + 2b) * 3c	15	3.8	Leachate to aquifer
SPR 6	1a * (2a + 2b) * 3d	0	0.0	Leachate to PWS
SPR 7	1a * (2a + 2b) * 3e	45	18.8	Leachate to SW
SPR 8	1a *2c*3e	0	0.0	Leachate to SW
SPR 9	1a *2c*3b	0	0.0	Leachate to GWDTE
SPR 10	1b *2d*3f	75	50.0	Landfill gas - humans
SPR 11	1b *2e*3f	0	0.0	Landfill gas - humans
HIGHEST INDIVIDUAL SCORE			**50.0**	**Landfill gas - humans**

Risk Classification	Range of Risk Scores
Highest Risk (Class A)	Greater than or equal to 70% for any individual SPR linkage
Moderate Risk (Class B)	Between 40 to 70% for any individual SPR linkage
Lowest Risk (Class C)	Less than or equal to 40% for any individual SPR linkage

Table 1a: Leachate: Source/Hazard Scoring Matrix

	WASTE FOOTPRINT (ha)		
WASTE TYPE	≤ 1 ha	> 1 ≤ 5 ha	> 5 ha
C&D [20]	0.5	1	1.5
Municipal [21]	5	7	10
Industrial [22]	5	7	10
Pre-1977 sites [23]	1	2	3
		MAX	10

[20]Table 1b: Landfill Gas: Source/Hazard Scoring Matrix

	WASTE FOOTPRINT (ha)		
WASTE TYPE	≤ 1 ha	> 1 ≤ 5 ha	> 5 ha
C&D [20]	0.5	0.75	1
Municipal [21]	5	7	10
Industrial [22]	3	5	7
Pre-1977 sites [23]	0.5	0.75	1
		MAX	10

[20] ***Predominantly inert waste with low biodegradable fraction and/or small industrial waste fraction.***
[21] ***Typically non-hazardous domestic waste (highly biodegradable) with potentially small hazardous waste fraction and/or small industrial waste fraction, e.g. town dump.***
[22] ***Generally industrial waste where hazardous waste was known to have been deposited or there is a strong likelihood that hazardous waste was deposited due to the close proximity of such industries.***
[23] ***Pre 1977 wastes would have been substantially degraded within the landfill.***

Table 2a: Leachate Migration: Pathways

Parameters	Points available
GROUNDWATER VULNERABILITY (Vertical pathway)	
Extreme Vulnerability	3
High Vulnerability	2
Moderate Vulnerability	1
Low Vulnerability	0.5
High – Low Vulnerability	2

Table 2b: Leachate Migration: Pathways

Parameters	Points available
GROUNDWATER FLOW REGIME (Horizontal pathway)	
Karstified Groundwater Bodies (Rk) [25]	5
Productive Fissured Bedrock Groundwater Bodies (Rf and Lm) [25]	3
Gravel Groundwater Bodies (Rg and Lg) [25]	2
Poorly Productive Bedrock Groundwater Bodies (Ll, Pl, Pu) [25]	1

Table 2c: Leachate Migration: Pathways

Parameters	Points available
SURFACE WATER DRAINAGE [26] (surface water pathway)	
Is there a direct connection between drainage ditches associated with the waste body and adjacent surface water body? Yes	2
If no direct connection	0

[25] ***Refer to DEHLG/EPA/GSI 1999, Groundwater Protection Schemes.***

Table 2d: Landfill Gas: Pathway Assuming Receptor Within 250m of Source

Parameters	Points available
LANDFILL GAS LATERAL MIGRATION POTENTIAL	
Sand and Gravel, Made ground, urban, karst	3
Bedrock	2
All other Tills (including limestone, sandstone etc – moderate permeability)	1.5
All Namurian or Irish Sea Tills (low permeability)	1
Clay, Alluvium, Peat	1

Table 2e: Landfill Gas: Pathway Assuming Receptor Located Above Source

Parameters	Points available
LANDFILL GAS VERTICAL (UPWARDS) MIGRATION POTENTIAL	
Sand and Gravel, Made ground, urban, karst	5
Bedrock [2]	3
All other Tills (including limestone, sandstone etc – moderate permeability) [2]	2
All Namurian or Irish Sea Tills (low permeability)	1
Clay, Alluvium, Peat	1

*Assigned a score of 0 as no receptors located above the waste disposal site

Table 3a: Leachate Migration: Receptors

Parameters	Points available
HUMAN PRESENCE (presence of a house indicates potential private wells)	
On or within 50m of the waste body	3
Greater than 50m but less than 250m of the waste body	2
Greater than 250m but less than 1km of the waste body	1
Greater than 1 km of the waste body	0

Table 3b: Leachate Migration: Receptors

Parameters	Points available
PROTECTED AREAS (SWDTE or GWDTE)	
Within 50m of the waste body	3
Greater than 50m but less than 250m of the waste body	2
Greater than 250m but less than 1km of waste body	1
Greater than 1 km of the waste body	0
Undesignated sites[24] within 50m of site of the waste body	1
Undesignated sites [24] greater than 50m but less than 250m of the waste body	0.5
Undesignated sites [24] greater than 250m of the waste body	0

*Assigned a score of 0 as the nearest SPA (i.e. Skerries Islands) is greater than 1km in distance from the waste body (i.e. approximately 3.5km in distance).

[24] ***The term 'Undesignated sites' refers to wetland sites that are not designated under the Habitats or Birds Directive or Wildlife Act but are considered to the important on a local scale. Consultation with NPWS is required to identify such sites.***

Table 3c: Leachate Migration: Receptors

Parameters	Points available
AQUIFER CATEGORY [26] (resource potential)	
Regionally Important Aquifers (Rk, Rf, Rg)	5
Locally Important Aquifers (Ll, Lm, Lg)	3
Poor Aquifers (Pl, Pu)	1

Table 3d: Leachate Migration: Receptors

PUBLIC WATER SUPPLIES (other than private wells)	
Within 100m of site boundary	7
Greater than 100m but less than 300m or within Inner SPA (SI) for GW supplies	5
Greater than 300m but less than 1km or within Outer SPA (SO) for GW supplies	3
Greater than 1km (karst aquifer)	3
Greater than 1km (no karst aquifer)	0

Table 3e: Leachate Migration: Receptors

Parameters	Points available
SURFACE WATER BODIES	
Within 50m of site boundary	3
Greater than 50m but less than 250m	2
Greater than 250m but less than 1km	1
Greater than 1km	0

Table 3f: Landfill Gas: Receptor

Parameters	Points available
HUMAN PRESENCE	
On site or within 50m of site boundary	5
Greater than 50m but less than 150m	3
Greater than 150m but less than 250m	1
Greater than 250m	0.5

[26] ***This element needs to be determined during the site inspection (including walkover survey). The presence of a direct link between surface water drainage from the waste body and any adjacent surface water body implies the existence of a pathway.***