

APPENDIX 1

Tier 1 Report

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Tier 1 Environmental Risk Assessment

For

Unlicensed Landfill

Whitegate

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Assessment carried out by:

Maeve Ryan

Patricia O'Brien

Michael McDermott

Environment Section

Clare County Council

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1. Introduction

1.1 Objective

The objective of this investigation was to undertake a Tier 1 Risk Assessment in accordance with the Code of Practice for Environmental Risk Assessment of Unregulated Waste Disposal Sites, EPA, 2007 (EPA CoP, 2007). The Tier 1 Risk Assessment is an initial screening process that allows for the prioritisation of sites into high, moderate and low risk, so that resources can be allocated to the investigation of higher risk sites. The risk assessment also enables the source-pathway-receptor (SPR) linkages to be examined for each site.

The Risk Assessment comprised the following:

- Desk study, including aquifer classification maps, aerial photographs, Ordnance Survey Ireland (OSI) maps, archived records.
- Site inspection including walkover survey.
- Development of conceptual site model showing SPR linkages.
- Risk screening as described in EPA Code of Practice.

2. Desk Study

2.1 Information Sources

The following sources of information were consulted as part of the desk study:

- Archived records held by Clare County Council.
- OSI 6" maps and 5 and 50k maps.
- GSI and EPA online maps.
- Ordnance Survey Ireland aerial photographs, 1996, 2002 and 2006.
- NPWS.
- Interviews with current and retired Council staff.

2.2 Site Location and Walkover Survey Observations.

Whitegate landfill is located on an 8 Ha site approximately 800m to the north of Whitegate village. According to available records, only 0.4Ha of the total site area was used for landfill. However, the landfill height in comparison to surrounding lands indicates that just under 1Ha may have been filled; a section to the rear of the site appears to have been filled with soil and stones rather than municipal waste.

The site is owned by Clare County Council (to be confirmed). The lands are fenced off and are currently idle. Lands immediately to the north of the landfill are under forestry. Lands to the south have recently been planted with conifers. The site is bordered to the

west by a local road from Whitegate village which rejoins the main Whitegate-Portumna road approximately 2km to the north of the landfill. Lands to the east were impassable during both site visits in 2008, due to high water level. The nearest house is 600m north. The lands slope from west to east. The groundwater vulnerability rating is "high" and the aquifer category is Pi (generally unproductive except in local zones).

The site walkover survey indicated that there are small amounts of exposed waste on the northern boundary and also in a small section of the southern boundary. There is some fly-tipped or blown litter on the forestry lands immediately to the north of the site. The walkover survey checklist is attached in appendix I. Site photographs are also included in appendix I.

2.3 Surface Water Features

A drain bounds the landfill immediately to the north, running west to east. Crooked Lough (wetland) lies approximately 250m to the southwest of the site (upstream). According to the 6" O.S. maps, a drain connects Crooked Lough to the boundary drain, downstream of the landfill. However, the land drainage underwent modification at some point and there are now a series of field drains to the immediate south of the site. The original drain from Crooked Lough could not be located.

Cregg Lough lies 750m southwest and upgradient of the site. Lough Allewnaghta is approximately 1km to the northeast of the landfill. The boundary drain eventually flows to Lough Allewnaghta via a first order stream.

2.4 Historical Site Use and Waste Disposal Activities.

The landfill opened between the 1960's and 1970's and closed in 1998. The waste type accepted was mainly municipal waste but because of the rural location of the site, it is likely that some agricultural waste was also deposited here. The annual tonnage of waste deposited was estimated at 1,365 tonnes (from information supplied from CCC for An Foras Forbatha report, 1986). The waste height was estimated by CCC area staff to be approximately 4m, indicating that a total of 28,000 tonnes of waste was deposited here (estimate only, assuming density of 0.7 tonnes per cubic metre).

3. Risk Assessment

The Tier 1 Risk Assessment was run for the site following the procedure described in EPA CoP, 2007. The procedure is not described here because a full and detailed description is available in the EPA document.

Scores were obtained for each of the total of eleven possible SPR linkages based on the nature of the source, the existence of receptors within defined distances from the source and the pathways available between the source and receptors. The scoring system is specified in the CoP.

The three highest individual linkage scores obtained from the Risk Assessment for Whitegate Landfill are summarised in table 1 below. Detailed results are provided in appendix II.

Table 1: Highest Linkage Scores for Whitegate Landfill.

SPR Number	Normalised Score %	Risk Classification*	Description of Linkage
9	70	High Risk (Class A)	Leachate migration through surface water to a protected area (SPA).
2	35	Lowest Risk (Class C)	Leachate migration through combined groundwater and surface water pathways to a protected area (SPA).
4	26	Lowest Risk (Class C)	Leachate migration through groundwater to a protected area (SPA)
Final Risk Classification:		High Risk (Class A)	

*from EPA Code of Practice For Unregulated Waste Disposal Sites.

As can be seen from table 1 above, Whitegate landfill is tentatively assigned to Class A (high risk) based on the score of 70% obtained for the SPR9 linkage (leachate migration through surface water to a protected area). This classification is due to the proximity of the site to the special protection area for birds (SPA), located immediately to the west. The risk assessment was repeated using the EPA online methodology, results of which are included in appendix IIb. Similar results were obtained.

4.0 Follow-up Investigation

Findings of the Tier 1 risk assessment are tentative only, and must be confirmed by field investigations. A follow-up site visit was made in November 2008 to assess surface water quality in the vicinity of the site. Subsurface gas levels were also measured.

4.1 Landfill Gas

Impact searcher bars were used to measure gas levels at 0.5m to 1m depths at suitable locations on the site. It was only possible to measure at six locations due to the ground being water-logged. No methane was detected at any location. CO₂ levels were low, ranging from 0.1 to 1.7%v/v. Detailed results are attached in Appendix III. Sample locations are shown on a map attached in appendix III.

4.2 Surface Water Quality.

Surface water samples were collected from two locations in the vicinity of the landfill site, as follows:

- SW1, from the drain which flows along the northern site boundary from west to east.
- SW2, from flooded lands to the south of the site.

Sample locations are shown on the drawing attached in appendix III.

Sample results are summarised below in Table 2, with detailed results included in Appendix III:

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Table 2: Surface Water Monitoring Results, Whitegate Landfill Area.

Parameter	units	SW1 (d/s)	SW2 (u/s)	Parameter	units	SW1 (d/s)	SW2 (u/s)
TON	ppm	<0.3	0.7	Nickel	ppb	4	5
Total 16 EPA PAH's	ppt	<10	<10	Selenium	ppb	4	6
Total phenol	ppm	<0.01	<0.01	Zinc	ppb	21	24
Mercury	ppb	<0.05	<0.05	TOC	ppm	12	32
Arsenic	ppb	2	4	Sulphate	ppm	7	8
Boron	ppb	<3	<3	pH	-	6.7	6.9
Cadmium	ppb	<0.4	<0.4	Total Cyanide	ppm	<0.05	<0.05
Chromium	ppb	<1	<1	Free Cyanide	ppm	<0.01	<0.01
Chromium VI	ppb	<0.03	<0.03	Sulphide	ppm	<0.01	<0.01
Copper	ppb	1	2	Thiocyanate	ppm	<0.2	NDP
Lead	ppb	1	6	Ammonia	ppm	<0.20	0.3

As can be seen from the table, satisfactory results were obtained for all parameters, indicating that the landfill is not impacting on surface water quality.

4.3 Proximity to SPA

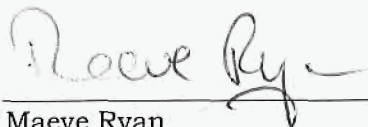
Whitegate landfill is categorised as a high-risk site because of its proximity to an SPA. The highest SPR linkage score obtained was for leachate migration through surface water to a protected area (SPA). If the site were not located beside an SPA, it would be classified as Class C (lowest risk). The theoretical impact on the SPA is due to potential for surface water contamination from leachate. However, the SPA is located to the west of the site and the direction of surface water flow is from west to east so the SPA is upstream of the landfill and surface waters within the SPA will not be impacted by the landfill. Furthermore, results for surface water samples taken in the vicinity of the site indicate

that downstream surface waters are not contaminated. Therefore, the results of field investigations indicate that this SPR linkage does not exist in reality.

The exposed waste at perimeter locations around the site boundary needs to be addressed particularly in view of the proximity of the SPA and the fact that birds may feed in the vicinity.

Conclusions

1. Results of the tier 1 risk assessment for the unlicensed landfill at Whitegate indicate that the landfill is a class A (high risk) site. This is based on the linkage between the landfill and the adjacent SPA, via leachate migration through surface water.
2. The SPR linkage between the landfill and the SPA does not exist in reality because the direction of surface water flow is from the SPA towards the landfill site. Surface waters within the SPA are upstream of the landfill.
3. Results of follow-up investigations indicate that the surface water downstream of the site is uncontaminated.
4. The landfill has been well covered except on the northern and southern perimeters, where exposed waste is visible on the side slopes.
5. While the theoretical SPR9 linkage does not exist in reality, the exposed waste must be addressed, particularly in view of the proximity of the site to the SPA.
6. Gas levels across the site were very low with no methane detected. However only six locations could be monitored as the ground was heavily waterlogged.



Maeve Ryan

29th July 2009

Appendix I
Site Walkover Survey Checklist and Site Photographs

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WHITEGATE LANDFILL



Area A: Entrance area. No waste visible except on northern side slope

Area B: C&D appears to have been placed waste here

Area C: Some waste visible on southern side slope

Whitegate Landfill

Information	Checked	Comment
What is current land use	√	Not used. Overgrown with furze and briars. Evidence of deer on site.
What are neighbouring land uses?	√	Forestry to north south and east. Road to the west. Agricultural land to the southwest beside road.
What is the size of the site?	√	total area landfilled just under 1 Ha
What is the topography?	√	Hilly, sloping towards the east
Are there potential receptors?	√	SPA to the west. Drain runs west to east at north of site.
Houses	√	Not in vicinity of site
Surface water features (if Yes, give distance and direction of flow)	√	Drain runs west to east, along the northern perimeter
Any wetland or protected areas?	√	SPA to the west. Undesignated wetland to the southwest
Public water supplies	√	No
Private wells	√	No
Services	√	No
Other buildings	√	Abandoned dwelling to the north
Other	√	Litter visible on adjoining forestry land. May have been blown from the landfill. Some exposed waste on side slopes.

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Information	Checked	Comment
Are there are potential sources of contamination	√	Not visible except for some exposed waste on side slopes
Surface waste (what type?)	√	Some visible on side slopes to north and on slope to SE (hidden by furze). Plastic, metal.
Surface ponding of leachate	√	None
leachate seepage	√	None visible although there is possibility of seepage to the north of the site, into the boundary drain
Landfill gas odours	√	None. Anaerobic odour from wetland to the southeast
Are there any outfalls to surface water? Are there discharges?	√	No outfalls
Are there any signs of impact on the environment?	√	None
Vegetation die off, bare ground	√	No
Leachate seepages	√	No
Odours	√	See note above
Litter	√	Yes, on forestry lands to the north, adjacent to site
Gas bubbling through water	√	No
Signs of settlement	√	No.

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testing for gas.JPG



to south of site.JPG

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view of Construction material to north boundary.JPG



view of northern boundary looking west. 2.JPG



view of placed material, boulders, at north boundary.JPG



view of western boundary, looking north.JPG



looking east, on lands to north of site.JPG



looking north, ESB cleared forestry track.JPG



side slope on northern boundary.JPG



SW sample location, outside southern boundary.JPG



outside northern boundary.JPG



pic to south.JPG



bare ground, no top soil looking east.JPG



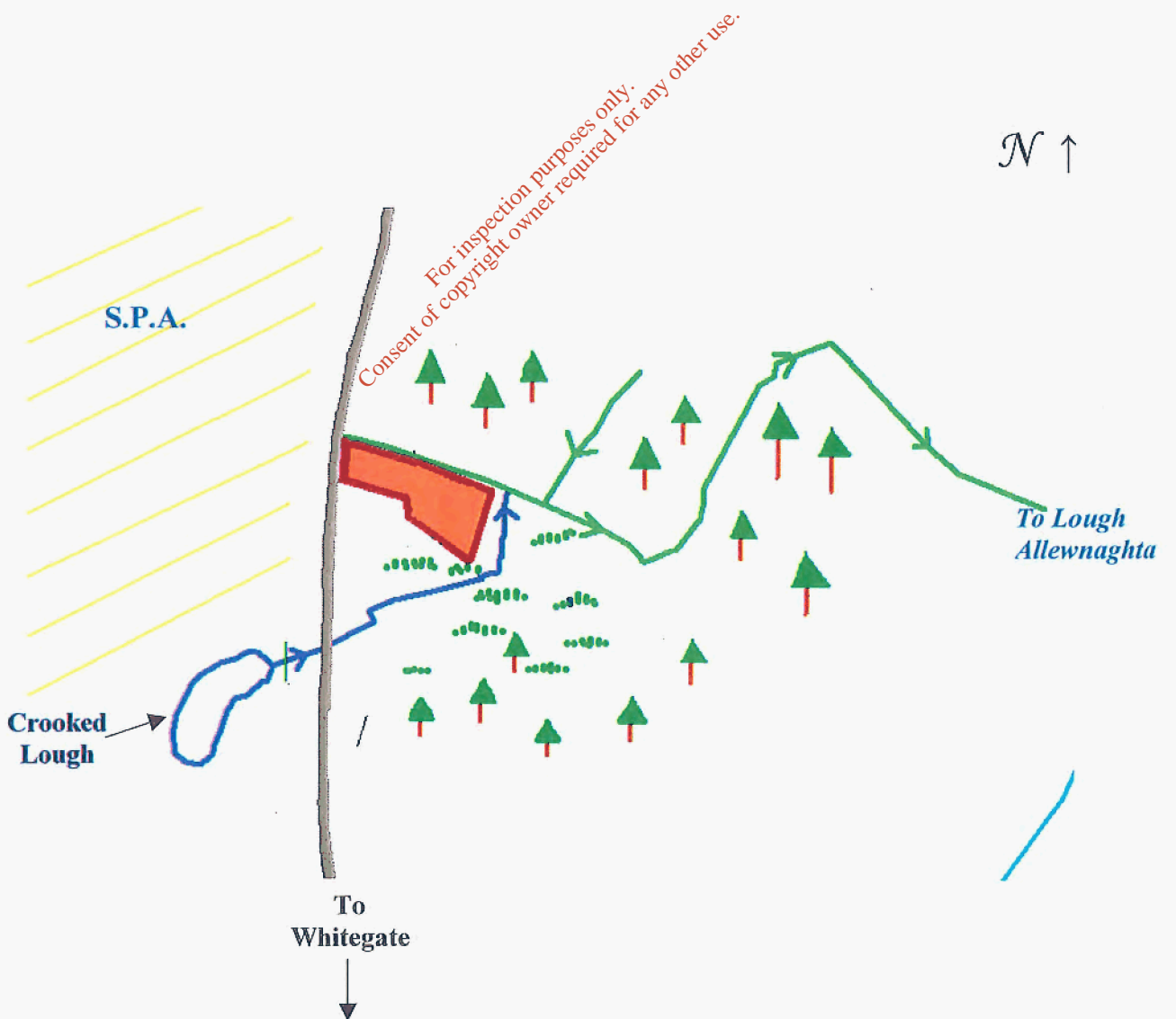
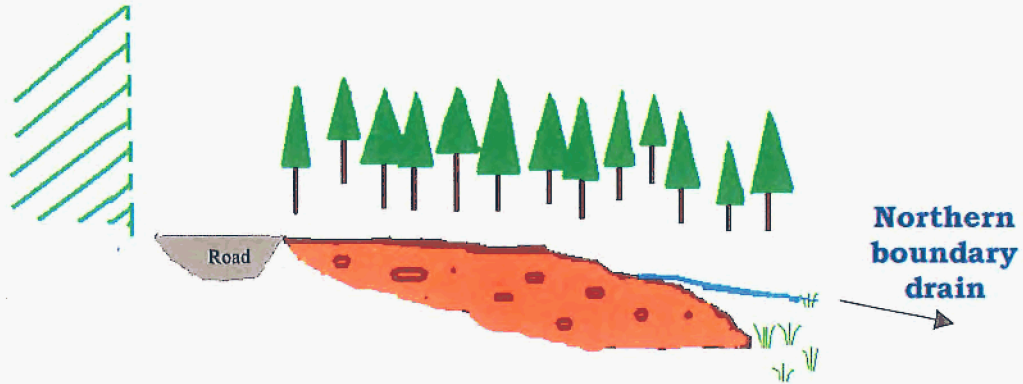
bare ground, no topsoil, looking east.JPG

Appendix II
Risk Assessment Results and Conceptual Site Model

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WHITEGATE LANDFILL Conceptual Site Model

S.P.A.

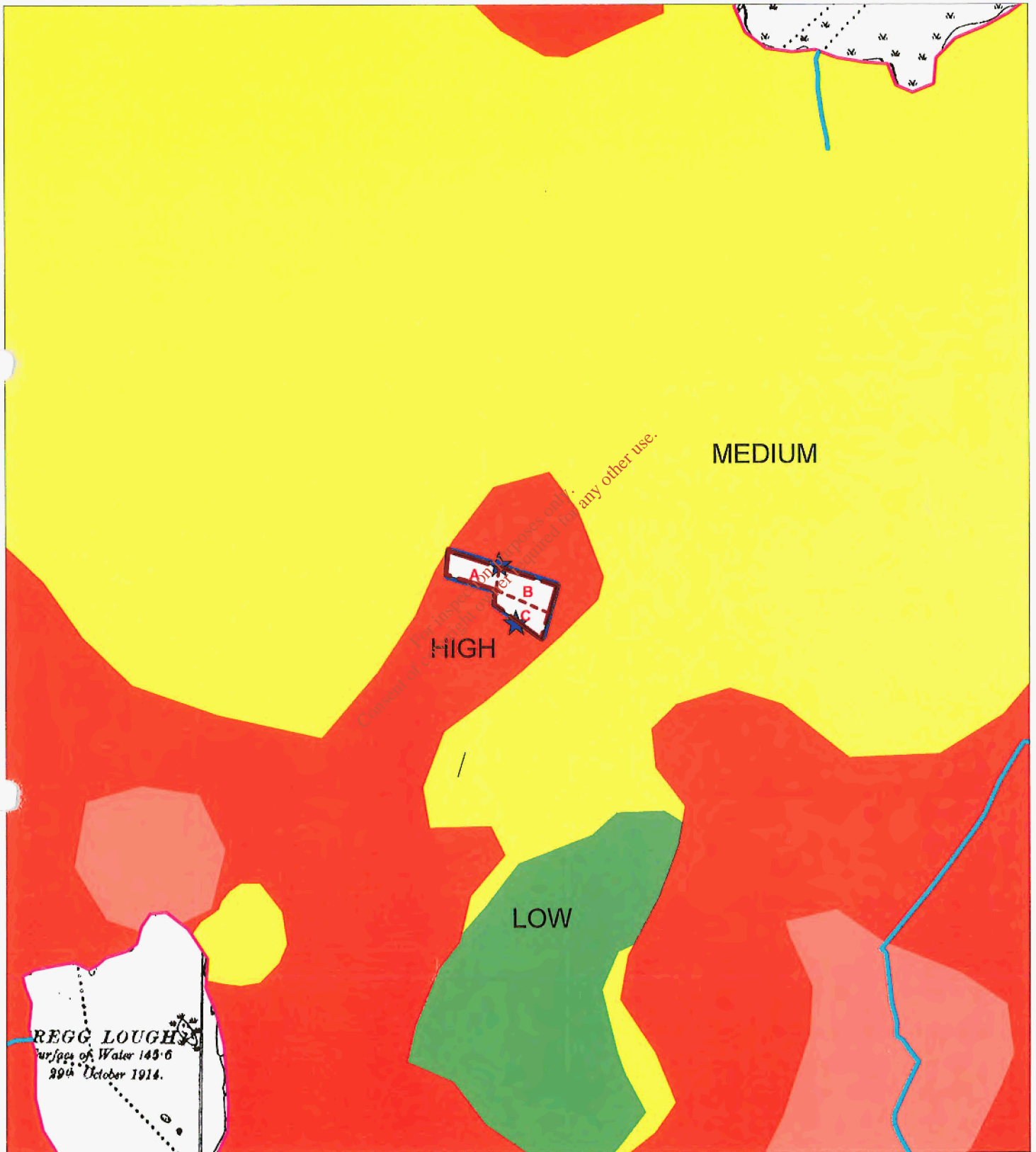


WHITEGATE LANDFILL



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WHITEGATE LANDFILL GROUNDWATER VULNERABILITY MAP



SPR linkage scores for Whitegate landfill

SPR #	SPR Linkage Score	Normalised Score (%)
SPR1	35.00	11.67
SPR2	105.00	35.00
SPR3	21.00	8.75
SPR4	63.00	26.25
SPR5	21.00	5.25
SPR6	0.21	0.04
SPR7	21.00	8.75
SPR8	14.00	23.33
SPR9	42.00	70.00
SPR10	3.50	2.33
SPR11	3.50	1.40

Comments:

Site is tentatively classified as High Risk (Class A) due to SPR 9 score (leachate migration through surface water to a protected area (SPA)).

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Whitegate Landfill

Table Number	Score	Scoring System	Comments
1a	7	Score from waste type and area:	This is a fixed score based on the size of the facility (1-5Ha). Note that although the full site is 8Ha, records state that only 0.4 Ha was actually landfilled. However, site pic indicates that size may be approx 1 Ha.
1b	7	score from waste type and area:	This is a fixed score based on the size of the facility (1-5Ha). Note that although the full site is 8Ha, records state that only 0.4 Ha was actually landfilled. However, site photograph indicates that size may be approx 1 Ha.
2a	2	GW vulnerability	scores 2 based on "high" score for vulnerability
2b	1	Groundwater flow regime	Pi, generally unproductive except for local zones.
2c	2	Is there a direct connection between drainage ditches ass w the waste body and adjacent SW	Direct connection exists between drainage ditches associated w waste body and adjacent SW body.
2d	1	Gas migration pathways	assuming receptor within 250m of source. PEAT
2e	1	Gas migration pathways	assuming receptor above source. PEAT
3a	1	human presence	human presence between 250m and 1km of source
3b	3	protected area	SPA immediately adjacent to site.
3c	1	Aquifer category (resource potential):	aquifer category (resource potential): Pi
3d	0	PWS	public water supply: greater than 1km and No karst
3e	1	SW bodies	SW body (lough alwenaughta?? Located 980m from site and first order stream located between 250m and 1km from the site. Score 1.
3f	0.5	human presence	human presence greater than 250m

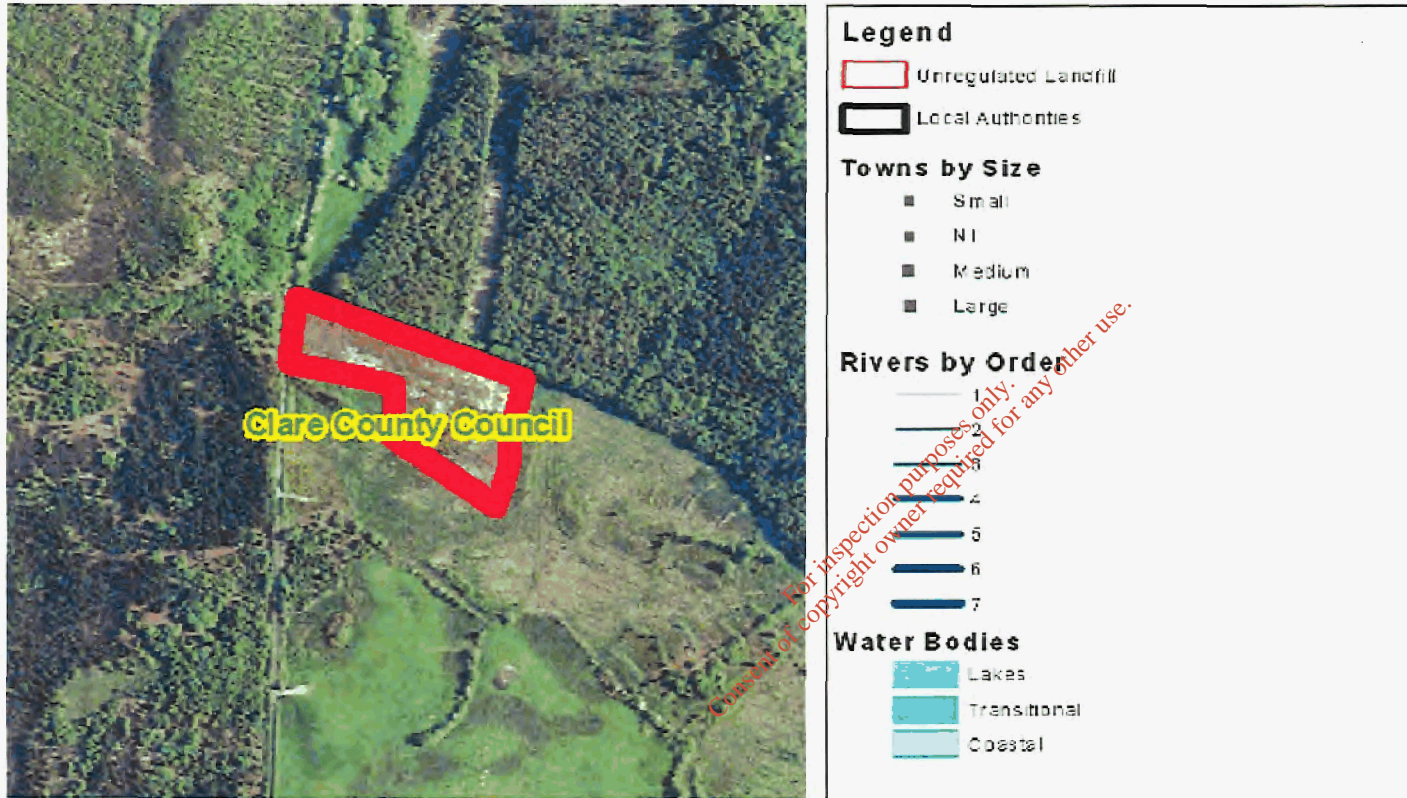
Appendix IIb
Risk Assessment Results Using EPA Online System

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Risk ranking report for Whitegate landfill - Clare County Council (S22-02502)

Date: 28/07/2009

Page 1 of 3



Grid reference of the centre of the site: 175071E, 189923N

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[Click here for the walkover survey checklist](#)



Risk ranking report for Whitegate landfill - Clare County Council
(S22-02502)

Date: 28/07/2009

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Table	Points available	Rationale	SPRLinkage	Linkage Score	Norm Score
1a	7.00	EITHER (Type: Industrial, Area > 1 <= 5 Ha) OR (Type: Municipal, Area > 1 <= 5 Ha)	SPR1	35.00	11.67
1b	7.00	EITHER (Type: Industrial, Area >5 Ha) OR (Type: Municipal, Area > 1 <= 5 Ha)	SPR2	105.00	35.00
2a	2.00	High Vulnerability / High - Low Vulnerability	SPR3	42.00	17.50
2b	1.00	Poorly Productive Bedrock Groundwater Bodies (LI, PI, Pu)	SPR4	63.00	26.25
2c	2.00	No direct connection	SPR5	21.00	5.25
2d	1.50	All other tills (Including limestone, sandstone etc. - moderate permeability)	SPR6	0.00	0.00
2e	2.00	All other tills (Including limestone, sandstone etc. - moderate permeability)	SPR7	21.00	8.75
3a	2.00	Greater than 50m but less than 250m of the waste body	SPR8	14.00	23.33
3b	3.00	On or within 50m of the waste body	SPR9	42.00	70.00
3c	1.00	Poor aquifers (PI, Pu)	SPR10	10.50	7.00
3d	0.00	Greater than 1km (No Karst Aquifer)	SPR11	14.00	5.60
3e	1.00	Greater than 250m but less than 1km			
3f	1.00	Greater than 150m but less than 250m			

Risk Classification: A: Highest Risk

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[Click here for the walkover survey checklist](#)



Risk ranking report for Whitegate landfill - Clare County Council
(S22-02502)

Date: 28/07/2009

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Site Summary

Facility Description

Not Specified

Receiving Environments

Not Specified

Known Impacts

Not Specified

Emissions Observed

Not Specified

Remediation Measures

Not Specified

Technical Requirements

Not Specified

Treatment Methods

Not Specified

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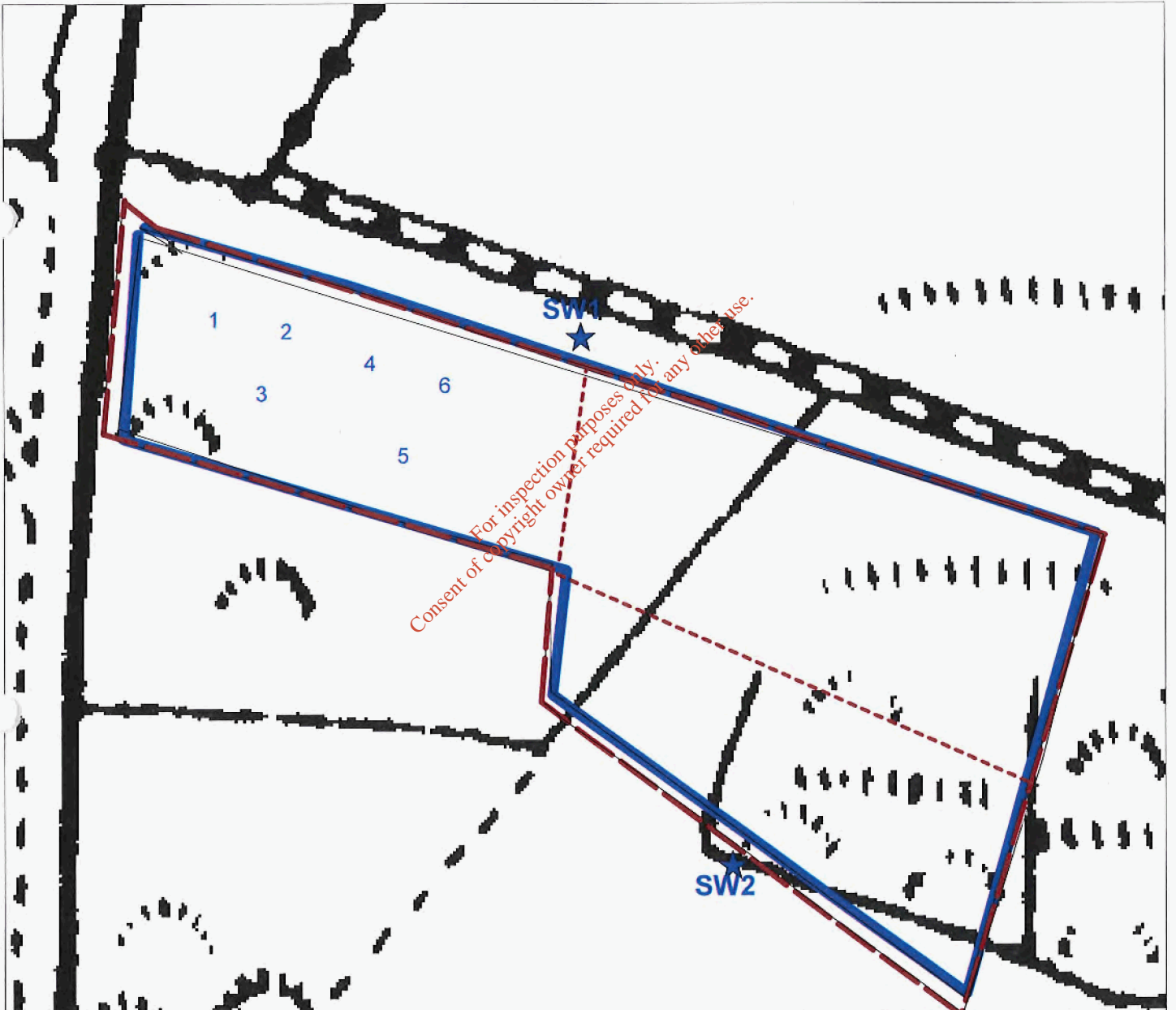
[Click here for the walkover survey checklist](#)

Appendix III
Results of Follow-Up Site Investigations
for Surface Water and Landfill Gas

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WHITEGATE LANDFILL

Gas and Surface Water Monitoring Locations



LANDFILL GAS MONITORING FORM

Site Name: Whitegate Landfill		Site Address: Whitegate, near Bargarriff, County Clare National Grid Reference:				
Site Status: Closed unlicensed landfill		Date: 26/11/08				
Instrument Used: Gas Data LMSxi		Date Next Calibration: Aug09				
Monitoring Personnel: Maeve Ryan/Patricia O'Brien/Michael McDermott		Weather: Variable, wet		Atmospheric Pressure:		
Results						
Sample Station Number	Borehole/ spike/ other	Survey Depth (m)	CH ₄ %v/v	CO ₂ %v/v	O ₂ %v/v	Comments
1	spike	All 0.51m	0	0.2	20.8	
2	spike		0	0.1	20.9	
3	spike		0	0.2	20.4	
4	spike		0	0.7	20.2	
5	spike		0	1.7	19.7	
6	spike		0	0.6	20.3	
7	spike					Ground is too wet for any further sampling. Risk of damage to analyser by drawing water through sample line.
8	spike					
9	spike					
10	spike					
11	spike					
12	spike					
13	spike					
14	spike					
15	spike					
16	spike					
17	spike					
18	spike					
19	spike					
20	spike					
21	spike					
22	spike					
23	spike					

Maeve Ryan

From: Mark Butler [mark.butler@alcontrol.com]
Sent: 15 December 2008 15:47
To: mryan@clarecoco.ie
Subject: Results B0-6883

Dear Maeve,

Please find attached results for above job. Should you have any queries please don't hesitate to contact me.

Kind Regards,

Mark Butler BSc (Hons),
Project Coordinator,

ALcontrol Laboratories (Ireland)
Unit 18a
Rosemount Business Park
Ballycoolin
Dublin 11

Tel: +353 (0)1 8829893
Fax: +353 (0)1 8829895
www.alcontrol.ie <<http://www.alcontrol.ie>>

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<<BO6883 NDP Work sheet.xls>> <<6883.xls>>

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- Interim
- Validated

ALcontrol Laboratories Ireland

Table Of Results

Ref Number: 08-B06883/01

Client: Clare County Council (Ennis)

Date of Receipt: 01/12/2008

(of first sample)

Sample Type: WATER

Location: Whitesgate & Ennistymon

Client Contact: MAEVE RYAN

Client Ref: Unlicensed Lanfills

Detection Method			Calculation	CV AA	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	GCMS	
Method Detection Limit			<0.3mg/l	<0.05ug/l	<10ng/l	<10ng/l	<10ng/l	<10ng/l	<10ng/l	<10ng/l	<10ng/l	<10ng/l	<10ng/l	<10ng/l	<10ng/l	<10ng/l	
UKAS Accredited [Testing Laboratory] No. 1291			✓														
ALcontrol Reference	Sample Identity	Other ID	Total Oxidised Nitrogen as N	Dissolved Mercury Low Level	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)+Benzo(k) Fluoranthene	Benzo(a)pyrene	Indeno(123cd)pyrene
			mg/l	ug/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l
08-B06883-S0003	SW1 - Ennistymon	25/11/2008	0.6	<0.05	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
08-B06883-S0004	SW2 - Ennistymon	25/11/2008	4.1	<0.05	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
08-B06883-S0005	SW3 - Ennistymon	25/11/2008	0.8	<0.05	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
08-B06883-S0006	SW4 - Ennistymon	25/11/2008	<0.3	<0.05	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
08-B06883-S0007	SW1 - Whitesgate	26/11/2008	<0.3	<0.05	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
08-B06883-S0008	SW2 - Whitesgate	26/11/2008	0.7	<0.05	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

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Notes : METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL.

NDP = NO DETERMINATION POSSIBLE

THE DATA ON THIS PRELIMINARY REPORT IS NOT VALIDATED AND MAY BE SUBJECT TO CHANGE.

Checked By : Mark Butler

Interim
 Validated

ALcontrol Laboratories Ireland

Table Of Results

Ref Number: 08-B06883/01

Client: Clare County Council (Ennis)

Date of Receipt: 01/12/2008
 (of first sample)

Sample Type: WATER

Location: Whitesgate & Ennistymon

Client Contact: MAEVE RYAN

Client Ref: Unlicenced Lanfills

UKAS Accredited [Testing Laboratory] No. 1291			Detection Method	GCMS	GCMS	GCMS	HPLC	HPLC	ICP MS	ICP MS	ICP MS	ICP MS	ICP MS	ICP MS	ICP MS	ICP MS	IR
			Method Detection Limit	<10ng/l	<10ng/l	<10ng/l	<0.05mg/l	<0.01mg/l	<1ug/l	<3ug/l	<0.4ug/l	<1ug/l	<1ug/l	<1ug/l	<1ug/l	<1ug/l	<2mg/l
Alcontrol Reference	Sample Identity	Other ID	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Total Aqueous 16 EPA PAHs	Free Sulphur**	Total Phenols	Dissolved Arsenic Level	Dissolved Boron Low Level	Dissolved Cadmium Low Level	Dissolved Chromium Low Level	Dissolved Copper Low Level	Dissolved Lead Low Level	Dissolved Nickel Low Level	Dissolved Selenium Low Level	Dissolved Zinc Low Level	Total Organic Carbon
			ng/l	ng/l	ng/l	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l
08-B06883-S0003	SW1 - Ennistymon	25/11/2008	<10	<10	<10	<0.05	<0.01	<1	124	<0.4	1	<1	<1	3	4	18	22
08-B06883-S0004	SW2 - Ennistymon	25/11/2008	<10	<10	<10	<0.05	<0.01	<1	22	<0.4	<1	1	<1	1	4	16	25
08-B06883-S0005	SW3 - Ennistymon	25/11/2008	<10	<10	<10	<0.05	<0.01	1	16	<0.4	<1	1	<1	2	5	17	25
08-B06883-S0006	SW4 - Ennistymon	25/11/2008	<10	<10	<10	<0.05	<0.01	<1	<3	<0.4	<1	1	<1	<1	5	19	19
08-B06883-S0007	SW1 - Whitegate	26/11/2008	<10	<10	<10	<0.05	<0.01	2	<3	<0.4	<1	1	1	4	4	21	12
08-B06883-S0008	SW2 - Whitegate	26/11/2008	<10	<10	<10	<0.05	<0.01	4	<3	<0.4	<1	2	6	5	6	24	32

Notes: METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL. **NDP** = NO DETERMINATION POSSIBLE
 THE DATA ON THIS PRELIMINARY REPORT IS NOT VALIDATED AND MAY BE SUBJECT TO CHANGE.

Checked By : Mark Butler

- Interim
 Validated

ALcontrol Laboratories Limited

Table Of Results

Ref Number: 08-B06883/01

Sample Type: WATER

Client: Clare County Council (Ennis)

Location: Whitesgate & Ennistymon

Date of Receipt: 01/12/2008

Client Contact: MAEVE RYAN

(of first sample)

Client Ref: Unlicensed Lanfills

			Detection Method	KONE	METER	SPECTRO	SPECTRO	SPECTRO	SPECTRO	SPECTRO	SPECTRO					
			Method Detection Limit	<3mg/l	napH Units	<0.03mg/l	<0.01mg/l	<0.01mg/l	<0.2mg/l	<0.05mg/l	<0.2mg/l					
UKAS Accredited [Testing Laboratory] No. 1291			✓	✓				✓		✓						
ALcontrol Reference	Sample Identity	Other ID	Sulphate	pH	Chromium VI	Free Cyanide	Sulphide	Thiocyanate	Total Cyanide	Ammoniacal Nitrogen as N						
			mg/l	pH Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l						
08-B06883-S0003	SW1 - Ennistymon	25/11/2008	48	7.35	<0.03	<0.01	<0.01	<0.2	<0.05	11.0						
08-B06883-S0004	SW2 - Ennistymon	25/11/2008	70	7.48	<0.03	<0.01	<0.01	<0.2	<0.05	<0.2						
08-B06883-S0005	SW3 - Ennistymon	25/11/2008	72	6.54	<0.03	<0.01	<0.01	<0.2	<0.05	<0.2						
08-B06883-S0006	SW4 - Ennistymon	25/11/2008	<3	6.77	<0.03	<0.01	<0.01	<0.2	<0.05	<0.2						
08-B06883-S0007	SW1 - Whitesgate	26/11/2008	7	6.67	<0.03	<0.01	<0.01	<0.2	<0.05	<0.2						
08-B06883-S0008	SW2 - Whitesgate	26/11/2008	8	6.86	<0.03	<0.01	<0.01	NDP	<0.05	0.3						

Notes : METHOD DETECTION LIMITS ARE NOT ALWAYS ACHIEVABLE DUE TO VARIOUS CIRCUMSTANCES BEYOND OUR CONTROL. NDP = NO DETERMINATION POSSIBLE
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Checked By : Mark Butler