



APPENDIX 4: METHANE MONITORING DATA PROVIDED BY LANDFILL OPERATORS

The following appendix to EPA's assessment report provides the methane monitoring data provided by landfill operators during Stage 3 of EPA's landfill assessment process.

CONTENTS

1	Sites with Possible Natural Methane Gas Detected.....	2
1.1	Landfill address: 274 Hallam Road, Hampton Park.....	2
2	Sites with Landfill Methane Detected	42
2.1	Landfill address: 890 Taylors Road, Lyndhurst.....	42
2.2	Landfill address: TPI sites Fraser Road and Heatherton Road Clayton South.....	56
2.3	Landfill address: 654-718 Clayton Road, Clayton South.....	72
2.4	Landfill address: Springvalley Park, Clarke Road, Springvale South.....	74

1 SITES WITH POSSIBLE NATURAL METHANE GAS DETECTED

1.1 Landfill address: 274 Hallam Road, Hampton Park

Landfill licence: ES33144

Licence holder: SITA Environmental Solutions

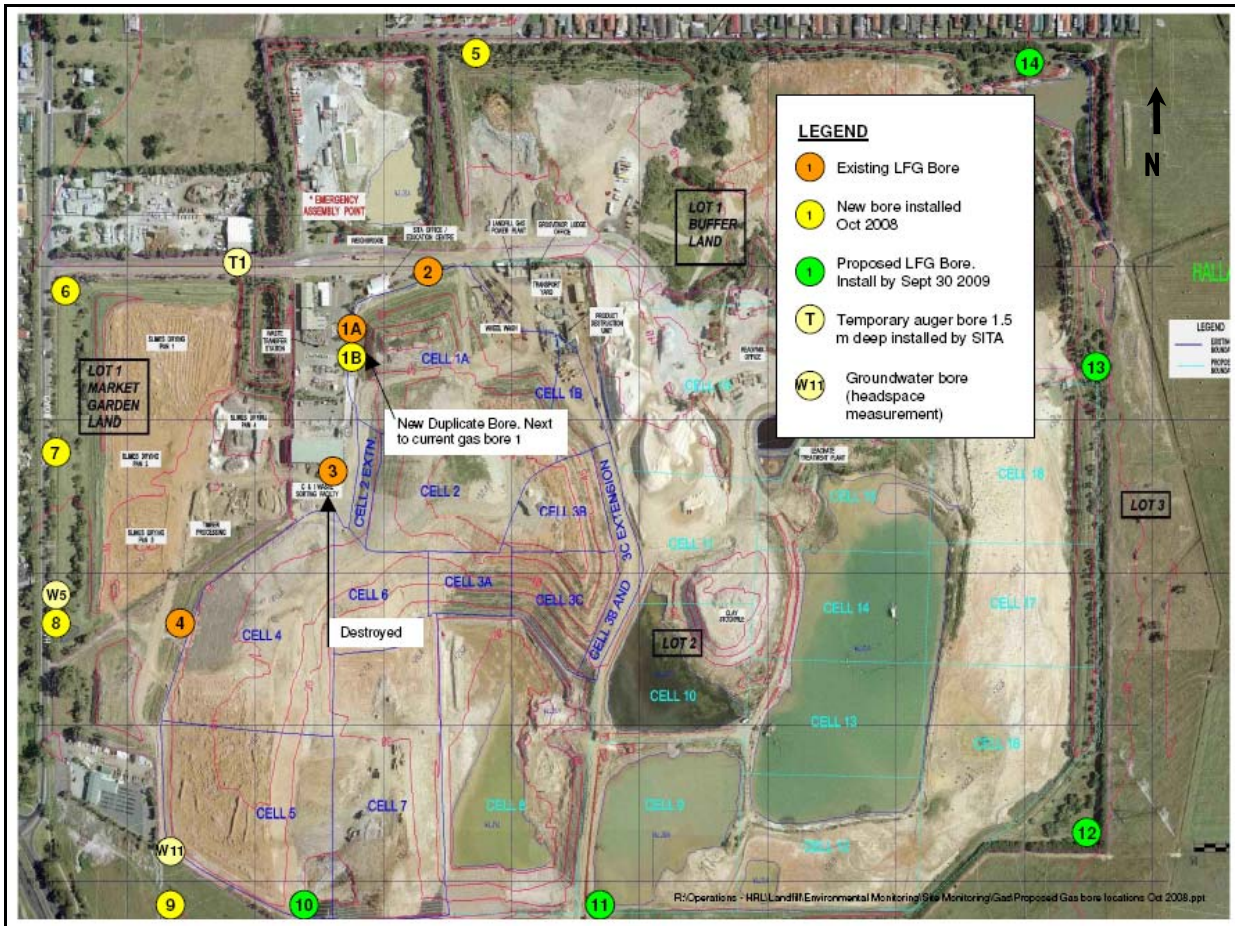


Figure: Hallam Road Monitoring Bore Location Plan (bores constructed by SITA).

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)

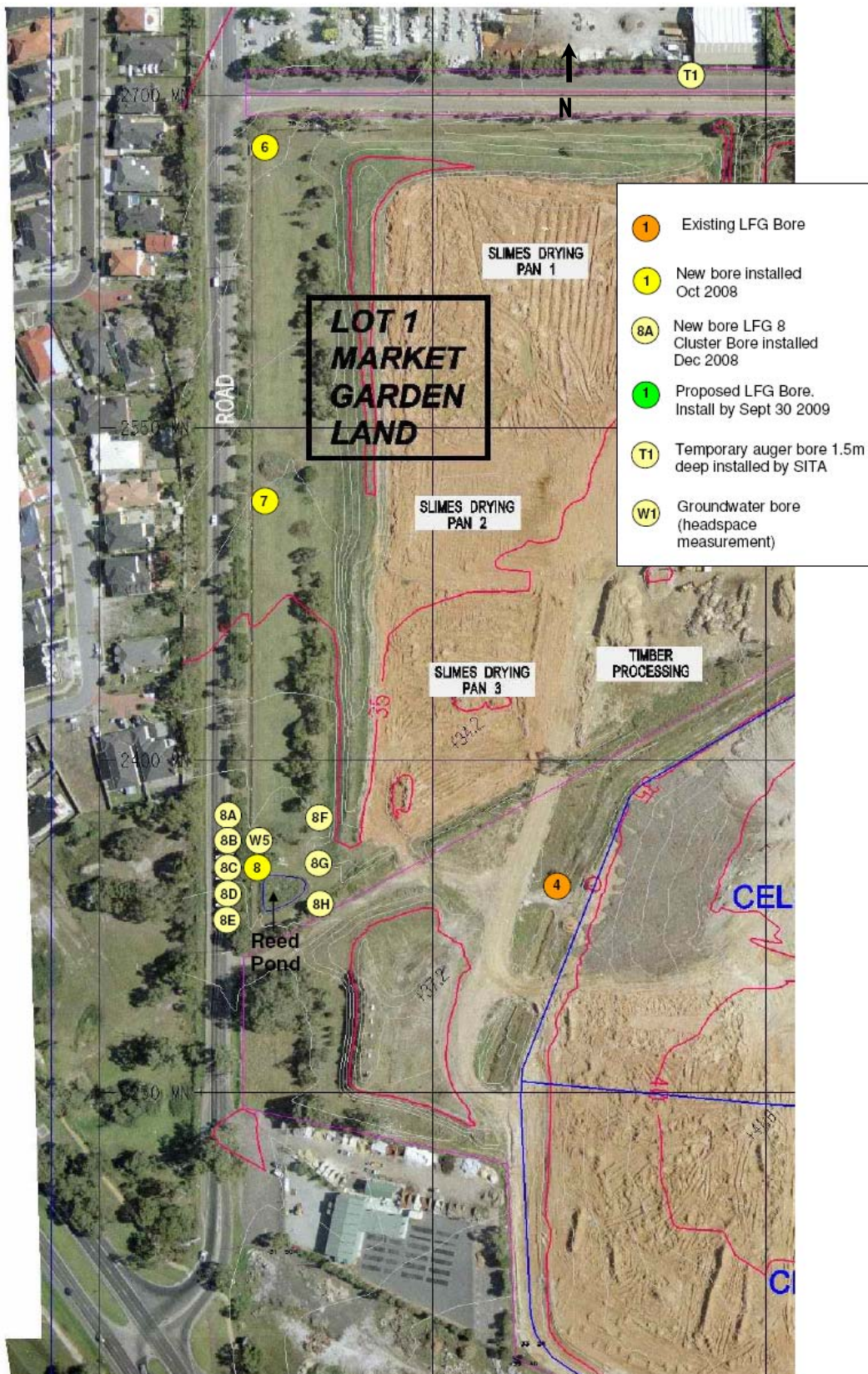


Figure: Hallam Road Monitoring Bore Location Plan – close-up of western boundary bordering Hallam Road (bores constructed by SITA).

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

Table: Hallam Road methane monitoring data supplied by SITA (field data)

Date	GAS (%) v/v	LFG 1			LFG 1B			LFG 2			LFG 3			LFG 4			LFG 5			LFG 6			LFG 7			
		1.5-2.5m	4.5-5.5m	7.5-8.5m	1.5-2.5m	4.5-5.5m	7.5-8.5m	1.5-2.5m	4.5-5.5m	7.5-8.5m	1.5-2.5m	4.5-5.5m	7.5-8.5m	1.5-2.5m	4.5-5.5m	7.5-8.5m	1.5-2.5m	4.5-5.5m	7.5-8.5m	1.5-2.5m	4.5-5.5m	7.5-8.5m	1.5-2.5m	4.5-5.5m	7.5-8.5m	
Mar 1999	CH ₄	44.0	39.0	25.0				6.0	6.6	0.0																
	CO ₂	53.0	45.0	20.0				26.0	25.0	2.2																
	O ₂	1.7	3.6	3.9				0.6	0.4	18.0																
Sept 1999	CH ₄	63.0	0.0	0.0				0.6	0.0	0.0																
	CO ₂	25.0	0.1	0.1				0.1	0.1	0.1																
	O ₂	0.4	21.0	20.0				21.0	21.0	21.0																
Jan 2000	CH ₄	-	-	-				14.0	0.1	0.1																
	CO ₂	-	-	-				24.0	8.1	8.5																
	O ₂	-	-	-				0.1	10.0	10.0																
Apr 2000	CH ₄	-	16.0	17.0				0.8	0.0	0.0																
	CO ₂	-	1.0	0.0				0.2	9.9	8.3																
	O ₂	-	17.0	16.0				21.0	8.6	9.6																
May 2000	CH ₄	0.8	16.0	17.0				29.0	0.0	0.0																
	CO ₂	0.7	19.0	18.0				20.0	7.3	11.0																
	O ₂	21.0	1.3	0.2				0.0	12.0	5.4																
June 2000	CH ₄	6.5	0.0	0.0				0.4	17.0	18.0																
	CO ₂	3.4	7.4	12.0				11.0	0.0	0.0																
	O ₂	17.3	13.2	4.7				5.6	20.0	18.0																
Aug 2000	CH ₄	-	16.9	16.9				67.0	20.0	0.1																
	CO ₂	-	17.3	16.5				11.0	7.7	9.0																
	O ₂	-	3.0	0.1				0.1	9.6	6.1																

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

Dec 2002	CH ₄	1.2	47.7	1.2				0.6	0.0	0.0														
	CO ₂	1.1	24.9	1.2				0.6	0.0	0.0														
	O ₂	19.7	1.0	19.7				20.3	20.7	20.7														
March 2003	CH ₄	24.5	19.0	0.3				21.5	51.0	52.0														
	CO ₂	23.0	19.0	10.0				22.0	21.0	19.0														
	O ₂	0.0	0.0	3.2				0.0	0.0	0.0														
June 2003	CH ₄	-	43.5	44.0				55.0	12.5	1.4														
	CO ₂	-	27.0	24.0				38.0	20.0	12.0														
	O ₂	-	0.1	0.0				0.0	0.2	0.4														
Sept 2003	CH ₄	-	54.7	52.5				65.1	33.3	4.7														
	CO ₂	-	28.8	28.8				34.3	23.6	13.0														
	O ₂	-	0.2	0.2				0.6	0.2	0.2														
Dec 2003	CH ₄	-	57.7	55.7				46.9	40.9	5.8														
	CO ₂	-	28.7	28.1				33.2	26.6	12.4														
	O ₂	-	0.1	0.0				0.0	0.1	0.2														
March 2004	CH ₄	-	54.3	54.3				0.0	4.2	3.1														
	CO ₂	-	28.6	26.7				12.2	20.4	12.5														
	O ₂	-	0.0	0.1				4.1	0.1	0.8														
June 2004	CH ₄	-	51.0	52.5				0.0	10.0	7.4														
	CO ₂	-	28.5	29.3				19.0	22.0	13.2														
	O ₂	-	0.0	0.0				0.0	0.0	0.2														
Sept 2004	CH ₄	-	54.6	52.3				0	17.8	10.6														
	CO ₂	-	24.6	27.3				19.3	20	13.1														
	O ₂	-	0.0	0.0				0.4	0.0	0.0														

**ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)**

Dec 2004	CH ₄	-	50.3	50.8				0.0	9	10.4	1.5	51.6	33.5	0.1	0.1	0.0														
	CO ₂	-	25.4	26.4				12.8	19.1	12.9	1.2	30	21.6	1.1	4.8	3.7														
	O ₂	-	0.0	16.7				8.2	0.1	0	19.9	15	6.7	19.4	14.6	15.4														
June 2005	CH ₄	4.1	7.5	8				0.22	-	-	-	-	-	-	0.21	-														
	CO ₂	-	4.5	6.1				3.6	3.4	0.61	0.71	0.53	0.55	1.1	0.76	0.61														
	O ₂	20.9	20.2	7.2				22.1	22.1	20.9	19	22.2	22.2	22.5	22.5	22.4														
Dec 2005	CH ₄	-	14.7	29.3				-	-	-	-	5.7	44.3	-	-	-														
	CO ₂	-	9.7	17.7				2.0	1.5	0.4	-	16.2	35.3	-	6	8.6														
	O ₂	-	14.3	8.8				20.2	20.3	20	20.3	7.6	0.5	20.2	11	11.3														
June 2006	CH ₄	-	19.9	22.3				-	-	-	17.6	0.1	no pipe	-	-	-														
	CO ₂	3	11.2	10.2				0.8	1.1	0.7	-	16.2	no pipe	-	1.8	-														
	O ₂	15.4	12.6	12.4				19.5	19.2	19.7	20.3	7.6	-	20.4	18.8	20.1														
Dec 2006	CH ₄	-	1.7	0.5				-	-	-	5.3	no pipe	no pipe	-	-	-														
	CO ₂	2.4	2	0.6				-	-	-	1.5	no pipe	no pipe	4.8	-	0.5														
	O ₂	19	19.9	20.7				21.2	21.2	21.2	19.4	no pipe	no pipe	16.8	20.9	20.8														
June 2007	Round missed due to staff changeover - letter received from MGT confirming will not happen again																													
Dec 2007	CH ₄	-	-	-				-	31.4	22.2	destroyed			-	-	-														
	CO ₂	18	15	12.5				11.8	8.1	3.1	destroyed			0.7	8.9	8.6														
	O ₂	2.2	7.2	11.2				8.4	12.2	15.5	destroyed			19	8.5	9.5														
June 2008	CH ₄	-	24.1	18				-	-	-	destroyed			-	-	-														
	CO ₂	18.8	5.7	3.1				103	7.6	4.7	destroyed			0.1	9.5	6.2														
	O ₂	1.3	15.8	17.1				9.9	13.1	14.9	destroyed			20.1	10.3	12.4														
Sept 2008	CH ₄	-	26.8	28.3				-	-	-	destroyed - Replacement bore to be drilled in October 2008			-	-	-														
	CO ₂	17.9	3.9	17.1				15.4	1.8	14.4	destroyed			0.9	14.7	11														

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

	O ₂	4	17.2	11.3				7.6	18.1	7.6					19.2	8.1	7								
25th Sept 2008 LMS sampling	CH ₄	-	2.2	-																					
	CO ₂																								
	O ₂																								
	Testing of conduits at weighbridge, drain near cell 1, under old Outlook gatehouse 0% methane																								
29th Sept 2008 MGT extra sampling	CH ₄	-	58.3	49.1																					
	CO ₂	0.9	26.3	29.5																					
	O ₂	19.8	1.3	3.7																					
30th Sept 2008 LMS sampling	CH ₄	-	-	-	LMS gas analyser is an Anri 410. Measurements were taken in-situ using tubing attached to the pump end. These measurements will continue on a monthly basis in conjunction with the meetings held between SITA and LMS																				
	CO ₂																								
	O ₂																								
1st October 2008 LMS sampling	CH ₄	-	5	-																					
	CO ₂																								
	O ₂																								
3rd October 2008 LMS sampling	CH ₄	-	-	-																					
	CO ₂																								
	O ₂																								
10th Oct 2008 MGT extra sampling	CH ₄		2.9	0.1																					
	CO ₂		6	2.8																					
	O ₂		12.4	18.7																					
20th & 21st October 2008					New bore drilled															New bore drilled			New bore drilled		
21st Oct 2008 URS gas meter (PM)	CH ₄														0	0	0				0	0	0		
	CO ₂														0.4	0	9.3				4	5.4	1		

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)

	O ₂																	20.9	21.5	8.7																									
	H ₂ S ppm																		0	0	0																								
	CO ppm																		0	0	0																								
22nd Oct 2008 URS gas meter (AM) LFG 7 drilled	CH ₄	0	14	0.6	0	60.2	34.9	0	0	0								0																											
	CO ₂	6	9.7	3.4	13.4	33.1	17.9	7.2	9.8	4.2								2.6																											
	O ₂	14.8	12.8	17.8	4.5	0	4.4	14.3	11.9	16.9									19.6																										
	LEL	0	>100	12	0	>100	>100	0	0	0									0																										
	H ₂ S ppm	0	0	0	0	0	0	0	0	0									0																										
	CO ppm	0	0	0	0	2	163	0	0	0									0																										
	CH ₄																																												
23rd Oct 2008 LMS gas meter (PM)	CO ₂																																												
	O ₂																																												
	CH ₄	0	11.6	0.4	0	60.9	60.4	0	0	0									0	0	0	0	0	0																					
24th Oct 2008 EDL gas meter (AM)	CO ₂	8.2	12.1	0.4	13.5	31.8	26.9	10.6	4.8	4.4									4.5	8.9	8.9	5.4	8.6	13.9																					
	O ₂	11.7	6.2	18.4	4.2	0	0.1	9.8	15.8	15.9																																			
27th Oct 2008 EDL Gas meter	CH ₄				0	61.3	61.8																																						
	CO ₂				13.1	32.9	29.7																																						
	O ₂				6.5	0	0																																						
28th Oct 2008 SITA QRAE	CO ₂																																												
	O ₂																																												
	LEL																																												
	H ₂ S ppm																																												
	CO ppm																																												
29th October LMS gas meter	CH ₄				0	54.4	55.4	0	0	0																																			
	CO ₂				13	29.7	29.1	7.9	7	3.5																																			

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)

	O ₂							12.6	13.7	16																											
29th October LMS pressure meter					Positive pressure measured in bores. Gas well 7 orifice plate changed to increase flow and influence negative pressure on bore.																																
30th October EDL gas meter	CH ₄																	0	0	0	0	0	0		Pulling up water	0	0	0									
	CO ₂																	1.1	6.5	8.3	14	4.4	3.9			7.3	2.7	3.2									
	O ₂																	19.7	10.9	8.1	3.3	16.4	10.2			9.2	11.8	10.8									
31st October MGT	CH ₄	0.3	0.8	0	0	54.5	58.5	0	0	0				0	0	0	0	0	0	0	0	0		Pulling up water	0	0	0										
	CO ₂	11	2.3	0.4	12.2	29.9	30	9.4	8.2	4.3				3.8	0	0	6.5	8	10.1	4.2	3.8		7.9		2.6	3.8											
	O ₂	9.2	18.6	20.4	8.1	1.3	0.6	11.1	12.3	15				17.3	20.9	21	11	8.5	8	17.2	10.1		7.4		11.3	9.4											
	H ₂ S ppm	0	0	0	0	0	0	0	0	0				0	0	0	0	0	0	0	0	0			0	0	0										
	CO ppm	2	3	2	6	8	11	3	2	2				0	0	0	7	124	4	0	9		3		4	48											
6th November LMS	CH ₄				0	11	10.7																														
	CO ₂				57	38	0																														
	O ₂				56	30	0																														
6th November		Refer to adjacent bore LFG 1B. Regular monitoring of LFG 1 has been reduced in favour of the more accurate implant type installation in LFG 1B				Negative pressure on bores due to influence from extraction wells in cell 1.																															
11th November					Gas well drilling in cell 1																																
12th November LMS	CH ₄				0	0.2	0																														
13th November EDL Meter	CH ₄																																				



ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)

	CO ₂																								
	O ₂																								
17th November																									
21st November	CH ₄	0	0.2	0	0	1.6	0	0	0	0				0	0	0	0	0	0	0	0				
SITA meter	CO ₂	8.3	1.6	1	0.1	0.5	0.2	10.2	7.7	6				6.3	7	6.6	8.8	10.2	14.2	4.3	6.5	Pulling up water	0	0	0
	O ₂	13.3	19.4	20.1	20.7	20.2	21.2	10.1	12.8	13				15.6	12.6	12.1	13.3	7.9	4.5	17.7	7.7		10.4	3.5	3.1
28th November SITA Meter	CH ₄				0	0	0																		
	CO ₂				0	0	0																		
	O ₂				20.3	20.4	20.4																		
5th December																									
5th December SITA Meter with Meinhardt QA/QC	CH ₄				0	0.1	0.4							0	0	0							0	0	0
	CO ₂				0	0.1	0.1							3	4.3	2							9	5	2.4
	O ₂				21	21	20.8							18.1	15.8	15.1							7	4.1	3.5
6th December SITA Meter	CH ₄																								
	CO ₂																								
	O ₂																								
7th December SITA Meter	CH ₄																								
	CO ₂																								
	O ₂																								

Date	GAS	LFG 8			LFG 8A	LFG 8B	LFG 8C	LFG 8D	LFG 8E	LFG 8F	LFG 8G	LFG 8H
		1.5-2.5m	4.5-5.5m	7.5-8.5m								
Mar 1999	(%) v/v											
	CH ₄											
	CO ₂											
	O ₂											



ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

Sept 1999	CH ₄												
	CO ₂												
	O ₂												
Jan 2000	CH ₄												
	CO ₂												
	O ₂												
Apr 2000	CH ₄												
	CO ₂												
	O ₂												
May 2000	CH ₄												
	CO ₂												
	O ₂												
June 2000	CH ₄												
	CO ₂												
	O ₂												
Aug 2000	CH ₄												
	CO ₂												
	O ₂												
Dec 2000	CH ₄												
	CO ₂												
	O ₂												
Mar 2001	CH ₄												
	CO ₂												
	O ₂												

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

June 2001	CH ₄												
	CO ₂												
	O ₂												
October 2001	CH ₄												
	CO ₂												
	O ₂												
January 2002	CH ₄												
	CO ₂												
	O ₂												
Mar 2002	CH ₄												
	CO ₂												
	O ₂												
June 2002	CH ₄												
	CO ₂												
	O ₂												
Sept 2002	CH ₄												
	CO ₂												
	O ₂												
Dec 2002	CH ₄												
	CO ₂												
	O ₂												
March 2003	CH ₄												
	CO ₂												
	O ₂												

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

June 2003	CH ₄												
	CO ₂												
	O ₂												
Sept 2003	CH ₄												
	CO ₂												
	O ₂												
Dec 2003	CH ₄												
	CO ₂												
	O ₂												
March 2004	CH ₄												
	CO ₂												
	O ₂												
June 2004	CH ₄												
	CO ₂												
	O ₂												
Sept 2004	CH ₄												
	CO ₂												
	O ₂												
Dec 2004	CH ₄												
	CO ₂												
	O ₂												
June 2005	CH ₄												
	CO ₂												
	O ₂												

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

Dec 2005	CH ₄											
	CO ₂											
	O ₂											
June 2006	CH ₄											
	CO ₂											
	O ₂											
Dec 2006	CH ₄											
	CO ₂											
	O ₂											
June 2007												
Dec 2007	CH ₄											
	CO ₂											
	O ₂											
June 2008	CH ₄											
	CO ₂											
	O ₂											
Sept 2008	CH ₄											
	CO ₂											
	O ₂											
25th Sept 2008 LMS sampling	CH ₄											
	CO ₂											
	O ₂											
29th Sept 2008 MGT extra sampling	CH ₄											

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

	CO ₂											
	O ₂											
30th Sept 2008 LMS sampling	CH ₄											
	CO ₂											
	O ₂											
1st October 2008 LMS sampling	CH ₄											
	CO ₂											
	O ₂											
3rd October 2008 LMS sampling	CH ₄											
	CO ₂											
	O ₂											
10th Oct 2008 MGT extra sampling	CH ₄											
	CO ₂											
	O ₂											
20th & 21st October 2008		New bore drilled										
21st Oct 2008 URS gas meter (PM)	CH ₄	0	0	2.3								
	CO ₂	2.8	6.5	12.5								
	O ₂	19.7	12.4	2.3								
	H ₂ S ppm	0	0	0								
	CO ppm	27	118	549								
22nd Oct 2008 URS gas meter (AM) LFG 7 drilled	CH ₄	0	0	2.2								
	CO ₂	2.5	7.5	11.9								
	O ₂	19.3	8.9	1.8								
	LEL	0	0	44								

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

	H ₂ S ppm	0	0	0								
	CO ppm	26	49	316								
23rd Oct 2008 LMS gas meter (PM)	CH ₄	0	0	1.2								
	CO ₂	1.8	6.9	9.4								
	O ₂	18.3	5.4	1.4								
24th Oct 2008 EDL gas meter (AM)	CH ₄											
	CO ₂											
	O ₂											
27th Oct 2008 EDL Gas meter	CH ₄	0	0	2.4								
	CO ₂	1.4	7.2	7.4								
	O ₂	17.7	2.5	1								
28th Oct 2008 SITA QRAE	CO ₂											
	O ₂											
	LEL											
	H ₂ S ppm											
	CO ppm											
29th October LMS gas meter	CH ₄	0	0	2.3								
	CO ₂	1	6.9	4.3								
	O ₂											
29th October LMS pressure meter												
30th October EDL gas meter	CH ₄											
	CO ₂											
	O ₂											
31st October MGT	CH ₄	0	0.1	2.3								
	CO ₂	1.3	7.7	5.5								

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

	O ₂	16.4	1.3	0.2									
	H ₂ S ppm	0	0	0									
	CO ppm	17	18	42									
6th November LMS	CH ₄												
	CO ₂												
	O ₂												
6th November													
11th November													
12th November LMS	CH ₄												
13th November EDL Meter	CH ₄	0	0.1	2.2									
	CO ₂	0.7	17.7	1.2									
	O ₂	10	7.6	0									
17th November													
21st November	CH ₄	0	0.2	2.6									
SITA meter	CO ₂	1.7	10.3	5.4									
	O ₂	12.3	0.4	0.6									
28th November SITA Meter	CH ₄	0	0.2	2.5									
	CO ₂	1.9	10.7	5.8									
	O ₂	15.7	0.5	0.7									
5th December													
5th December SITA Meter with Meinhardt QA/QC	CH ₄	0	0.1	1.8	0	0	0	0	0	0	0	0	0
	CO ₂	2	6.7	6.4	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.3	0.3
	O ₂	15.1	8.7	1.3	19.6	19.6	19.6	19.7	19.8	19.8	20	20	20
6th December SITA Meter	CH ₄	0	0.2	1.8	0	0	0	0	0	0	0	0	0

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

	CO ₂	1.9	8.9	6.5	0.1	0.1	0.2	0	0	0.1	0.2	0.4
	O ₂	15.3	5	1.5	20.7	20.6	20.7	20.8	20.8	20.4	20.1	20
7th December SITA Meter	CH ₄	0	0.2	1.6	0	0	0	0	0	0	0	0
	CO ₂	2.1	9.4	6.6	0.1	0	0.1	0	0	0.2	0.1	0.3
	O ₂	15.2	4.1	1.4	20.8	20.8	20.9	21.3	21.1	20.2	20.2	20.3

Date	GAS (%) v/v	LFG 9			Temp bore along drive	GW bore 11	GW bore 5a	GW bore 5b	GW bore 5c
		1.5-2.5m	4.5-5.5m	7.5-8.5m	2.0m				
Mar 1999	CH ₄								
	CO ₂								
	O ₂								
Sept 1999	CH ₄								
	CO ₂								
	O ₂								
Jan 2000	CH ₄								
	CO ₂								
	O ₂								
Apr 2000	CH ₄								
	CO ₂								
	O ₂								
May 2000	CH ₄								
	CO ₂								
	O ₂								
June 2000	CH ₄								

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

	CO ₂								
	O ₂								
Aug 2000	CH ₄								
	CO ₂								
	O ₂								
Dec 2000	CH ₄								
	CO ₂								
	O ₂								
Mar 2001	CH ₄								
	CO ₂								
	O ₂								
June 2001	CH ₄								
	CO ₂								
	O ₂								
October 2001	CH ₄								
	CO ₂								
	O ₂								
January 2002	CH ₄								
	CO ₂								
	O ₂								
Mar 2002	CH ₄								
	CO ₂								
	O ₂								
June 2002	CH ₄								

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

	CO ₂								
	O ₂								
Sept 2002	CH ₄								
	CO ₂								
	O ₂								
Dec 2002	CH ₄								
	CO ₂								
	O ₂								
March 2003	CH ₄								
	CO ₂								
	O ₂								
June 2003	CH ₄								
	CO ₂								
	O ₂								
Sept 2003	CH ₄								
	CO ₂								
	O ₂								
Dec 2003	CH ₄								
	CO ₂								
	O ₂								
March 2004	CH ₄								
	CO ₂								
	O ₂								
June 2004	CH ₄								

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

	CO ₂								
	O ₂								
Sept 2004	CH ₄								
	CO ₂								
	O ₂								
Dec 2004	CH ₄								
	CO ₂								
	O ₂								
June 2005	CH ₄								
	CO ₂								
	O ₂								
Dec 2005	CH ₄								
	CO ₂								
	O ₂								
June 2006	CH ₄								
	CO ₂								
	O ₂								
Dec 2006	CH ₄								
	CO ₂								
	O ₂								
June 2007									
Dec 2007	CH ₄								
	CO ₂								
	O ₂								

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

June 2008	CH ₄								
	CO ₂								
	O ₂								
Sept 2008	CH ₄								
	CO ₂								
	O ₂								
25th Sept 2008 LMS sampling	CH ₄								
	CO ₂								
	O ₂								
29th Sept 2008 MGT extra sampling	CH ₄								
	CO ₂								
	O ₂								
30th Sept 2008 LMS sampling	CH ₄								
	CO ₂								
	O ₂								
1st October 2008 LMS sampling	CH ₄								
	CO ₂								
	O ₂								
3rd October 2008 LMS sampling	CH ₄								
	CO ₂								
	O ₂								
10th Oct 2008 MGT extra sampling	CH ₄								
	CO ₂								

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

	O ₂								
20th & 21st October 2008		New bore drilled							
21st Oct 2008 URS gas meter (PM)	CH ₄	0	0	0					
	CO ₂	0.4	2.3	4.9					
	O ₂	17.1	16.9	15.6					
	H ₂ S ppm	0	0	0					
	CO ppm	196	170	0					
22nd Oct 2008 URS gas meter (AM) LFG 7 drilled	CH ₄								
	CO ₂								
	O ₂								
	LEL								
	H ₂ S ppm								
	CO ppm								
23rd Oct 2008 LMS gas meter (PM)	CH ₄	0	0	0					
	CO ₂	0.7	3.2	5.2					
	O ₂	16.4	15.3	13.9					
24th Oct 2008 EDL gas meter (AM)	CH ₄								
	CO ₂								
	O ₂								
27th Oct 2008 EDL Gas meter	CH ₄					0			
	CO ₂					0			
	O ₂					20.7			
28th Oct 2008 SITA QRAE	CO ₂				n/a				
	O ₂				17.1				

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

	LEL				0				
	H ₂ S ppm				0				
	CO ppm				17				
29th October LMS gas meter	CH ₄						0	0	0
	CO ₂						0	0.4	0.4
	O ₂								
29th October LMS pressure meter									
30th October EDL gas meter	CH ₄	0	0	0	0	0			
	CO ₂	0.2	4.2	5.5	0.1	1.4			
	O ₂	18.7	15.6	14.6	17.9	16.7			
31st October MGT	CH ₄	0	0	0		0	0	0	0
	CO ₂	1.8	4.8	4.4		0.5	0.3	1.4	1
	O ₂	15.2	14.9	16		20.1	20.8	20	20.1
	H ₂ S ppm	0	0	0		0	0	0	0
	CO ppm	535	50	3		2	2	0	0
6th November LMS	CH ₄								
	CO ₂								
	O ₂								
6th November									
11th November									
12th November LMS	CH ₄								
13th November EDL Meter	CH ₄				0				
	CO ₂				0				
	O ₂				17.4				

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

17th November									
21st November	CH ₄	0	0	0					
SITA meter	CO ₂	3.7	5	6.1					
	O ₂	9.8	14.9	13.9					
28th November SITA Meter	CH ₄								
	CO ₂								
	O ₂								
5th December									
5th December SITA Meter with Meinhardt QA/QC	CH ₄								
	CO ₂								
	O ₂								
6th December SITA Meter	CH ₄								
	CO ₂								
	O ₂								
7th December SITA Meter	CH ₄								
	CO ₂								
	O ₂								

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

Table: Hallam Road methane monitoring data supplied by SITA (laboratory data)

Date	GAS (% v/v)	LFG 1			LFG 1B			LFG 2			LFG 3			LFG 4			LFG 5			LFG 6			LFG 7			LFG 8			
		1.5- 2.5m	4.5- 5.5m	7.5- 8.5m	1.5- 2.5m	4.5- 5.5m	7.5- 8.5m	1.5- 2.5m	4.5- 5.5m	7.5- 8.5m	1.5- 2.5m	4.5- 5.5m	7.5- 8.5m	1.5- 2.5m	4.5- 5.5m	7.5- 8.5m	1.5- 2.5m	4.5- 5.5m	7.5- 8.5m	1.5- 2.5m	4.5- 5.5m	7.5- 8.5m	1.5- 2.5m	4.5- 5.5m	7.5- 8.5m	1.5- 2.5m	4.5- 5.5m	7.5- 8.5m	
June- 2005	CH ₄		5.7			0																							
	CO ₂																												
	O ₂																												
Dec 2005	CH ₄		8.2			0																							
	CO ₂																												
	O ₂																												
June 2006	CH ₄									10.2																			
	CO ₂									2																			
	O ₂									20.5																			
Dec 2006	CH ₄			0.27									0																
	CO ₂			0.55									0																
	O ₂			20.4									20.8																
Dec 2007	CH ₄																												
	CO ₂			0			0							0															
	O ₂																												
June 2008	CH ₄																												
	CO ₂			0			0							0															
	O ₂																												
Sept 2008	CH ₄			1.9																									
	CO ₂																												
	O ₂																												
29th Sept	CH ₄			8.5																									

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)

Date	GAS (%) v/v	LFG 9			Temp bore along drive 2.0m	GW bore 11	GW bore 5a	GW bore 5b	GW bore 5c
		1.5- 2.5m	4.5- 5.5m	7.5- 8.5m					
June- 2005	CH ₄								
	CO ₂								
	O ₂								
Dec 2005	CH ₄								
	CO ₂								
	O ₂								
June 2006	CH ₄								
	CO ₂								
	O ₂								
Dec 2006	CH ₄								
	CO ₂								
	O ₂								
Dec 2007	CH ₄								
	CO ₂								
	O ₂								
June 2008	CH ₄								
	CO ₂								
	O ₂								
Sept 2008	CH ₄								
	CO ₂								
	O ₂								
29th Sept extra sampling	CH ₄								
	CO ₂								
	O ₂								
10th Oct extra sampling	CH ₄								
	CO ₂								
	O ₂								
21st Oct MGT	CH ₄			0					

mgt gas chromatography report: Hallam Road (Supplied SITA 9 January 2009)



Environmental Consulting Pty. Ltd

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22nd December 2008

Baker & McKenzie
Level 39, Rialto 525 Collins St
Melbourne, Victoria 3000

Att : Ms Angela Cook

Dear Angela,

SITA HALLAM GAS PROBE DETERMINATION – DECEMBER 2008.

Please find attached our Report No. 238578 relating to the samples that were obtained from the SITA Hallam site on the 12th December 2008.

The soil gas was sampled in accordance with our in-house sampling procedure – AISOP002, a copy of which is included as Attachment 1, refer to In-situ Gas Probe Sampling Procedure section. mgt have reported the Landfill Gases – CO₂, O₂, CH₄, CO, S₂ & Balance (predominantly Nitrogen) obtained from the GA2000 Landfill Gas Analyser – refer Sheet 2 of 2 sheets. Methane sampling & analysis has been undertaken according to MGT Air Method AO4 and MGT Inhouse Method AO6 (Gas Bag – FID). Prior to sampling all gas probes are purged for 2-3 minutes and readings obtained once the values have stabilised (as per mgt method AISOP002 – refer **In-situ Probe Procedure for measuring Pressure and Landfill gases** – included as Attachment 1)

Detectable levels of methane were found within LFG 1B – 5.5m, LFG 4 – 8.5m, LFG 7 – 8.5m, LFG 8 – 5.5m, LFG 8 – 8.5m, LFG 8C, LFG 8D, LFG 8E, and Gas Extraction Well adjacent to LFG8.

As requested by Baker & McKenzie the following gas locations have been analysed for volatile GCMS via an Activated Carbon Tube in accordance with the USEPA 8260 methodology;

- LFG8 – 12th December 2008
- Gas Extraction Well 37 – 12th December 2008

Results obtained for Volatile Organic Compounds via an Activated Carbon Tube have been expressed using an Overlaid Chromatogram – included as Attachment 2

If you have any questions relating to this report please do not hesitate in contacting myself on the above phone number.

Yours faithfully,

Stephen Curwood
Project Officer.
Email: stephenc@mgtenv.com.au



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ANALYSIS REPORT – mgt Report No. 238578

Baker & McKenzie
Level 39, Rialto 525 Collins St
Melbourne, Victoria 3000

On the 12th December 2008 samples were collected from soilgas probes located at SITA Hallam. Soil Gas vapour samples were collected from twenty-four locations. Gas probe samples were collected as detailed within mgt In-house Method AISOP002 – refer In-situ Probe Procedure for measuring Pressure and Landfill gases.

Sampling & analysis was undertaken from twenty-four locations via the GA2000 Landfill gas analyser. Prior to sampling all gas probes are purged for 2-3 minutes and readings obtained once the values have stabilised. For each gas probe location Landfill Gases – CO₂, O₂, CH₄, CO, S₂ & Balance (predominantly Nitrogen) have been sampled and reported.

Methane sampling & analysis was undertaken from the following gasprobes;

LFG1B (2.5m) – 12th December 2008	LFG8 (2.5m) – 12th December 2008
LFG1B (5.5m)– 12th December 2008	LFG8 (5.5m)– 12th December 2008
LFG1B (8.5m)– 12th December 2008	LFG8 (8.5m)– 12th December 2008
LFG4 (2.5m) – 12th December 2008	LFG8A – 12th December 2008
LFG4 (5.5m) – 12th December 2008	LFG8B – 12th December 2008
LFG4 (8.5m) – 12th December 2008	LFG8C – 12th December 2008
LFG6 (2.5m) – 12th December 2008	LFG8D– 12th December 2008
LFG6 (5.5m) – 12th December 2008	LFG8E – 12th December 2008
LFG6 (8.5m) – 12th December 2008	LFG8F – 12th December 2008
LFG7 (2.5m)– 12th December 2008	LFG8G – 12th December 2008
LFG7 (5.5m) – 12th December 2008	LFG8H – 12th December 2008
LFG7 (8.5m) – 12th December 2008	Gas Extraction Well 37 - 12th December 2008

Confirmation methane gas bag samples were also sampled and analysed within the lab. Sampling was undertaken as per as per MGT Air Method AO4. Analysis as per MGT Inhouse Method AO6 (Gas Bag – FID).

Analytical Results :

Refer Sheets 2 of 2 sheets.

Report No. 238578
Sheet 1 of 2 Sheets.

P. Richardson
Project Manager.

M. Wright.
Lab Manager.

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)



Environmental Consulting Pty. Ltd.

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mgt GAS PROBE MONITORING - Field Data Sheet.

Client : Baker & McKenzie

Site : Sita Hallam Rd Landfill

Barometric Pressure : 1007 Hpa

In-Situ Landfill Gas Analyser : GA2000

Gas Probe I.D.	Sample Date	Probe Depth (m)	Sample Time (Hours)	In-Situ Readings via Portable Gas Analyser							Gas Bag I.D.	Gas Bag Lab No.	Gas Bag Methane %v/v
				Methane %v/v	Peak Methane %v/v	CO2 %v/v	O2 %v/v	Balance %v/v	H2S ppm	CO ppm			
LFG 1B	12.12.08	2.5	1016	<0.1	<0.1	<0.1	20.3	79.7	<1	<1	-	-	-
LFG 1B	12.12.08	5.5	1021	0.6	0.6	<0.1	20.4	79.0	<1	<1	LFG1B - 5.5	08-De05382	0.3
LFG 1B	12.12.08	8.5	1026	<0.1	<0.1	<0.1	20.6	79.4	<1	<1	-	-	-
LFG 4	12.12.08	2.5	1057	<0.1	<0.1	5.6	15.8	78.5	<1	<1	-	-	-
LFG 4	12.12.08	5.5	1100	<0.1	<0.1	3.8	16.1	80.1	<1	<1	-	-	-
LFG 4	12.12.08	8.5	1102	0.1	0.1	1.4	18.8	79.7	<1	<1	LFG4 - 8.5	08-De05383	<0.002
LFG 6	12.12.08	2.5	1113	<0.1	<0.1	4.1	17.6	78.3	<1	<1	-	-	-
LFG 6	12.12.08	5.5	1118	<0.1	<0.1	8.6	6.2	86.1	<1	<1	LFG6 - 5.5	08-De05384	0.02
LFG 6	12.12.08	8.5	1120	-	-	-	-	-	<1	<1	Moisture present unable to extract sample		
LFG 7	12.12.08	2.5	1133	<0.1	<0.1	9.7	5.8	84.4	<1	<1	-	-	-
LFG 7	12.12.08	5.5	1136	<0.1	<0.1	6.0	3.4	90.6	<1	<1	-	-	-
LFG 7	12.12.08	8.5	1140	<0.1	0.1	2.6	2.8	94.6	<1	<1	LFG7 - 8.5	08-De05385	0.003
LFG 8	12.12.08	2.5	1153	<0.1	<0.1	2.3	14.6	83.2	<1	<1	-	-	-
LFG 8	12.12.08	5.5	1157	0.2	0.2	10.4	1.7	87.7	<1	<1	-	-	-
LFG 8	12.12.08	8.5	1200	0.8	0.9	8.3	0.1	90.9	<1	1	LFG8 - 8.5	08-De05386	0.4
LFG 8A	12.12.08	-	1326	<0.1	<0.1	0.1	20.8	79	<1	<1	-	-	-
LFG 8B	12.12.08	-	1329	<0.1	<0.1	0.1	20.9	79	<1	<1	-	-	-
LFG 8C	12.12.08	-	1333	0.1	0.1	0.2	20.9	78.8	<1	<1	-	-	-
LFG 8D	12.12.08	-	1341	0.1	0.1	0.1	21.0	78.9	<1	<1	-	-	-
LFG 8E	12.12.08	-	1349	0.1	0.1	0.1	20.9	78.9	<1	<1	-	-	-
LFG 8F	12.12.08	-	1355	<0.1	<0.1	0.2	21.1	78.8	<1	<1	-	-	-
LFG 8G	12.12.08	-	1358	<0.1	<0.1	0.6	20.8	78.5	<1	<1	-	-	-
LFG 8H	12.12.08	-	1402	<0.1	<0.1	0.8	20.8	78.4	<1	<1	-	-	-
Extraction Well 37	12.12.08	-	1313	56.8	67	44.7	0.1	0	38	135	Extraction Well 37	08-De05387	60

Report No. 238578
Sheet 2 of 2 sheets



ATTACHMENT 1

Gas Probe Monitoring Procedure - AISOP002

mgt Environmental Consulting Pty Ltd

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ABN 50 005 085 521

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Gas Probe Monitoring – AISOP002

Scope

This procedure is to be used for the monitoring of in-situ soil gas probes, provided with a capped top or a suitable septum that can be pierced using a syringe, or alternatively temporary gas probes provided with disposable probe heads and open end for sampling purposes.

Samples can be extracted from the pierced septum after a pressure determination has been conducted using a digital manometer, or alternatively directly from the top of the capped probe.

Samples can be collected using the following procedures:

MGTAO2	Sampling Methods for Hot Gases from Stacks using Silica Gel, Charcoal & Specialised Adsorption Tubes.
MGTAO3	Standard procedures - Sampling methods for gases using integrated gas bag samples.
MGTAO4	Standard procedures - Sampling methods using Impinger Bubbler collection.
Vic EPA 4230	Sampling Volatile Organic Compounds – VOC's
AS4323.3	Odour Dynamic Olfactometry
NIOSH	Assorted NIOSH Methods for specific analytes

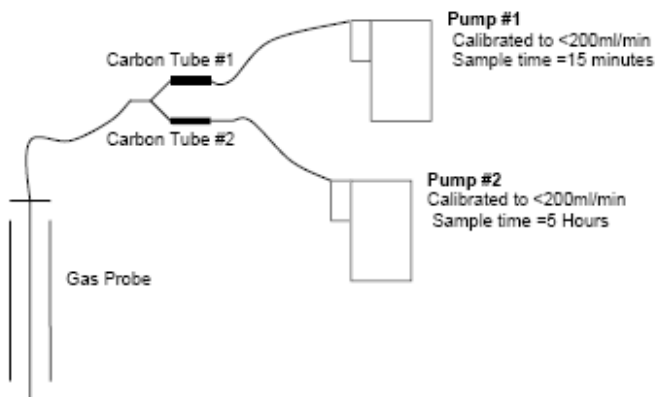
Apparatus

Ambient or Soilgas Field Sheet
Landfill Gas analyser (CH₄, O₂, CO₂, CO, H₂S) – on-site instrument
Photo Ionisation Detector (PID) – on-site instrument
Barometer – to measure atmospheric pressure.
Clean Teflon or Tygon tubing for sampling (1/4 inch & 3/16 inch ID)
Air Sampling Pumps, Low Flow Restrictors, Calibrator & Charger
Suitable adsorbance tubes (CT's, SG, etc) & Sample labels
Stainless Steel Sampling Probes
Disposable probe heads or Retractable probe head system
Hammer or Slam bar
Temperature Probe
Dry gas flow meter
Gas Bag Sample Vacuum Drum & Tedlar sampling bags
Esky and ice
SGE Needle – NLL-5/14
Digital Manometer – capable of reading Pascals

In-situ Gas Probe Sampling Procedure

The in-situ gas probe construction is not covered within this procedure.

1. Samples can be retrieved using any of the procedures and methods listed above.
2. Prior to sampling a calibrated air sample pump (~500 ml/min) is connected to the top of the probe and vapour extracted for 2-3 minutes (Typically 3 holding volumes). Alternately the Landfill Gas analyser can also be used to purge the bore prior to obtaining readings. If during this purging or at anytime during normal sampling the air sample pump stops due to negative pressure within the probe then sampling should be abandoned. The nominal cause for this is either a blockage of the probe due to soil or groundwater or the probe head is inserted in a clay type soil that contains minimal or no soil voids or vapor.
3. For sorbent tube sampling or to determine the ability of the probe to generate gas vapour the following sampling procedure is adopted – this procedure has the dual ability of providing a secondary sample tube that can be used in the event the primary tube is overloaded due to high level of contaminant gas within the bore.



4. Carbon tube #2 is submitted for analysis.
5. In the event that Carbon tube #2 is overloaded and shows breakthrough the concentration of the gas in the bore can be determined from Carbon tube #1, unless breakthrough is also shown in this tube.
6. In the event that Carbon Tube #2 does not show break through – Carbon tube #1 can still analysed and reported to show the gas probes vapour generating capacity over time.
7. In the event that the probe does not contain any contaminant gas the reporting of the two tubes shows that any low level positives reportable from Carbon Tube #1 are not diluted below the detection limit in Carbon Tube #2 due to the increased sample volume on that tube.
8. Field QAQC Requirements:
 - Field Duplicate – 1 in 10 or one every batch – where the batch is <10
 - Field/Trip Blank - 1 in 10 or one every batch – where the batch is <10
 - Equipment Blank – One every batch (Temporary Probe Procedure only)
 - Method Blank – One every batch

Note
9. To minimise streamlining Sorbent Tubes should be positioned vertical to the flow of gas vapour through the tube.
10. At the completion of sampling the probe is purged again for 1-2 minutes. As with the pre purge if at anytime during this purge the air sample pump stops due to negative pressure within the probe then the sampling run is abandoned.

Samples can then be submitted to the laboratory for analysis after being appropriately labeled as detailed within MGT In-house Procedure MGT AO7. Transportation of samples to the laboratory should be conducted immediately on ice.

In-situ Probe Procedure for measuring Pressure and Landfill gases

1. The integrity of the bore must be examined and recorded ensuring an adequate seal has been formed at the bore cap to prevent contamination from outside sources.
2. Record atmospheric pressure and weather conditions.
3. Connect sample tubing to appropriately sealed gas probe fitting (i.e quick connect fitting, septum etc). If end cap is not provided then an alternate temporary endcap should be applied to minimise outside contamination. If a temporary endcap can not be used then temporary tubing should be inserted as close to the screened interval as possible to minimise outside contamination.
4. If Pressure readings are required zero the manometer (using manufacturers procedures) and connect the digital manometer directly to the probe inlet. Record the Manometer reading when stabilised on the field data sheet, if a variance is noticed within the reading record the pressure range when stabilised.
5. Calibrate and zero the Landfill gas analyser.
6. Purge gasprobe using calibrated sample pump for 2-3 minutes (typically 3 holding volumes). Alternately the Landfill gas analyser can be used to purge the gasprobe prior to obtaining gas readings – typically 2-3 minutes.
7. If the valve does not allow purging as a result of a blockage, kinked filament, groundwater intrusion or a faulty valve temporary tubing must be installed as close to the screened interval as possible to reduce contamination from outside sources.
8. Once landfill gas readings have stabilised on the analyser record on the field data sheet.
9. If lab confirmation samples are required (i.e methane) connect the Vacuum Chamber with the Tedlar gas bag installed and sample until bag is full (usually 3 minutes).
10. If required conduct appropriate air sampling using Adsorbance Tubes, Impingers or Gas Bag sampling techniques, refer relevant analyte methodologies.
11. If Pressure readings are required at the completion of sampling measure the pressure within the gas probe using the manometer.
12. Samples can then be submitted to the laboratory for analysis after being appropriately labeled as detailed within MGT In-house Procedure MGT AO7. Transportation of samples to the laboratory should be conducted immediately on ice
13. NOTE – Pressure readings are only applicable on probes that are sealed. Landfill gases are only measured upon request.

Temporary Probe Procedure

1. Development of a borehole using standard drilling techniques – mechanical or hand auguring can be used to the desired depth. Note that depths greater than 1m normally require the use of a slam bar or drill rig dependent on soil matrix.
2. The Stainless steel probe is positioned at the desired sample location with the disposable head attached to the base of the probe
3. A Slidebar or hammer is then used to insert the probe head to the desired depth. Please note that a hand auger or mechanical auger can be used to remove the top layer of soil in the event that the soil is very rocky or clay like in nature. In this instance the borehole should be inspected after auguring to determine it has not collapsed prior to inserting the stainless steel probe.
4. The probe is then withdrawn by pulling it back up the borehole ~100mm. Care should be taken to ensure that the withdrawal of the probe ensures that the disposable head remains in the soil and not connected to the probe.
5. The probe should be secured so as to prevent it dropping back down into the void. Where pre auguring has occurred a bentonite plug may be used to seal the probe head and ensure that contamination from the outside ambient air does not enter the probe void.
6. Samples can be extracted either directly from the stainless steel probe or via insertion of a teflon inner tube to the desired depth.
7. A calibrated air sample pump is connected to the top of the probe and the contents of the probe purged so as soil vapor is drawn into the probe. The probe is nominally a small ID stainless or teflon tubing and purging is only necessary for 1-2 minutes at 500 ml/min, subject to depth considerations, to allow for adequate purging of ~ 3 holding volumes. Alternately a Landfill gas analyser or PID can be used to purge the gasprobe prior to obtaining gas readings – typically 2-3 minutes. If at anytime during purging the air sample pump stops due to negative pressure within the probe then the sampling run is abandoned.
8. For sample retrieval refer sampling procedure above for in-situ probe.

ATTACHMENT 2

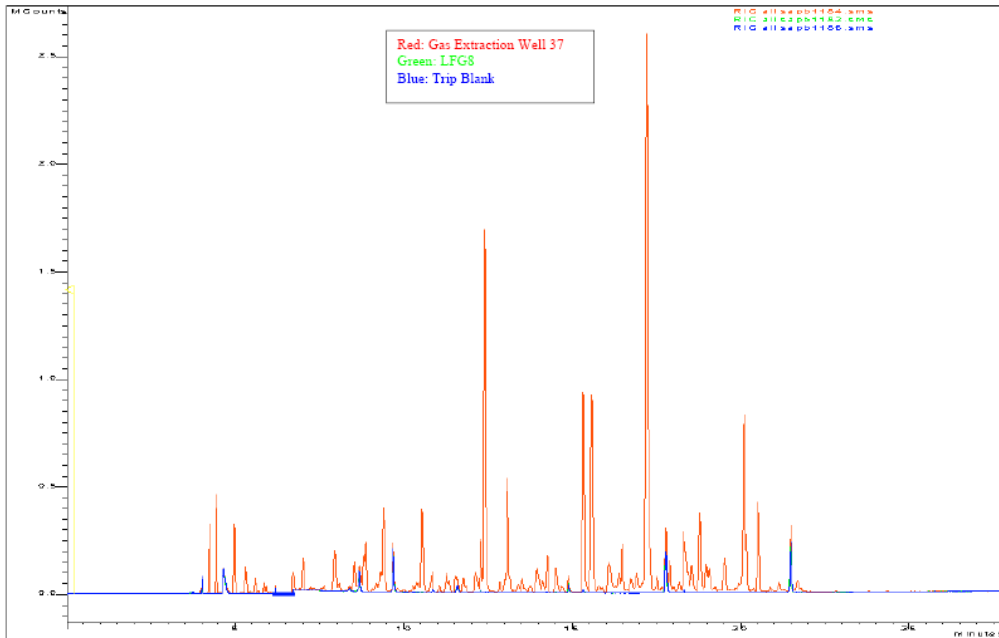
GAS CHROMATOGRAM OF:

1. OVERLAY OF GAS EXTRACTION WELL 37, LFG8 & TRIP BLANK
2. GAS EXTRACTION WELL 37 WITH IDENTIFIED MAYJOR PEAKS
3. TRIP BLANK – INTERNAL STANDARDS IDENTIFIED



Overlaid Chromatogram Plots

Plot 1: c:\saturnw\results\sequence\sapb\sapb1184.sms RIC all
 Plot 2: c:\saturnw\results\sequence\sapb\sapb1182.sms RIC all
 Plot 3: c:\saturnw\results\sequence\sapb\sapb1186.sms RIC all

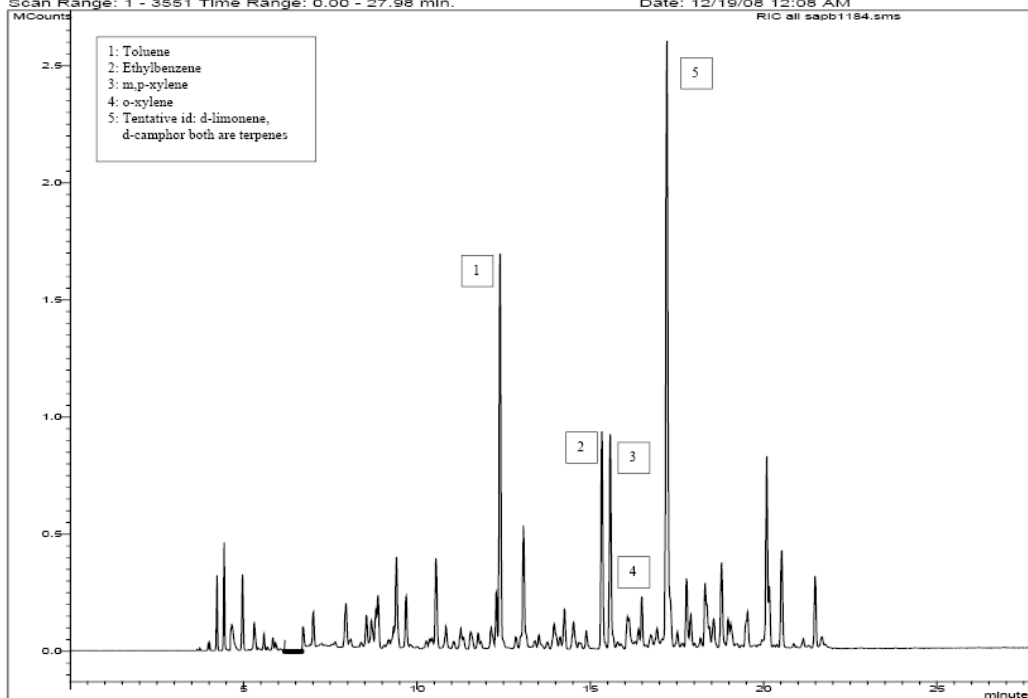


GAS EXTRACTION WELL 37 WITH IDENTIFIED MAJOR PEAKS

Chromatogram Plot

File: c:\saturnw\results\sequence\sapb\sapb1184.sms
 Sample: deS390 res1
 Scan Range: 1 - 3551 Time Range: 0.00 - 27.98 min.

Operator: L.C
 Date: 12/19/08 12:08 AM



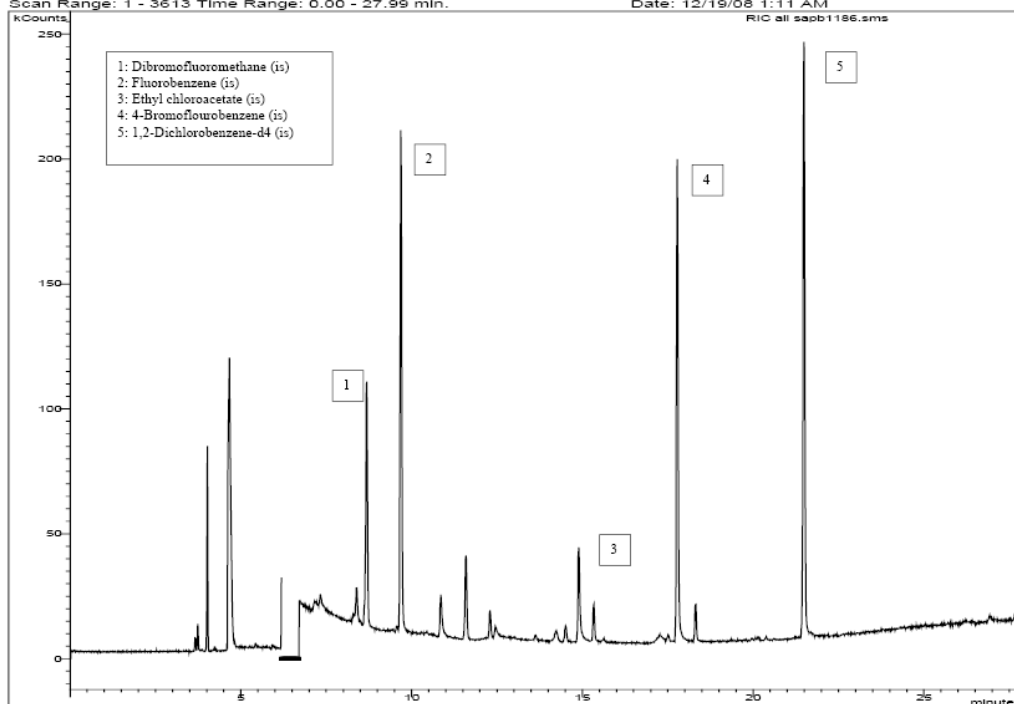
ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)

TRIP BLANK – INTERNAL STANDARDS

Chromatogram Plot

File: c:\saturnw\results\sequence\sapb\sapb1186.sms
Sample: de5391 f es1
Scan Range: 1 - 3613 Time Range: 0.00 - 27.99 min.

Operator: L.C
Date: 12/19/08 1:11 AM



ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)

2 SITES WITH LANDFILL METHANE DETECTED

2.1 Landfill address: 890 Taylors Road, Lyndhurst

Landfill licence: ES511

Licence holder: SITA Environmental Solutions

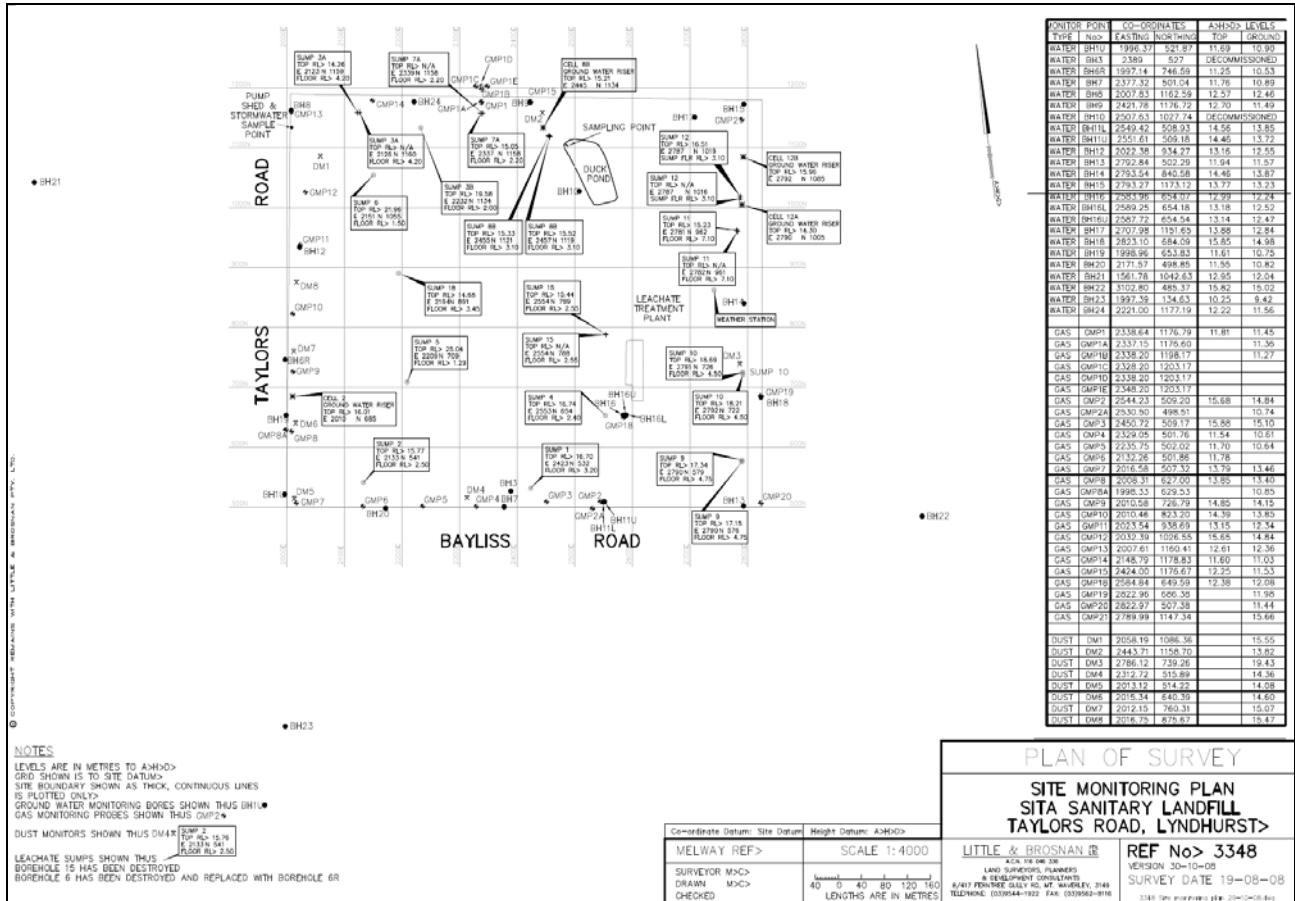


Figure: Taylors Road monitoring bore location plan and data (bores constructed by SITA)

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

Table: Taylors Road methane monitoring data supplied by SITA

Bore and Sample Date	%CH4	%CO2	%O2	Comments
GMP1				Bore located in Melbourne Water Drain (south side)
24-Oct-08	63.5	32.9	0.08	
27-Oct-08	0	0	20.9	
5-Nov-08	61.8	33	0.2	
12-Nov-08	43.3	30.1	0.8	
19-Nov-08	59.4	34.5	0.4	
25-Nov-08	64.3	33.4	0	
1-Dec-08	33.6	17.8	10.4	
2-Dec-08	33.4	18.1	9.1	
3-Dec-08	0.1	0.1	20.8	
4-Dec-08	0	0.1	20.5	
6-Dec-08	0	0	20.7	Results collected by Meinhardt
7-Dec-08	0.2	2.2	17.5	
8-Dec-08	22.1	17.3	2.3	Results collected by Meinhardt. NOTE: One gas blower not functioning
10-Dec-08	0	0	20.5	
11-Dec-08	0	0	21.3	
12-Dec-08	0	0	20	
15-Dec-08	9.3	4.8	17.3	
17-Dec-08	60.4	30.9	0.4	
18-Dec-08	59.5	30.3	0.6	
19-Dec-08	0	0	20.6	
22-Dec-08	42.8	24.6	0.7	Vacuum to cut-off trench throttled back. Vacuum to cut-off trench increased after sampling period.
23-Dec-08	0	0	20.5	
24-Dec-08	0	0	20.3	
5-Jan-09	0.1	0.1	19.6	
6-Jan-09	0	0.4	18.5	
GMP1A				Bore located in Melbourne Water Drain (south side) adjacent to GMP1
24-Oct-08	65.5	29.8	0	
27-Oct-08	14	19.7	9.3	
5-Nov-08	55.9	29.8	0.6	

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

12-Nov-08	25.6	22.6	4.2	
19-Nov-08	24.1	19	6.9	
25-Nov-08	30.6	22.7	1.7	
1-Dec-08	9.7	21.5	4.6	
2-Dec-08	7.8	20.2	5.9	
3-Dec-08	7.7	19.2	6.3	
4-Dec-08	0.6	14.6	13.6	
6-Dec-08	0.7	11.6	13.6	Results collected by Meinhardt
7-Dec-08	1.4	12.6	13.8	
8-Dec-08	5	12.7	12.4	Results collected by Meinhardt. NOTE: One gas blower not functioning
10-Dec-08	1.6	12.1	13.4	
11-Dec-08	0.3	1.2	19.8	
12-Dec-08	0	1	19.4	
17-Dec-08	N/A	N/A	N/A	Bore inundated with water. Unable to obtain results.
18-Dec-08	N/A	N/A	N/A	Bore inundated with water. Unable to obtain results.
19-Dec-08	N/A	N/A	N/A	Bore inundated with water. Unable to obtain results.
22-Dec-08	N/A	N/A	N/A	Bore inundated with water. Unable to obtain results.
23-Dec-08	N/A	N/A	N/A	Bore inundated with water. Unable to obtain results.
24-Dec-08	N/A	N/A	N/A	Bore inundated with water. Unable to obtain results.
5-Jan-09	N/A	N/A	N/A	Bore inundated with water. Unable to obtain results.
6-Jan-09	N/A	N/A	N/A	Bore inundated with water. Unable to obtain results.
GMP1B				Bore located in Melbourne Water Drain (north side) directly opposite GMP1
5-Nov-08	1.9	0	16	
12-Nov-08	9.8	2.9	16.7	
19-Nov-08	43.7	27.5	0.5	
25-Nov-08	28.8	15.3	8.6	
1-Dec-08	41.7	27.5	0.4	
2-Dec-08	41.3	27.2	0.4	
3-Dec-08	36.7	26.8	0.4	
4-Dec-08	38.4	27	0.2	
6-Dec-08	36.9	27.1	0.3	Results collected by Meinhardt
7-Dec-08	33.4	26.8	0.6	
8-Dec-08	40.5	27.3	0.5	Results collected by Meinhardt

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

10-Dec-08	26.2	25.7	0.2	Vacuum to cut-off trench throttled back. Vacuum to cut-off trench increased after sampling period.
11-Dec-08	13.5	17.6	7.8	
12-Dec-08	18.8	20.4	4.5	
17-Dec-08	35.2	23.2	1.4	
18-Dec-08	35.8	24.9	0.3	
19-Dec-08	5.8	9	12.5	
22-Dec-08	33	23.1	1	
23-Dec-08	6.6	11.5	10.7	
24-Dec-08	9.5	14.3	7	
5-Jan-09	7.5	17.3	5.1	
6-Jan-09	6.8	17.1	4.4	
GMP1C				
6-Dec-08	0	0.2	20.9	Results collected by Meinhardt
7-Dec-08	0	1.9	19.3	Results collected by Meinhardt
8-Dec-08	0	2.2	19.5	
10-Dec-08	0	2.2	18.7	
11-Dec-08	0	0.3	20.1	
12-Dec-08	0	0.6	19.4	
17-Dec-08	0	0	20.2	
18-Dec-08	0	3.5	16.7	
19-Dec-08	0	2.8	18.1	
22-Dec-08	0	3	15.9	
23-Dec-08	0	3.1	17.7	
24-Dec-08	0	2.7	17.6	
5-Jan-09	0.1	3.2	17	
6-Jan-09	0	3	16.4	
GMP1D				
6-Dec-08	0	0.2	20.8	Results collected by Meinhardt
7-Dec-08	0	0.7	20.3	Results collected by Meinhardt
8-Dec-08	0	1.4	20.4	
10-Dec-08	0	1.6	19.5	

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

11-Dec-08	0	0.1	20.2	
12-Dec-08	0	0.9	19.4	
17-Dec-08	0	1.7	18.3	
18-Dec-08	0	2.4	17.6	
19-Dec-08	0	1.9	18.9	
22-Dec-08	0	2	16.8	
23-Dec-08	0	3.1	17.4	
24-Dec-08	0	2	18	
5-Jan-09	0	2.1	18.3	
6-Jan-09	0	2.5	17	
GMP1E				
6-Dec-08	0	0.2	20.8	Results collected by Meinhardt
7-Dec-08	0	0.4	20.6	
8-Dec-08	0	0.6	21	Results collected by Meinhardt
10-Dec-08	0	0.2	20.6	
11-Dec-08	0	0	20.4	
12-Dec-08	0	0.3	19.4	
17-Dec-08	0	0.3	19.8	
18-Dec-08	0	0.2	19.9	
19-Dec-08	0	0.2	20.4	
22-Dec-08	0	0	18.3	
23-Dec-08	0	0.2	20	
24-Dec-08	0	0.1	19.9	
5-Jan-09	0	0.4	19.5	
6-Jan-09	0	1.7	17.2	
EPA BORE LTBH2				EPA installed bore to 1.5m within roadside drain on southern side of Entry Drive
05.11.08	0	2.8	16.4	
12.11.08	1.4	0.6	19.2	
19.11.08	N/A	N/A	N/A	
25.11.08	N/A	N/A	N/A	Bore destroyed due to installation of gas cut-off trench

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

EPA Bore LTBH1				EPA installed bore to 1.5m located at Melbourne Water Drain
24-Oct-08	0	2	0	
27-Oct-08	0	0.8	17.2	
5-Nov-08	0	0.6	19.2	
12-Nov-08	0.4	0.8	19.2	
19-Nov-08	1.3	2.7	18.9	
25-Nov-08	2.8	3.6	15.8	
1-Dec-08	1.6	7.8	15.4	
2-Dec-08	1	6.9	15.6	
3-Dec-08	0.9	6.3	16.8	
4-Dec-08	0.4	4.8	18.3	
6-Dec-08	0.6	4.2	17.9	Results collected by Meinhardt
7-Dec-08	0.5	3.2	19.6	
8-Dec-08	0.6	3.1	19.7	Results collected by Meinhardt. NOTE: One gas blower not functioning
10-Dec-08	0.3	2.7	19	
11-Dec-08	0.6	2.5	19.9	
12-Dec-08	0.3	2.2	18.8	
17-Dec-08	0	0.5	19.7	
18-Dec-08	0	0.7	19.4	
19-Dec-08	0	0.6	20.2	
22-Dec-08	0	0.9	18.4	
23-Dec-08	0	0.8	19.7	
24-Dec-08	0	0.6	20	
5-Jan-09	0.2	1.4	19.3	
6-Jan-09	0	1.9	17.8	
Gas Trench (Lower)				
6-Dec-08	0	0.2	20.5	Results collected by Meinhardt
7-Dec-08	0	0.1	20.8	
8-Dec-08	0	0.1	20.6	Results collected by Meinhardt
10-Dec-08	0	0	20.3	
11-Dec-08	0.3	0.1	19.5	
12-Dec-08	0	0	19.7	
18-Dec-08	0	0	20.1	

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

19-Dec-08	0	0	19.8	
22-Dec-08	0	0	18.5	
23-Dec-08	0	0	19.9	
24-Dec-08	0	0	19.8	
5-Jan-09	0	0.1	19.5	
6-Jan-09	0	0.1	18.8	
Gas Trench (Upper)				
6-Dec-08	0	0	20.5	Results collected by Meinhardt
7-Dec-08	0	0.1	20.8	
8-Dec-08	0.1	0.1	20.5	Results collected by Meinhardt
10-Dec-08	0	0.1	20.5	
11-Dec-08	61.6	37.3	0.2	Note: EDL power plant shutdown. Gas being flared
12-Dec-08	0	0	19.7	
18-Dec-08	0	0	19.5	
19-Dec-08	0	0	20.2	
22-Dec-08	0	0	18.3	
23-Dec-08	0	0	20.9	
24-Dec-08	0	0	20.5	
5-Jan-09	0	0.1	19.5	
6-Jan-09	0	0.1	18.2	
GMP2				Bore located within site boundary and perimeter 'fill' embankment (2-5m from waste boundary)
24-Oct-08	0.9	2.8	18.6	
27-Oct-08	3.1	4.5	16.3	
5-Nov-08	0	2.4	18.7	
12-Nov-08	0	1.5	18.3	
19-Nov-08	0	1.6	18.7	
25-Nov-08	0	0.7	18	
2-Dec-08	0	0.8	19.9	
15-Dec-08	0	0.2	20.2	
22-Dec-08	0	0.1	19.5	
6-Jan-09	0	1.1	18.3	

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

GMP2A				Bore located directly opposite GMP2 outside site boundary
24-Oct-08	0	1.4	19.2	
27-Oct-08	0	3.5	17.7	
5-Nov-08	0	3.3	17.1	
12-Nov-08	0	3.6	16.7	
19-Nov-08	0	3.5	18.3	
25-Nov-08	0	3.7	17.1	
2-Dec-08	0	3.9	18.3	
15-Dec-08	0	3.6	19.6	
22-Dec-08	0	7.7	12.6	
6-Jan-09	0	11.3	8.5	
GMP3				
5-Nov-08	0	0	20	
12-Nov-08	0	0	19.4	
19-Nov-08	0	0	20.5	
25-Nov-08	0	0.1	19.4	
2-Dec-08	0	0.3	20.4	
15-Dec-08	0	0.4	19.9	
22-Dec-08	0	2	18.3	
6-Jan-09	0	0.4	19.9	
GMP4				
5-Nov-08	0	0	19.6	
12-Nov-08	0	1.2	17.8	
19-Nov-08	0	3.9	16.3	
25-Nov-08	0	2.6	17.6	
2-Dec-08	0	4.6	15.2	
15-Dec-08	0	3.1	15.4	
22-Dec-08	0	4.3	13.5	
6-Jan-09	0	1.2	17.6	

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

GMP5				
5-Nov-08	0	0.9	19.1	
12-Nov-08	0	1.7	17.9	
19-Nov-08	0	1.6	19.2	
25-Nov-08	0	1.2	18.1	
2-Dec-08	0	0	18.8	
15-Dec-08	0	0.1	20.1	
22-Dec-08	0	3.2	18.4	
6-Jan-09	0	2.3	16.4	
GMP6				
5-Nov-08	0	4.8	15.6	
12-Nov-08	0	5.9	13.9	
19-Nov-08	0	4.3	17.2	
25-Nov-08	0	2.7	16.3	
2-Dec-08	0	5.6	15.5	
11-Dec-08	0	1.8	18.1	
22-Dec-08	0	2.2	17.1	
6-Jan-09	0	1.6	17.9	
GMP7				
5-Nov-08	0	1.7	18.3	
12-Nov-08	0	0	19.2	
19-Nov-08	0	5.6	16.1	
25-Nov-08	0	4.6	16.3	
2-Dec-08	0	4.6	17.5	
11-Dec-08	0	0	19.6	
22-Dec-08	0	1.8	17.8	
6-Jan-09	0	3.9	16.5	
GMP8				Bore located within site boundary and perimeter 'fill' embankment (2-5m from waste boundary)
24-Oct-08	9	6.6	16.1	
27-Oct-08	24.7	28.6	0.97	

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

5-Nov-08	6.4	8.1	14.3	
12-Nov-08	23.3	25.4	3.4	
19-Nov-08	25.7	28	1.4	
25-Nov-08	0	3.9	16.5	
2-Dec-08	15.2	21.6	6.2	
11-Dec-08	0.1	0.6	20.1	
12-Dec-08	0	0	19.8	
22-Dec-08	20.6	23.3	3.7	
6-Jan-09	22.1	28.1	1	
GMP8a				Bore located directly opposite GMP8 outside site boundary
24-Oct-08	0	2.5	17.2	
27-Oct-08	0	3.6	17.7	
5-Nov-08	0	2.5	17.1	
12-Nov-08	0	2.3	17.4	
19-Nov-08	0	2.4	18.5	
25-Nov-08	0	2.3	17.4	
2-Dec-08	0	2.5	18.8	
15-Dec-08	0	2.4	18.2	
22-Dec-08	0	0.1	19.3	
6-Jan-09	N/A	N/A	N/A	Bore inundated with water. Unable to obtain results.
GMP10				
5-Nov-08	0	6.1	15.6	
12-Nov-08	0	0.1	19.3	
19-Nov-08	0	2.3	13.4	
25-Nov-08	0	0	20.6	
2-Dec-08	0	0	22.6	
11-Dec-08	0	0	20.6	
22-Dec-08	0	0	20.2	
6-Jan-09	0.1	3.3	17.5	
GMP11				

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

5-Nov-08	0	0.4	18.9
12-Nov-08	0	0.7	18.4
19-Nov-08	0.1	1.4	19.3
25-Nov-08	0	0.2	19.1
2-Dec-08	0	1	19.7
11-Dec-08	0	0	19.2
22-Dec-08	0	1.2	18.6
6-Jan-09	0.1	1.2	19.3
GMP12			
19-Nov-08	0	0	20.9
25-Nov-08	0	0	20.1
2-Dec-08	0	0	18.6
11-Dec-08	0	0	18.2
22-Dec-08	0	0	18.6
6-Jan-09	0	0.5	18.6
GMP13			
5-Nov-08	0	2.1	17.1
12-Nov-08	0	1.4	18.3
19-Nov-08	0.2	1.8	19
25-Nov-08	0	1.4	18.1
2-Dec-08	0	5.8	16.3
15-Dec-08	0	1.3	18.2
22-Dec-08	0	9.8	7.6
6-Jan-09	0	9.2	11
GMP14			
5-Nov-08	0	2.4	15.6
12-Nov-08	1.1	0.8	18.2
19-Nov-08	0.1	1.1	18.6
25-Nov-08	0	0.4	18.6
2-Dec-08	0	0.1	20.4

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

11-Dec-08	0	0.8	20.4
12-Dec-08	0	0	20.2
17-Dec-08	0	5.4	12.2
18-Dec-08	0	4.6	12.9
19-Dec-08	0	0	20.5
22-Dec-08	0	4.3	15.3
23-Dec-08	0	2.3	16.3
24-Dec-08	0	0.1	19.6
5-Jan-09	0	1.8	17.3
6-Jan-09	0	4.5	12.3
GMP15			
5-Nov-08	0	0	20.4
12-Nov-08	0	0	19.6
19-Nov-08	0	0	20.8
25-Nov-08	0	0	19.9
2-Dec-08	0	0	20.6
11-Dec-08	0	0	22.6
12-Dec-08	0	0.1	19.8
17-Dec-08	0	0	20.1
18-Dec-08	0	0	19.9
19-Dec-08	0	0	20.6
22-Dec-08	0	0	19.9
23-Dec-08	0	0	20.2
24-Dec-08	0	1.2	18.6
5-Jan-09	0	0	20.4
6-Jan-09	0	0	18.3
GMP19			
24-Oct-08	0	0.2	20.9
27-Oct-08	0	8	14.2
5-Nov-08	0	7.9	13.7
12-Nov-08	0	7.8	12.9

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

19-Nov-08	0	8.2	13.9	
25-Nov-08	0	8.1	13.2	
2-Dec-08	0	8.4	14	
15-Dec-08	0	1.4	19.2	
22-Dec-08	0	8.2	12.7	
6-Jan-09	0	8.8	12.3	
GMP20				
24-Oct-08	0	2	17	
27-Oct-08	0	3.3	16.5	
5-Nov-08	0	1.3	19.3	
12-Nov-08	0	1.3	18.1	
19-Nov-08	0	1.6	19.2	
25-Nov-08	0	1.6	18.5	
2-Dec-08	0	1.4	19.7	
15-Dec-08	0	1.6	18.4	
22-Dec-08	0	1.7	17.4	
6-Jan-09	0	1.7	18	
GMP21				
24-Oct-08	0	0.5	20.8	
27-Oct-08	0	1.5	19.7	
5-Nov-08	0	4.9	15.4	
12-Nov-08	0	5.3	14.9	
19-Nov-08	0	6	15.5	
25-Nov-08	0	6.2	15	
2-Dec-08	0	6.3	15.3	
15-Dec-08	0	5.2	19.6	
22-Dec-08	0	5.8	12.5	
6-Jan-09	0	7	9.2	
EPA LTBH4				EPA monitoring bore installed to 1.5m directly adjacent to GMP8a
5-Nov-08	0	1.6	18	

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

12-Nov-08	0	0.9	18.3	
19-Nov-08	0	1.6	19.3	
25-Nov-08	0	1.2	18.2	
2-Dec-08	0	0.9	20.2	
15-Dec-08	N/A	N/A	N/A	Bore inundated with water. Unable to obtain reading.
22-Dec-08	0	2.3	16.3	
6-Jan-09	N/A	N/A	N/A	Bore inundated with water. Unable to obtain reading.
EPA BAYLISS				EPA monitoring bore installed to 1.5m on south side of Bayliss Rd (south of site.)
5-Nov-08	0	0.5	19.2	
12-Nov-08	0	0.6	18.6	
19-Nov-08	0	0.3	20.2	
25-Nov-08	0	0.4	19.1	
2-Dec-08	0	1	20.1	
15-Dec-08	N/A	N/A	N/A	Unable to obtain reading as bore was inundated with water
22-Dec-08	0	0.2	19.4	
6-Jan-09	0	0.7	18.5	

2.2 Landfill address: TPI sites Fraser Road and Heatherton Road, Clayton South

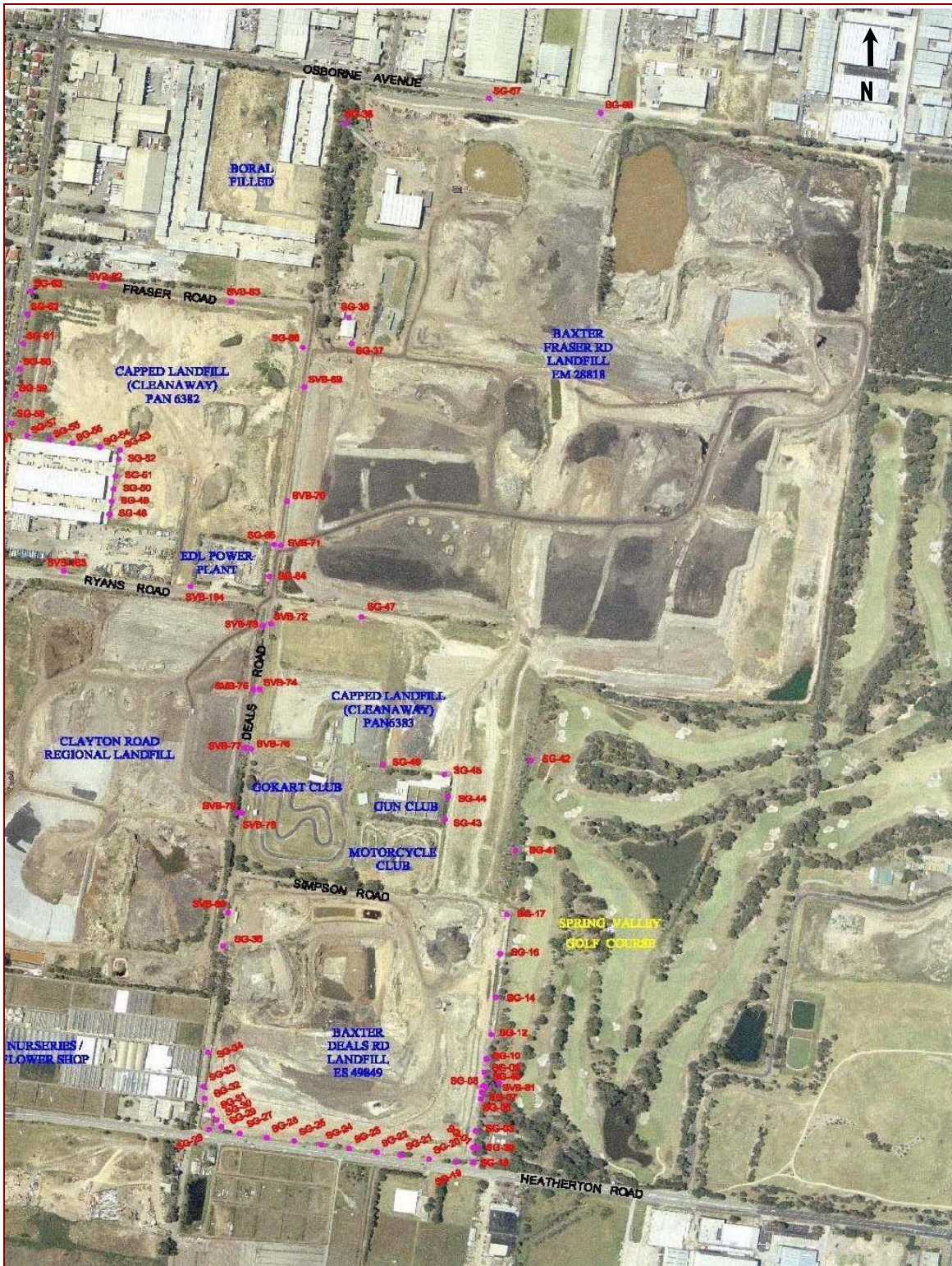


Figure: Clayton South probe monitoring location plan (probes used by TPI). Baxter and Cleanaway landfills shown are owned by TPI.

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)

Landfill address: Fraser Rd, Clayton South

Landfill licence: EM28818

Licence holder: Transpacific Industries Group Ltd (TPI)

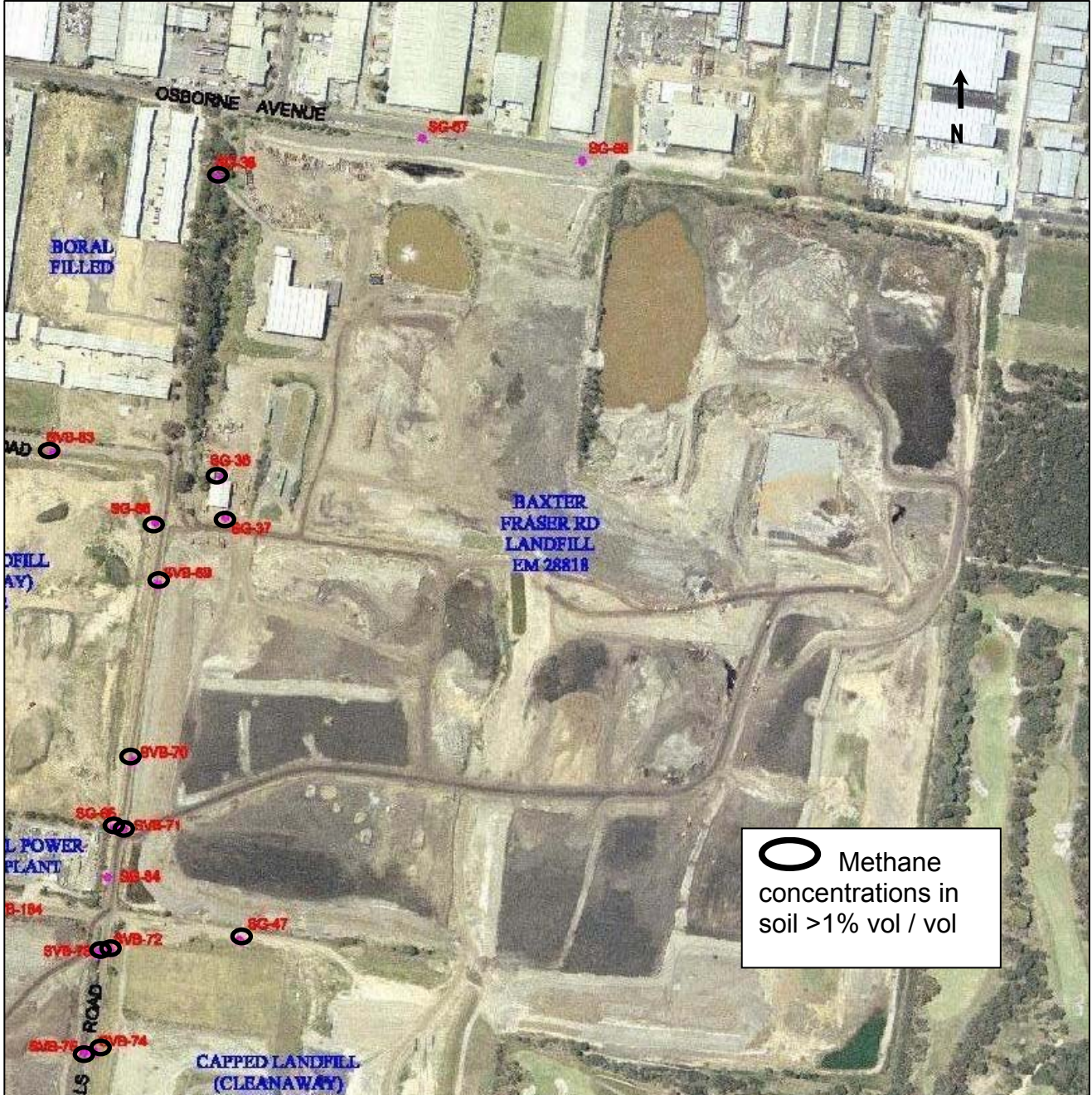


Figure: Fraser Road probe monitoring location plan (probes used by TPI). Baxter and Cleanaway landfills shown are owned by TPI.

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)

Landfill address: corner Deals Road & Heatherton Road, Clayton South

Landfill licence: ES49849

Licence holder: Transpacific Industries Group Ltd (TPI)



Figure: Heatherton Road probe monitoring location plan (probes used by TPI).
Baxter and Cleanaway landfills shown are owned by TPI.

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

Table: Fraser Road and Heatherton Road methane monitoring data supplied by TPI

mgt Environmental Soilgas Monitoring - Deals Road Landfill

Gas Monitoring Probe	Date Sampled	Sample Depth (m)	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)						mgt Lab Analysis			GPS Location
				Field Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field CO ppm	Field H ₂ S ppm	Field N ₂ (Balance) %v/v	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v	
SG1	14.7.08	1.3	1130	<0.5	0.1	20.9	<1	<1	79.0	-	-	-	S. 37.57'30.4° E. 145.07'21.6°
SG1 (post purge)	14.7.08	1.3	1205	<0.5	0.1	20.8	<1	1	79.1	SG1	08-JL07197	<0.05	
SG2	14.7.08	1.3	1145	<0.5	4.2	17.8	<1	1	78.0	-	-	-	S. 37.57'29.5° E. 145.07'21.8°
SG2 (post purge)	14.7.08	1.3	1220	<0.5	4.1	17.9	<1	1	78.0	-	-	-	
SG3	14.7.08	1.3	1155	<0.5	10.2	12.8	<1	<1	76.9	-	-	-	S. 37.57'29.2° E. 145.07'22.1°
SG3 (post purge)	14.7.08	1.3	1225	<0.5	9.9	12.9	<1	<1	77.1	-	-	-	
SG4	14.7.08	1.3	1200	47.7	29.8	0.6	9	158	21.9	-	-	-	S. 37.57'28.6° E. 145.07'22.2°
SG4 (post purge)	14.7.08	1.3	1235	40.8	29.6	1.3	17	197	28.3	-	-	-	
SG5	14.7.08	1.3	1240	31.7	37.0	<1	2	9	31.3	-	-	-	S. 37.57'28.2° E. 145.07'22.2°
SG5 (post purge)	14.7.08	1.3	1315	31.2	37.1	<1	3	25	31.7	-	-	-	
SG6	14.7.08	1.3	1245	48.1	42.4	<1	41	>200	9.5	-	-	-	S. 37.57'27.9° E. 145.07'22.3°
SG6 (post purge)	14.7.08	1.3	1320	47.5	42.3	<1	64	>200	10.2	-	-	-	
SG7	14.7.08	1.3	1250	54.5	43.5	<1	164	>200	2.0	-	-	-	S. 37.57'27.7° E. 145.07'22.4°
SG7 (post purge)	14.7.08	1.3	1325	54.1	44.0	<1	203	>200	1.9	-	-	-	
SG8	14.7.08	1.3	1255	58.8	41.2	<1	6	14	0.0	-	-	-	S. 37.57'27.3° E. 145.07'22.4°
SG8 (post purge)	14.7.08	1.3	1330	58.5	41.5	<1	12	26	0.0	-	-	-	
SG9	14.7.08	1.3	1300	31.4	35.5	2.2	<1	6	30.9	-	-	-	S. 37.57'26.5° E. 145.07'22.5°
SG9 (post purge)	14.7.08	1.3	1335	30.7	35.3	2.6	3	7	31.5	SG9	08-JL07198	21	

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.
Barometric Pressure : 1005 HPa

Report No.230561
1 of 3

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

mgt Environmental Soilgas Monitoring - Deals Road Landfill

Gas Monitoring Probe	Date Sampled	Sample Depth (m)	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)						mgt Lab Analysis			GPS Location
				Field Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field CO ppm	Field H ₂ S ppm	Field N ₂ (Balance) %v/v	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v	

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.
Barometric Pressure : 1005 HPa

Report No.230561
2 of 3

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

mgt Environmental Soilgas Monitoring - Deals Road Landfill

Gas Monitoring Probe	Date Sampled	Sample Depth (m)	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)						mgt Lab Analysis			GPS Location
				Field Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field CO ppm	Field H2S ppm	Field N2 (Balance) %v/v	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v	
SG10	14.7.08	1.3	1340	37.3	39.2	<1	5	6	23.5	-	-	-	S. 37.57'26.0° E. 145.07'22.7°
SG10 (post purge)	14.7.08	1.3	1405	37.4	39.4	<1	<1	4	23.2	-	-	-	
SG11	14.7.08	1.3	1410	56.9	43.1	<1	10	28	0.0	-	-	-	S. 37.57'25.5° E. 145.07'22.7°
SG11 (post purge)	14.7.08	1.3	1445	56.8	43.2	<1	14	31	0.0	-	-	-	
SG12	14.7.08	1.3	1415	58.3	41.7	<1	10	48	0.0	-	-	-	S. 37.57'24.7° E. 145.07'22.9°
SG12 (post purge)	14.7.08	1.3	1450	58.2	41.8	<1	10	53	0.0	-	-	-	
SG13	14.7.08	1.3	1420	58.0	30.4	<1	1	7	11.6	-	-	-	S. 37.57'24.1° E. 145.07'23.0°
SG13 (post purge)	14.7.08	1.3	1455	57.8	30.3	<1	4	21	11.9	-	-	-	
SG14	14.7.08	1.3	1425	61.1	38.9	<1	10	28	0.0	-	-	-	S. 37.57'23.5° E. 145.07'23.2°
SG14 (post purge)	14.7.08	1.3	1500	61.4	38.6	<1	10	30	0.0	-	-	-	
SG15	14.7.08	1.3	1505	58.4	39.1	<1	7	29	2.5	-	-	-	S. 37.57'22.8° E. 145.07'23.2°
SG15 (post purge)	14.7.08	1.3	1540	58.9	38.9	<1	6	32	2.2	-	-	-	
SG16	14.7.08	1.3	1535	29.4	24.5	<1	12	8	46.1	-	-	-	S. 37.57'20.7° E. 145.07'23.6°
SG16 (post purge)	-	-	-	-	-	-	-	-	-	-	-	-	
SG17	14.7.08	1.3	1540	0.6	15.2	4.0	<1	2	80.2	-	-	-	S. 37.57'18.8° E. 145.07'24.0°
SG17 (post purge)	-	-	-	-	-	-	-	-	-	-	-	-	

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.
Barometric Pressure : 1005 HPa

Report No.230561
3 of 3

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

mgt Environmental Soilgas Monitoring - Transpacific Clayton Landfills

Ambient Gas Monitoring Location	Date Sampled	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)						mgt Lab Analysis		
			Field Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field CO ppm	Field H ₂ S ppm	Field N ₂ (Balance) %v/v	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v
House - South West boundary (South West corner of Deals Rd Landfill)	29.10.08	1404	<0.1	<0.0	20.7	79.3	<1	<1	-	-	-
Workshop (Western boundary of Fraser Rd Landfill)	29.10.08	1555	<0.1	<0.0	20.4	79.6	<1	<1	-	-	-
Nursery - Building 1 (In Spring Valley Golf Club property on South East boundary of Deals Rd Landfill)	30.10.08	0926	<0.1	<0.0	20.5	79.5	<1	<1	-	-	-
Nursery - Building 2 (In Spring Valley Golf Club property on South East boundary of Deals Rd Landfill)	30.10.08	0930	<0.1	<0.0	20.6	79.4	<1	<1	-	-	-
Nursery - Building 3 (In Spring Valley Golf Club property on South East boundary of Deals Rd Landfill)	30.10.08	0934	<0.1	<0.0	20.5	79.5	<1	<1	-	-	-

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.

Report No.236282
1 of 1

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

mgt Environmental Soilgas Monitoring - Transpacific Clayton Landfills

Gas Monitoring Probe	Barometric Pressure	Date Sampled	Sample Depth (m)	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)							mgt Lab Analysis			Comments
					Average Methane %v/v	Peak Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field N ₂ (Balance) %v/v	Field H ₂ S ppm	Field CO ppm	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v	
SG1	1013	29.10.08	1.3	1054	<0.1	<0.1	0.3	20.8	78.8	<1	2	-	-	-	
SG3	1013	29.10.08	1.3	1105	<0.1	<0.1	8.5	13.3	78.2	<1	2	-	-	-	
SG6	1013	29.10.08	1.3	1114	<0.1	<0.1	13.4	7.3	79.2	<1	3	-	-	-	
SG8	1013	29.10.08	1.3	1121	45.5	45.6	40.6	0.0	13.5	<1	10	-	-	-	
SG10	1013	29.10.08	1.3	1127	0.5	0.5	20.9	1.4	77.1	<1	4	-	-	-	
SG12	1013	29.10.08	1.3	1134	46.2	46.8	40.2	0.0	13.7	41	5	-	-	-	
SG14	1013	29.10.08	1.3	1144	54.3	54.4	35.9	0	9.5	22	6	-	-	-	
SG16	1013	29.10.08	1.3	1215	27.3	36.5	24	1.5	47.2	4	5	-	-	-	
SG17	1013	29.10.08	1.3	1218	4.7	4.7	21.7	0.1	73.4	2	7	-	-	-	
SG18	1013	29.10.08	1.3	1250	0	0	3.2	18	78.6	4	48	SG18	08-Oct11247	<0.002	
SG19	1013	29.10.08	1.3	1320	0	0	23	2.2	74.7	<1	9	-	-	-	
SG20	1013	29.10.08	1.3	1325	57.6	57.7	42.3	0.2	0.1	3	25	-	-	-	
SG21	1013	29.10.08	1.3	1341	0.1	0.1	0	20.8	79	<1	2	-	-	-	
SG22	1013	29.10.08	1.3	1350	-	-	-	-	-	-	-	-	-	-	Unable to purge
SG23	1013	29.10.08	1.3	1400	56.7	56.9	42.5	0.2	0.3	32	34	-	-	-	

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.

Report No.236282
1 of 6

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

mgt Environmental Soilgas Monitoring - Transpacific Clayton Landfills

Gas Monitoring Probe	Barometric Pressure	Date Sampled	Sample Depth (m)	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)							mgt Lab Analysis			Comments	
					Average Methane %v/v	Peak Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field N ₂ (Balance) %v/v	Field H ₂ S ppm	Field CO ppm	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v		
SG24	1013	29.10.08	1.3	1404	-	-	-	-	-	-	-	-	-	-	-	Unable to purge
SG25	1013	29.10.08	1.3	1409	-	-	-	-	-	-	-	-	-	-	-	Unable to purge
SG26	1013	29.10.08	1.3	1412	50.8	51.7	46.4	0.2	2.2	2	64	-	-	-	-	
SG27	1013	29.10.08	1.3	1416	57.4	57.4	42.7	0.1	0	2	32	-	-	-	-	
SG28	1013	29.10.08	1.3	1423	0.1	0.1	0.7	20.3	78.8	<1	4	-	-	-	-	
SG29	1013	29.10.08	1.3	1427	6.9	7	24.2	0.1	68.6	<1	72	-	-	-	-	
SG30	1013	29.10.08	1.3	1432	20.4	20.5	23.1	0.1	56.1	<1	72	-	-	-	-	
SG31	1013	29.10.08	0.8	1440	65.5	65.6	30.5	0.1	3.8	8	46	-	-	-	-	
SG32	1013	29.10.08	0.7	1450	28.2	28.6	18.3	0.1	3.8	2	22	-	-	-	-	
SG33	1013	29.10.08	1.3	1505	0.8	0.8	13.3	5.6	80.1	<1	12	-	-	-	-	
SG34	1013	29.10.08	1.3	1509	0.1	0.1	3.9	16.6	79.3	<1	9	-	-	-	-	
SG35	1013	29.10.08	1.3	1515	4.2	4.5	18.4	4.7	72.6	82	19	-	-	-	-	
SG36	1013	29.10.08	1.3	1530	47.9	48.2	31.8	0.2	20.2	10	93	-	-	-	-	
SG37	1013	29.10.08	1.0	1552	20.7	20.8	22.9	0.2	56.1	23	22	-	-	-	-	
SG38	1013	29.10.08	1.3	1627	3.5	3.7	20.8	0.5	75.1	6	18	-	-	-	-	
SG39	1008	30.10.08	1.3	926	<0.1	<0.1	4.6	16.8	78.5	<1	2	SG39	08-Oct1248	<0.002		

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.

Report No.236282
2 of 6

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

mgt Environmental Soilgas Monitoring - Transpacific Clayton Landfills

Gas Monitoring Probe	Barometric Pressure	Date Sampled	Sample Depth (m)	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)							mgt Lab Analysis			Comments
					Average Methane %v/v	Peak Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field N ₂ (Balance) %v/v	Field H ₂ S ppm	Field CO ppm	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v	

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.

Report No.236282
3 of 6

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

mgt Environmental Soilgas Monitoring - Transpacific Clayton Landfills

Gas Monitoring Probe	Barometric Pressure	Date Sampled	Sample Depth (m)	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)							mgt Lab Analysis			Comments
					Average Methane %v/v	Peak Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field N ₂ (Balance) %v/v	Field H ₂ S ppm	Field CO ppm	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v	
SG40	1008	30.10.08	1.3	937	9.5	9.5	27	0.2	73.2	<1	2	-	-	-	
SG41	1008	30.10.08	1.3	950	<0.1	<0.1	2.4	18.7	78.8	<1	3	-	-	-	
SG42	1008	30.10.08	1.3	958	<0.1	<0.1	4.2	17	78.7	<1	2	-	-	-	
SG43	1008	30.10.08	1.3	1020	<0.1	<0.1	4.4	17.9	77.6	<1	14	-	-	-	
SG44	1008	30.10.08	1.3	1035	<0.1	<0.1	12.1	11.1	76.6	<1	5	SG44	08-Oct11249	<0.002	
SG45	1008	30.10.08	1.3	1050	<0.1	<0.1	14.6	3.3	82	<1	13	-	-	-	
SG46	1008	30.10.08	1.3	1058	<0.1	<0.1	4.9	15.1	79.8	<1	10	-	-	-	
SG47	1008	30.10.08	1.3	1120	57.1	57.5	31.6	0	11	8	21	SG47	08-Oct11250	45	
SG48	1002	30.10.08	1.3	1230	<0.1	<0.1	4.9	17.3	77.8	<1	17	-	-	-	
SG49	1002	30.10.08	1.3	1238	<0.1	<0.1	6.9	15.5	77.4	<1	2	-	-	-	
SG50	1002	30.10.08	1.3	1242	<0.1	<0.1	10.1	12.7	77.3	<1	49	-	-	-	
SG51	1002	30.10.08	1.3	1245	<0.1	<0.1	12.9	6.2	80.8	<1	4	-	-	-	
SG52	1002	30.10.08	1.3	1250	<0.1	<0.1	3	15.7	81.2	<1	2	-	-	-	
SG53	1002	30.10.08	1.3	1255	0.1	0.1	19.4	1.3	79.1	<1	11	-	-	-	
SG54	1002	30.10.08	-	-	-	-	-	-	-	-	-	-	-	-	Unable to reach depth
SG55	1002	30.10.08	1.2	1303	<0.1	<0.1	4.5	16.9	78.5	2	6	-	-	-	

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.

Report No.236282
4 of 6

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

mgt Environmental Soilgas Monitoring - Transpacific Clayton Landfills

Gas Monitoring Probe	Barometric Pressure	Date Sampled	Sample Depth (m)	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)							mgt Lab Analysis			Comments
					Average Methane %v/v	Peak Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field N ₂ (Balance) %v/v	Field H ₂ S ppm	Field CO ppm	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v	
SG56	1002	30.10.08	1.2	1309	<0.1	<0.1	2.6	18	79.3	2	16	-	-	-	

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.

Report No.236282
5 of 6

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

mgt Environmental Soilgas Monitoring - Transpacific Clayton Landfills

Gas Monitoring Probe	Barometric Pressure	Date Sampled	Sample Depth (m)	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)							mgt Lab Analysis			Comments
					Average Methane %v/v	Peak Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field N ₂ (Balance) %v/v	Field H ₂ S ppm	Field CO ppm	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v	
SG57	1002	30.10.08	1.2	1320	<0.1	<0.1	3.8	17.8	78.4	<1	8	-	-	-	
SG58	1002	30.10.08	1.3	1325	<0.1	<0.1	2.3	18.8	78.9	<1	2	-	-	-	
SG59	1002	30.10.08	1.3	1342	<0.1	<0.1	1.8	19.6	78.6	<1	2	-	-	-	
SG60	1002	30.10.08	1.3	1352	<0.1	<0.1	3.2	18.3	78.4	<1	1	-	-	-	
SG61	1002	30.10.08	1.3	1357	<0.1	<0.1	2	19.6	78.4	<1	2	-	-	-	
SG62	1002	30.10.08	1.3	1402	<0.1	<0.1	2.7	19	78.2	<1	4	-	-	-	
SG63	1002	30.10.08	1.3	1406	<0.1	<0.1	0.8	20.4	78.6	<1	2	-	-	-	
SG64	1002	30.10.08	1.3	1415	65.5	66.5	31	0.2	2.8	10	67	SG64	08-Oc11251	67	
SG65	1002	30.10.08	1.3	1424	60.9	61.5	34.2	0.1	4.9	10	17	SG65	08-Oc11252	63	
SG66	1002	30.10.08	1.3	1438	8.3	10.9	19.4	3.7	58.5	4	9	-	-	-	
SG67	1002	30.10.08	1.3	1450	<0.1	<0.1	2.2	18.9	78.8	<1	23	-	-	-	
SG68	1002	30.10.08	1.3	1456	<0.1	<0.1	3.9	14.1	81.8	<1	75	-	-	-	

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.

Report No.236282
6 of 6

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

mgt Environmental Soilgas Monitoring - Transpacific Clayton South area

Gas Monitoring Probe	Barometric Pressure	Date Sampled	Sample Depth (m)	Sample Time (Hours)	mgt Field Analysis (In-Situ Landfill Gas meter - Portable GA2000 Landfill Gas Analyser)							mgt Lab Analysis			Comments
					Average Methane %v/v	Peak Methane %v/v	Field CO2 %v/v	Field O2 %v/v	Field N ₂ (Balance) %v/v	Field H ₂ S ppm	Field CO ppm	Gas Bag I.D	Gas Bag Lab No.	Lab Methane %v/v	
SVB69	1002	20.11.08	1.3	0926	56.0	56.1	39.2	0.2	4.6	22	17	-	-	-	
SVB70	1002	20.11.08	1.3	0917	67.5	67.6	32.4	0.2	0.0	31	17	SVB70	08-No08250	49	
SVB71	1002	20.11.08	1.3	0910	62.3	62.3	35.5	0.7	1.4	11	14	-	-	-	
SVB72	1008	19.11.08	1.3	1447	11.1	11.2	21.6	3.1	64.1	8	5	-	-	-	
SVB73	1008	19.11.08	1.3	1432	29.6	29.9	20.6	9.7	39.8	144	6	-	-	-	
SVB74	1008	19.11.08	1.3	1421	56.3	56.3	38.7	0.4	4.5	40	13	-	-	-	
SVB75	1008	19.11.08	1.3	1413	57.9	58	38.4	0.4	3.2	144	12	-	-	-	
SVB76	1008	19.11.08	1.3	1355	57.9	58.1	38.9	0.4	3.0	59	13	-	-	-	
SVB77	1008	19.11.08	1.3	1337	46.6	47.7	32.2	3.9	17.3	1	12	-	-	-	
SVB78	1008	19.11.08	1.3	1312	0.0	0.0	4.0	14.5	81.5	<1	5	-	-	-	
SVB79	1008	19.11.08	1.2	1258	0.0	0.8	4.9	16.4	78.6	<1	3	-	-	-	
SVB80	1008	19.11.08	1.3	1235	22.9	42.8	22.1	0.1	55.6	>200	11	-	-	-	
SVB81	1002	20.11.08	1.3	0953	1.7	1.7	4.1	18.1	76.0	<1	<1	-	-	-	
SVB82	1002	20.11.08	1.3	1018	<0.1	<0.1	4.7	17.0	78.3	<1	2	SVB82	08-No08247	<0.002	
SVB83	1002	20.11.08	1.3	1025	<0.1	<0.1	5.7	16.2	78.0	<1	4	SVB83	08-No08248	<0.002	
SVB163	1002	21.11.08	1.3	1402	5.1	5.1	23.9	0.4	70.6	7	13	-	-	-	
SVB164	1002	21.11.08	1.3	1410	58.2	58.6	38.5	0.4	3.0	27	27	-	-	-	

In-Situ Field measurements performed by GA2000 Landfill Gas Analyser.

Report No.237354
1 of 1

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

Survey Co-ordinates of Soil Gas Monitoring Locations in the Clayton South Area Since July 2008

Gas Soil Monitoring Location	Easting	Northing	RL m ground	Date Surveyed by Charter Keck Cramer
SG-01	334966.1	5796951.1	30.9	3/11/2008
SG-02				
SG-03	334970.3	5796976.7	31.6	3/11/2008
SG-04				
SG-05				
SG-06	334977.6	5797025.9	32.5	3/11/2008
SG-07	334978.9	5797036.2	32.7	3/11/2008
SG-08	334980.2	5797045.8	32.9	3/11/2008
SG-09	334982.9	5797066.6	33.5	3/11/2008
SG-10	334985.6	5797087.3	34.2	3/11/2008
SG-11				3/11/2008
SG-12	334992.3	5797124.8	34.8	3/11/2008
SG-13				3/11/2008
SG-14	334999.0	5797181.8	35.1	3/11/2008
SG-15				3/11/2008
SG-16	335005.7	5797248.7	36.4	3/11/2008
SG-17	335015.1	5797309.1	36.3	3/11/2008
SG-18	334966.7	5796928.7	30.2	3/11/2008
SG-19	334941.7	5796928.7	29.6	3/11/2008
SG-20	334902.2	5796933.2	45.2	3/11/2008
SG-21	334862.1	5796938.9	44.7	3/11/2008
SG-22	334826.9	5796944.1	28.3	3/11/2008
SG-23	334787.0	5796949.9	28.1	3/11/2008
SG-24	334746.5	5796955.7	28.2	3/11/2008
SG-25	334707.4	5796961.4	28.3	3/11/2008
SG-26	334667.8	5796966.2	28.1	3/11/2008
SG-27	334628.5	5796973.0	28.6	3/11/2008
SG-28	334583.9	5796979.2	29.4	3/11/2008
SG-29	334601.9	5796983.0	29.3	3/11/2008
SG-30	334595.0	5796993.7	29.3	3/11/2008
SG-31	334588.4	5797008.3	29.4	3/11/2008
SG-32	334577.7	5797026.7	30.1	3/11/2008
SG-33	334575.6	5797044.9	30.3	3/11/2008
SG-34	334582.2	5797097.3	30.4	3/11/2008
SG-35	334604.1	5797260.9	34.7	3/11/2008
SG-36	334787.0	5798226.3	41.3	3/11/2008
SG-37	334790.5	5798186.5	41.2	3/11/2008
SG-38	334782.0	5798525.3	43.8	3/11/2008
SG-39	334972.3	5796950.5	31.2	3/11/2008
SG-40	334984.7	5797044.9	32.8	3/11/2008
SG-41	335027.7	5797407.8	35.5	3/11/2008
SG-42	335050.4	5797546.1	38.0	3/11/2008
SG-43	334925.6	5797455.4	37.6	3/11/2008
SG-44	334930.1	5797489.8	37.6	3/11/2008
SG-45	334825.1	5797524.3	37.6	3/11/2008
SG-46	334835.8	5797539.4	37.5	3/11/2008
SG-47	334804.8	5797766.1	40.3	3/11/2008
SG-48	334440.2	5797924.2	45.4	3/11/2008
SG-49	334443.1	5797944.1	45.9	3/11/2008
SG-50	334446.3	5797962.9	46.2	3/11/2008
SG-51	334448.9	5797982.9	46.4	3/11/2008
SG-52	334453.3	5798008.7	46.8	3/11/2008
SG-53	334455.5	5798023.1	47.1	3/11/2008

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)

Survey Co-ordinates of Soil Gas Monitoring Locations in the Clayton South Area Since July 2008

Gas Soil Monitoring Location	Easting	Northing	RL m ground	Date Surveyed by Charter Keck Cramer
SG-54	334426.0	5798027.5	46.5	3/11/2008
SG-55	334386.0	5798033.9	46.6	3/11/2008
SG-56	334353.2	5798039.4	46.7	3/11/2008
SG-57	334320.4	5798045.0	47.0	3/11/2008
SG-58	334298.6	5798064.1	47.0	3/11/2008
SG-59	334304.4	5798106.6	46.3	3/11/2008
SG-60	334310.0	5798147.3	44.9	3/11/2008
SG-61	334315.0	5798187.1	43.6	3/11/2008
SG-62	334321.2	5798231.9	42.2	3/11/2008
SG-63	334326.0	5798267.4	42.0	3/11/2008
SG-64	334671.8	5797828.6	40.7	3/11/2008
SG-65	334678.5	5797877.7	41.0	3/11/2008
SG-66	334720.0	5798180.6	41.5	3/11/2008
SG-67	334989.6	5798563.3	45.0	3/11/2008
SG-68	335151.3	5798540.9	44.2	3/11/2008
SVB-69	334721.7	5798119.8	41.3	28/11/2008
SVB-70	334697.4	5797944.2	41.0	28/11/2008
SVB-71	334687.9	5797876	41.0	28/11/2008
SVB-72	334673.5	5797756.2	40.1	28/11/2008
SVB-73	334661.4	5797753.5	40.2	28/11/2008
SVB-74	334657.6	5797655.4	39.8	28/11/2008
SVB-75	334647.8	5797655.1	40.0	28/11/2008
SVB-76	334644.9	5797563.6	38.8	28/11/2008
SVB-77	334635.3	5797565	38.7	28/11/2008
SVB-78	334631.8	5797464.8	36.6	28/11/2008
SVB-79	334625.8	5797465.3	37.2	28/11/2008
SVB-80	334611.4	5797312	35.8	28/11/2008
SVB-81	335004.2	5797050.3	34.3	28/11/2008
SG-82	334430.5	5798275.8	42.3	28/11/2008
SVB-83	334616.2	5798250.9	41.7	28/11/2008
SVB-163	334373.7	5797837	41.0	28/11/2008
SVB-164	334557.5	5797813.6	42.3	28/11/2008

2.3 Landfill address: 654–718 Clayton Road, Clayton South

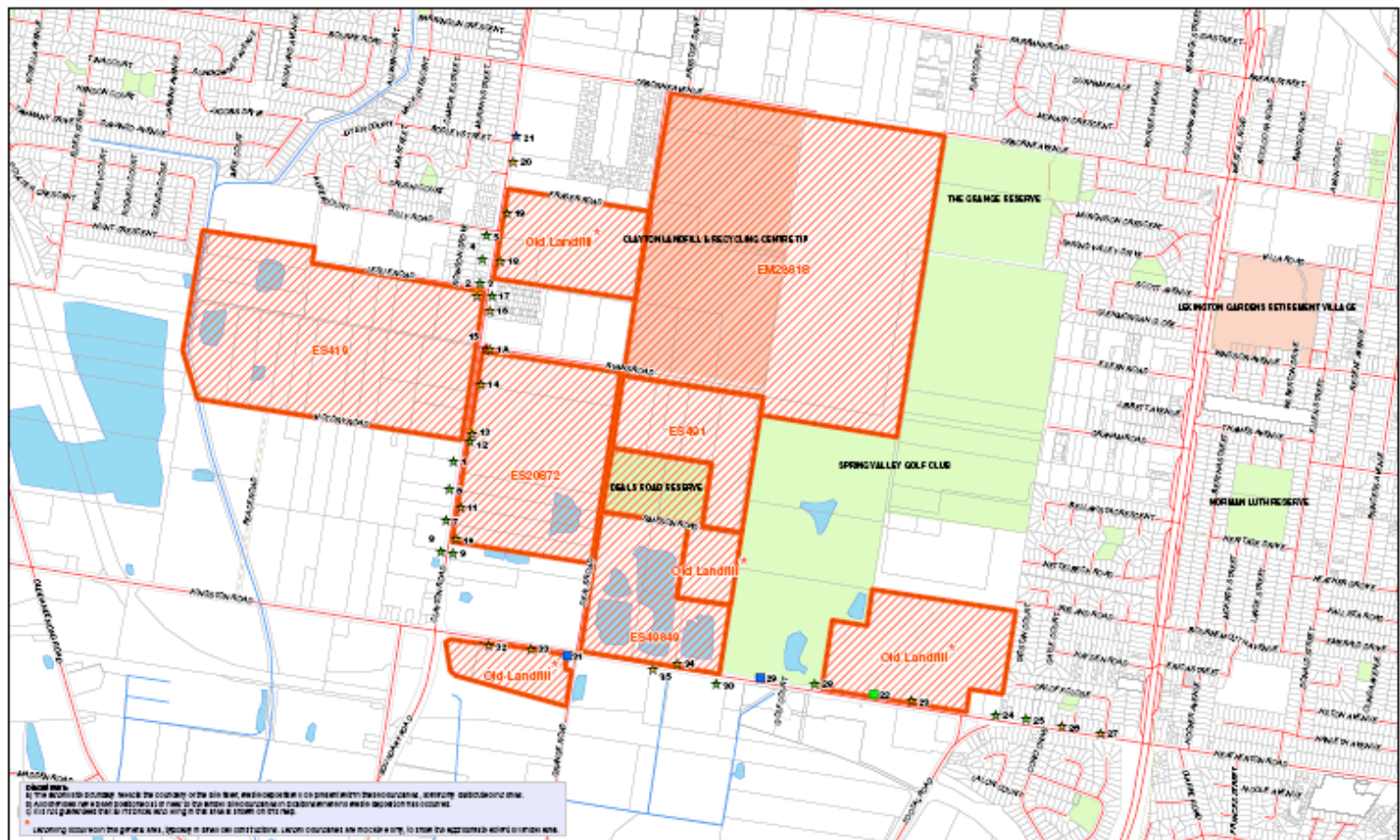
Landfill licence: ES20872

Licence holder: Clayton Road Landfill Joint Venture

Table: Methane monitoring data supplied by Clayton Road Joint Venture
(Bores were constructed by EPA and bore locations are shown in Appendix 3: GHD report)

Date	Bore ID	CH ₄	CO ₂	O ₂
26 December 2008	CL12			
	CL11			
	CLDH26			
	CL10			
	CL09	Not done due to christmas		
29 December 2008	CL12	61.3	38.6	0
	CL11	0	0.9	20
	CLDH26	0	1.6	19
	CL10	65	33	0
	CL09	0	2.5	17
31 December 2008	CL12	60	40	0
	CL11	17	30	0
	CLDH26	0	7.7	13
	CL10	61	35	0
	CL09	0	2.7	17.3
2 January 2009	CL12	60	39	0
	CL11	16	30	0
	CLDH26	0	6.4	16.7
	CL10	61	35	0
	CL09	0	2.5	18
5 January 2009	CL12	60.3	39	0
	CL11	15	29	0
	CLDH26	0	5.3	15.8
	CL10	61	35	0.1
	CL09	0	2	18.3
7 January 2009	CL12	59.7	38	0
	CL11	16	29	0
	CLDH26	0	4.8	15.8
	CL10	61	34	0.1
	CL09	0	2	18
9 January 2009	CL12	60.1	39	0
	CL11	15	29	0
	CLDH26	0	5.3	15.8
	CL10	61	35	0.1
	CL09	0	2	18.3
12 January 2009	CL12	60	40	0
	CL11	13	30	0
	CLDH26	0	4.5	16.5
	CL10	60	36	0
	CL09	0	1.7	18
14 January 2009				
16 January 2009				

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT FROM VICTORIAN LANDFILLS (APPENDIX 4)



<p>Scale: 1:10,000 (A3)</p> <p>0 40 80 120 160 200</p> <p>North arrow</p> <p>Map Project: Victoria's Methane Gas Project - Service Sweep Locations</p> <p>© 2009 GHD. All Rights Reserved.</p>	<table border="0"> <tr> <td>★ AOME PI</td> <td>Green line</td> <td>Orange box</td> <td>Red box</td> <td>Blue box</td> <td>Grey box</td> </tr> <tr> <td>★ DFC PI</td> <td>Red line</td> <td>Blue box</td> <td>Green box</td> <td>Red box</td> <td>Blue box</td> </tr> <tr> <td>★ CDFI PI</td> <td>Red line with dashes</td> <td>Red box</td> <td>Green box</td> <td>Red box</td> <td>Blue box</td> </tr> <tr> <td>★ TDFI PI</td> <td>Red line with dots</td> <td>Red box</td> <td>Green box</td> <td>Red box</td> <td>Blue box</td> </tr> <tr> <td>★ PDC PI</td> <td>Red line with squares</td> <td>Red box</td> <td>Green box</td> <td>Red box</td> <td>Blue box</td> </tr> <tr> <td>★ DCDF PI</td> <td>Red line with triangles</td> <td>Red box</td> <td>Green box</td> <td>Red box</td> <td>Blue box</td> </tr> <tr> <td>★ DCDFI PI</td> <td>Red line with diamonds</td> <td>Red box</td> <td>Green box</td> <td>Red box</td> <td>Blue box</td> </tr> </table>	★ AOME PI	Green line	Orange box	Red box	Blue box	Grey box	★ DFC PI	Red line	Blue box	Green box	Red box	Blue box	★ CDFI PI	Red line with dashes	Red box	Green box	Red box	Blue box	★ TDFI PI	Red line with dots	Red box	Green box	Red box	Blue box	★ PDC PI	Red line with squares	Red box	Green box	Red box	Blue box	★ DCDF PI	Red line with triangles	Red box	Green box	Red box	Blue box	★ DCDFI PI	Red line with diamonds	Red box	Green box	Red box	Blue box	<table border="0"> <tr> <td>Blue box</td> <td>Blue box</td> <td>Blue box</td> </tr> <tr> <td>Blue box</td> <td>Blue box</td> <td>Blue box</td> </tr> <tr> <td>Blue box</td> <td>Blue box</td> <td>Blue box</td> </tr> </table>	Blue box	Blue box	Blue box	Blue box	Blue box	Blue box	Blue box	Blue box	Blue box	<table border="0"> <tr> <td>EPA</td> <td>Job Number: 01-25955</td> </tr> <tr> <td>Preliminary Landfill Screening Project</td> <td>Revision: A</td> </tr> <tr> <td></td> <td>Date: Oct 2009</td> </tr> <tr> <td>Service Sweep Locations</td> <td>Appendix B</td> </tr> <tr> <td>Clayton Landfills</td> <td></td> </tr> </table> <p>GHD GREENING THE PLANET</p> <p>EPA Environment Australia 6100 London St, Melbourne VIC 3000 T 61 3 9509 2000 F 61 3 9509 1111 www.ghd.com.au www.epa.gov.au</p>	EPA	Job Number: 01-25955	Preliminary Landfill Screening Project	Revision: A		Date: Oct 2009	Service Sweep Locations	Appendix B	Clayton Landfills	
★ AOME PI	Green line	Orange box	Red box	Blue box	Grey box																																																											
★ DFC PI	Red line	Blue box	Green box	Red box	Blue box																																																											
★ CDFI PI	Red line with dashes	Red box	Green box	Red box	Blue box																																																											
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★ DCDF PI	Red line with triangles	Red box	Green box	Red box	Blue box																																																											
★ DCDFI PI	Red line with diamonds	Red box	Green box	Red box	Blue box																																																											
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Service Sweep Locations	Appendix B																																																															
Clayton Landfills																																																																

Bore location plan: Clayton area map (Supplied GHD)



2.4 Landfill address: Springvalley Park, Clarke Road, Springvale South

Landfill licence: ES553

Licence holder: City of Greater Dandenong

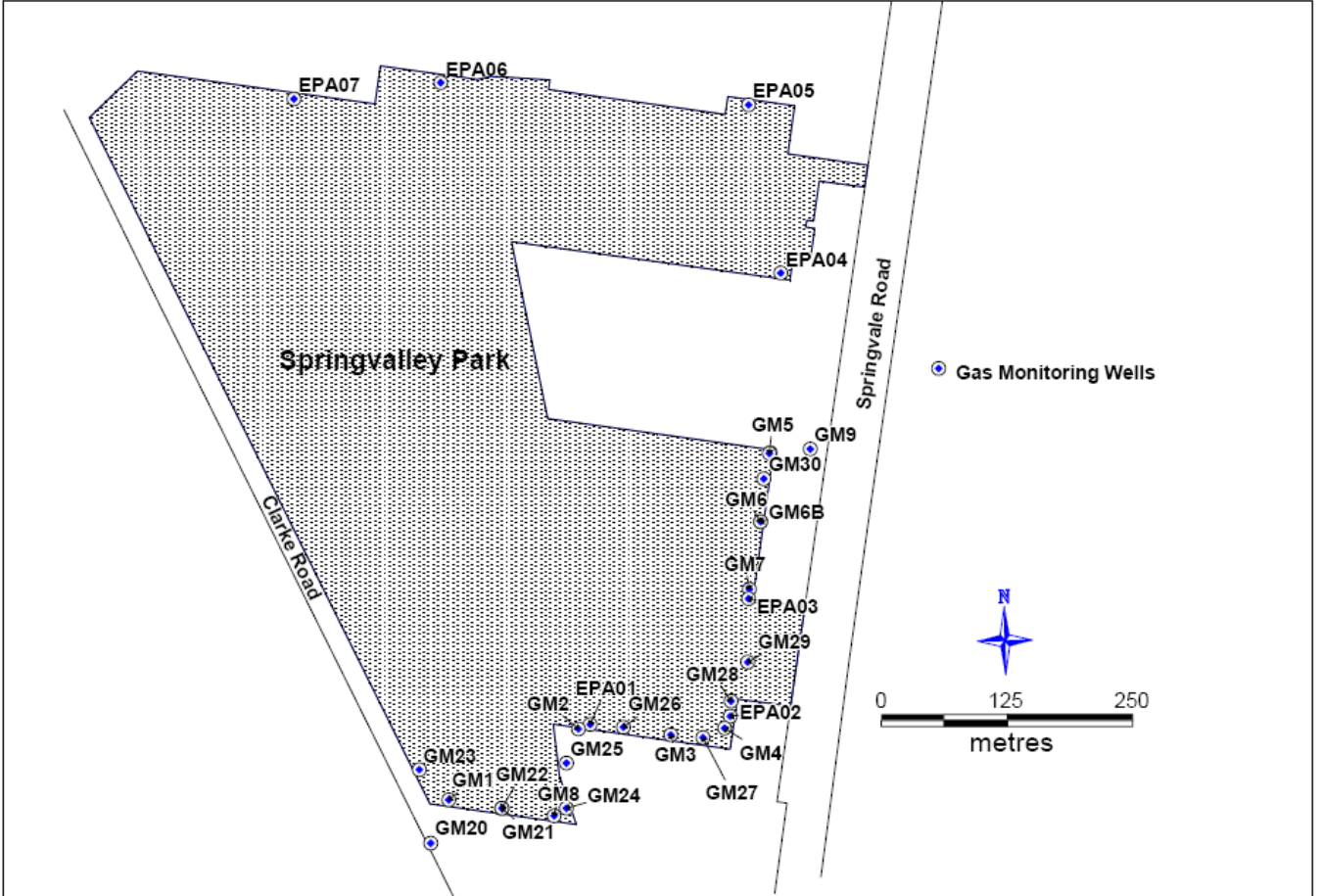


Figure: Springvale Park bore monitoring location plan (bores constructed by City of Greater Dandenong).

Table: Springvale Park methane monitoring data supplied by City of Greater Dandenong

Location	Date	Reading*	Methane (% V/V)	Methane LEL (%)	Oxygen (%V/V)	Carbon Dioxide (%V/V)
GM01	01-Oct-08	A	27.3	>100	12.2	19.9
GM01	01-Oct-08	B	0.6	10	19.7	0.3
GM08	01-Oct-08	A	0	0	15.7	11.6
GM08	01-Oct-08	B	0.1	2	19.7	0.3
GM21	01-Oct-08	A	0	0	16.7	5.9
GM21	01-Oct-08	B	0.1	2	19.8	0
GM22	01-Oct-08	A	6.3	>100	13.1	10.8
GM22	01-Oct-08	B	1.5	30	17.8	2.9
GM01	02-Oct-08	A	10.9	>100	13	8.9
GM01	02-Oct-08	B	0.2	3	19.5	0.1
GM02	02-Oct-08	A	0	0	19	2
GM02	02-Oct-08	B	0	0	20.7	0
GM03	02-Oct-08	A	0	0	19.2	0.7
GM03	02-Oct-08	B	0	0	20.3	0
GM04	02-Oct-08	A	0	0	19.6	0.2
GM04	02-Oct-08	B	0.1	0	20.5	0
GM05	02-Oct-08	B	0	0	19.9	0.2
GM06B	02-Oct-08	A	0	0	18.3	1.3
GM06B	02-Oct-08	B	0	0	18.8	0.9
GM07	02-Oct-08	A	0	0	20	0.1
GM07	02-Oct-08	B	0	0	19.6	0
GM08	02-Oct-08	A	0	0	17.9	4.6
GM08	02-Oct-08	B	0	0	20.9	0
GM09	02-Oct-08	A	0	0	11.4	8.3
GM09	02-Oct-08	B	0	0	17	2.3
GM20	02-Oct-08	A	0	0	18.6	1
GM20	02-Oct-08	B	0	0	19.5	0
GM21	02-Oct-08	A	0.5	10	17.6	3.3
GM21	02-Oct-08	B	0.2	4	20.7	0
GM22	02-Oct-08	A	5.6	>100	12.7	9.6
GM22	02-Oct-08	B	2.4	46	18.9	2.3

Location	Date	Reading*	Methane (% V/V)	Methane LEL (%)	Oxygen (%V/V)	Carbon Dioxide (%V/V)
GM01	30-Oct-08	A	12.6	>100	15.4	6.2
GM01	30-Oct-08	B	0	0	19.7	0
GM02	30-Oct-08	A	0	0	18.6	0.1
GM02	30-Oct-08	B	0	0	19.8	0
GM03	30-Oct-08	A	0	0	18.5	2.4
GM03	30-Oct-08	B	0	0	19.8	0
GM04	30-Oct-08	A	0	0	19.1	0.6
GM04	30-Oct-08	B	0	0	19.8	0
GM05	30-Oct-08	B	0	0	19.7	0
GM06B	30-Oct-08	A	0	0	18.6	1.6
GM06B	30-Oct-08	B	0	0	19.6	0.3
GM07	30-Oct-08	A	0	0	19.7	0.1
GM07	30-Oct-08	B	0	0	19.6	0.2
GM08	30-Oct-08	A	0	0	15.7	7.2
GM08	30-Oct-08	B	0	0	19.7	0.2
GM20	30-Oct-08	A	0	0	19	1
GM20	30-Oct-08	B	0	0	18.9	1
GM21	30-Oct-08	A	0	0	18.8	1.3
GM21	30-Oct-08	B	0	0	19.7	0
GM22	30-Oct-08	A	2.3	46	14.1	7.1
GM22	30-Oct-08	B	0	0	19.7	0
EPA1	12-Dec-08	A	0.1	2	20.3	0.6
EPA1	12-Dec-08	B	0.1	2	21	0
EPA2	12-Dec-08	A	0.2	4	20.4	0.6
EPA2	12-Dec-08	B	0.1	2	20.7	0.5
EPA3	12-Dec-08	A	0.2	4	20.6	0.3
EPA3	12-Dec-08	B	0.1	2	20.7	0.5
EPA4	12-Dec-08	A	0.1	1	18.2	2.4
EPA4	12-Dec-08	B	0.1	1	21	0
EPA5	12-Dec-08	A	0.1	1	19.8	4
EPA5	12-Dec-08	B	0.1	1	20.2	1.2
EPA6	12-Dec-08	A	0.1	2	20.1	0.9
EPA6	12-Dec-08	B	0.1	2	21	0
EPA7	12-Dec-08	A	0.1	2	20.5	0.3
EPA7	12-Dec-08	B	0.1	2	20.7	0.3

ASSESSMENT OF THE POTENTIAL FOR METHANE GAS MOVEMENT
FROM VICTORIAN LANDFILLS (APPENDIX 4)

Location	Date	Reading*	Methane (% V/V)	Methane LEL (%)	Oxygen (%V/V)	Carbon Dioxide (%V/V)
GM01	12-Dec-08	A	13.1	>100	17.4	4.8
GM01	12-Dec-08	B	0.2	3	20.9	0
GM02	12-Dec-08	A	0.1	2	20.6	0
GM02	12-Dec-08	B	0.1	2	21	0.1
GM03	12-Dec-08	A	0.1	2	20.5	0.2
GM03	12-Dec-08	B	0.1	2	21	0
GM04	12-Dec-08	A	0.2	4	20.2	0.1
GM04	12-Dec-08	B	0.1	2	21.1	0
GM06B	12-Dec-08	A	0.1	2	20.5	0.3
GM06B	12-Dec-08	B	0.1	2	21	0.1
GM07	12-Dec-08	A	0.1	1	20.6	0.4
GM07	12-Dec-08	B	0.1	1	20.2	1.6
GM08	12-Dec-08	A	0.1	2	6.3	29.2
GM08	12-Dec-08	B	0.1	2	20.1	1.4
GM09	12-Dec-08	A	0.2	1	21	0
GM09	12-Dec-08	B	0.1	1	21.1	1.4
GM20	12-Dec-08	A	0.1	2	19.5	1.3
GM20	12-Dec-08	B	0.1	1	20.1	1.2
GM21	12-Dec-08	A	0	0	18.5	2.9
GM21	12-Dec-08	B	0.1	1	21	0
GM22	12-Dec-08	A	2.4	45	14.3	7.8
GM22	12-Dec-08	B	0.1	2	21	0
GM23	12-Dec-08	A	0.1	2	19.4	1.5
GM23	12-Dec-08	B	0.1	2	20.9	0.1
GM24	12-Dec-08	A	0	0	19.4	1.7
GM24	12-Dec-08	B	0.1	2	20.8	0.5
GM25	12-Dec-08	A	0	0	20	0.7
GM25	12-Dec-08	B	0.1	2	20.9	0.1
GM26	12-Dec-08	A	0.1	1	20.5	0.2
GM26	12-Dec-08	B	0.1	2	21.1	0
GM27	12-Dec-08	A	0.2	2	20.2	0.7
GM27	12-Dec-08	B	0.1	2	21.1	0
GM28	12-Dec-08	A	0.1	2	20.2	0.9
GM28	12-Dec-08	B	0.1	2	21.1	0
GM29	12-Dec-08	A	0.2	2	20.6	0.4
GM29	12-Dec-08	B	0.1	2	20.6	0.9
GM30	12-Dec-08	A	0.1	2	19.7	1.7
GM30	12-Dec-08	B	0	0	19.4	3.4

Location	Date	Reading*	Methane (% V/V)	Methane LEL (%)	Oxygen (%V/V)	Carbon Dioxide (%V/V)
EPA1	19-Dec-08	A	0	0	20.5	1.5
EPA1	19-Dec-08	B	0	0	21.7	0
EPA2	19-Dec-08	A	0	0	20.8	1.1
EPA2	19-Dec-08	B	0	0	21.5	0.3
EPA3	19-Dec-08	A	0	0	21	0.8
EPA3	19-Dec-08	B	0	0	21.6	0.1
EPA4	19-Dec-08	A	0	0	18.4	3
EPA4	19-Dec-08	B	0	0	21.1	0.5
EPA5	19-Dec-08	A	0	0	20.3	1.8
EPA5	19-Dec-08	B	0	0	21.7	0
EPA6	19-Dec-08	A	0	0	19.6	2.4
EPA6	19-Dec-08	B	0	0	21.5	0.2
EPA7	19-Dec-08	A	0	0	20.4	0.6
EPA7	19-Dec-08	B	0	0	21.7	0.2
GM01	19-Dec-08	A	24.5	>100	12.8	17.1
GM01	19-Dec-08	B	0.2	4	21.9	0
GM02	19-Dec-08	A	0	0	21.2	0
GM02	19-Dec-08	B	0	0	21.7	0
GM03	19-Dec-08	A	0	0	20.6	0.4
GM03	19-Dec-08	B	0	0	21.3	0.1
GM04	19-Dec-08	A	0	0	16.4	9.9
GM04	19-Dec-08	B	0	0	21.7	0.1
GM06B	19-Dec-08	A	0	0	20.2	2.2
GM06B	19-Dec-08	B	0	0	21.5	0.3
GM07	19-Dec-08	A	0	0	20.7	1.3
GM07	19-Dec-08	B	0	0	21.3	0.4
GM08	19-Dec-08	A	0	0	11.6	23.3
GM08	19-Dec-08	B	0.1	2	20.8	0.3
GM09	19-Dec-08	A	0	0	20.7	17.3
GM09	19-Dec-08	B	0	0	20.6	0.5
GM20	19-Dec-08	A	0	0	19.5	2.3
GM20	19-Dec-08	B	0	0	18.7	3.4
GM21	19-Dec-08	A	0	0	20.4	1.8
GM21	19-Dec-08	B	0	0	21.6	0

Location	Date	Reading*	Methane (% V/V)	Methane LEL (%)	Oxygen (%V/V)	Carbon Dioxide (%V/V)
GM22	19-Dec-08	A	8.5	>100	9.7	16.3
GM22	19-Dec-08	B	0.5	12	20.8	1.2
GM23	19-Dec-08	A	0	0	19.2	2.5
GM23	19-Dec-08	B	0	0	21.7	0.1
GM24	19-Dec-08	A	0	0	16.9	4.6
GM24	19-Dec-08	B	0	0	21.5	0.2
GM25	19-Dec-08	A	0	0	17.9	4.4
GM25	19-Dec-08	B	0	0	21.6	0
GM26	19-Dec-08	A	0	0	20.2	1.3
GM26	19-Dec-08	B	0	0	21.7	0.1
GM27	19-Dec-08	A	0	0	20.2	1.8
GM27	19-Dec-08	B	0	0	21.7	0.2
GM28	19-Dec-08	A	0	0	19.3	2.8
GM28	19-Dec-08	B	0	0	20.8	0.8
GM29	19-Dec-08	A	0	0	20.6	1.4
GM29	19-Dec-08	B	0	0	20.5	1.4
GM30	19-Dec-08	A	0	0	19.4	3.3
GM30	19-Dec-08	B	0	0	21.7	0
A:						
B:						

* Reading **A** refers to the reading recorded when well cap removed

Reading **B** refers to maximum reading recorded at least 30 minutes following removal of well cap.