

APPENDIX I

PERMANENT GROUND GAS AND GROUNDWATER MONITORING RESULTS

Permanent Ground Gas Monitoring													
Borehole ID		BH01	BH02	BH03	BH04	BH05	WS01	WS02	WS03	WS04	WS05	WS06	WS07
Date		03/08/2016 & 05/08/2016											
Weather		Overcast											
Atmospheric Conditions (Steady/Rising/Falling)		Falling											
Atmospheric Pressure	(mb)	989	989	1006	989	1006	989	989	1006	989	989	1006	989
Peak (l/hr)		-10.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Gas Flow Rate		-6.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Peak (l/hr)		6.0	<0.1	0.2	1.1	0.1	0.2	<0.1	0.1	<0.1	<0.1	5.8	<0.1
Methane (CH ₄)		<0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	0.1	<0.1	<0.1	5.8	<0.1
Steady (% v/v)		0.4	8.5	0.1	4.1	4.2	2.2	2.2	0.4	5.9	3.5	19.0	2.8
Carbon Dioxide (CO ₂)		<0.1	6.4	<0.1	0.4	4.2	2.1	0.3	0.1	1.8	3.5	19.0	2.8
Steady (% v/v)		19.3	13.3	19.4	14.6	16.6	14.8	18.9	19.7	15.5	17.7	0.1	17.6
Oxygen		19.3	15.1	20.5	20.1	16.6	14.8	20.3	19.7	19.1	17.7	0.1	17.7
Hydrogen Sulphide		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Monoxide		1	1	1	10	8	3	3	1	<1	<1	<1	8
Q _{ig} CH ₄	(l/hr)	-0.6420	<0.0001	0.0002	0.0011	0.0001	-0.0014	<0.0001	<0.0001	0.0001	<0.0001	0.0058	<0.0001
Q _{ig} CO ₂	(l/hr)	-0.0428	0.0085	0.0001	0.0041	0.0042	-0.0154	0.0022	0.0004	0.0059	0.0035	0.0190	0.0028
Depth to Water	m bgl	1.47	3.71	2.79	2.30	3.94	0.25	1.37	0.26	3.43	2.14	0.12	0.00
Depth to Base of well	m bgl	10.02	9.16	10.18	10.80	9.94	1.42	3.59	4.34	4.77	2.70	2.66	4.50
Well Screening	m bgl	2.0-10.0	1.5-9.5	3.0-10.0	6.0-10.0	1.0-10.0	1.0-3.0	1.0-5.0	1.0-5.0	1.0-5.0	1.0-3.0	1.0-4.0	1.0-5.0
Geology / Geological Unit		Cohesive	Cohesive	Granular	Granular	Cohesive	Granular	Cohesive	Cohesive	Cohesive	Granular	Mixed	Cohesive
		Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial

Notes:

- Parameter not measured
- mb Millibar
- % v/v Percentage Volume by Volume
- l/hr Litres per hour
- ppm Parts Per Million
- Q_{ig} Hazardous gas flow rate
- m bgl Metres below ground level
- >>> Reading exceeds gas analyser maximum level
- Groundwater elevation above well screening interval
- Groundwater elevation above bung, unable to monitor

Permanent Ground Gas Monitoring																	
Borehole ID		BH01	BH02	BH03	BH04	BH05	WS01	WS02	WS03	WS04	WS05	WS06	WS07	WS08	WS09	WS10	WS11
Date		18 August 2016															
Weather		Sunny, breezy															
Atmospheric Conditions (Steady/Rising/Falling)		Falling															
Atmospheric Pressure		(mb)	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001
Gas Flow Rate		Peak (l/hr)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
		Steady (l/hr)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methane (CH ₄)		Peak (% v/v)	0.1	0.1	0.1	0.6	<0.1	<0.1	0.1	<0.1	0.1	<0.1	5.1	<0.1	0.1	<0.1	0.1
		Steady (% v/v)	0.1	0.1	<0.1	0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	3.9	<0.1	0.1	<0.1	<0.1
Carbon Dioxide (CO ₂)		Peak (% v/v)	6.4	0.7	0.9	4.3	0.1	4.1	0.2	3.2	2.5	<0.1	17.6	<0.1	1.9	0.7	3.7
		Steady (% v/v)	5.9	0.2	0.1	1.6	<0.1	2.0	0.1	1.5	2.2	<0.1	16.3	<0.1	1.7	0.2	3.2
Oxygen		Minimum (% v/v)	14.1	19.4	19.3	13.8	21.0	16.2	19.8	17.6	18.3	21.0	0.3	21.0	18.9	19.6	17.4
		Steady (% v/v)	14.5	20.6	19.9	18.9	21.1	18.9	20.5	19.3	18.9	21.0	0.9	21.2	19.2	19.9	17.7
Hydrogen Sulphide		ppm	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Monoxide		ppm	<1	<1	<1	6	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1
Q _{hg} CH ₄		(l/hr)	0.0001	0.0001	0.0001	0.0006	<0.0001	0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0051	<0.0001	0.0001	<0.0001	0.0001
Q _{hg} CO ₂		(l/hr)	0.0064	0.0007	0.0009	0.0043	0.0052	0.0041	0.0002	0.0032	0.0025	<0.0001	0.0176	<0.0001	0.0019	0.0007	0.0037
Depth to Water		m bgl	2.09	3.77	2.84	2.34	3.97	0.00	2.22	0.32	1.51	0.17	2.10	0.11	3.17	1.22	1.52
Depth to Base of well		m bgl	10.02	9.16	10.18	10.80	9.94	0.28	3.59	4.34	2.70	0.17	2.66	4.66	4.50	4.77	4.05
Well Screening		m bgl	2.0-10.0	1.5-9.5	3.0-10.0	6.0-10.0	1.0-10.0	1.0-3.0	1.0-5.0	1.0-5.0	1.0-3.0	1.0-5.0	1.0-3.0	1.0-4.0	1.0-5.0	1.0-5.0	1.0-5.0
Geology / Geological Unit			Cohesive	Cohesive	Granular	Granular	Cohesive	Granular	Cohesive	Cohesive	Granular	Cohesive	Mixed	Cohesive	Mixed	Cohesive	Mixed
			Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial

Notes:

- mb

Parameter not measured
- % v/v

Millibar
- l/hr

Percentage Volume by volume
- ppm

Litres per hour
- m bgl

Parts Per Million
- >>>

Hazardous gas flow rate
- Metres below ground level
- Reading exceeds gas analyser maximum level
- Groundwater elevation above well screening interval
- Groundwater elevation above bung, unable to monitor

Permanent Ground Gas Monitoring																	
Borehole ID		BH01	BH02	BH03	BH04	BH05	WS01	WS02	WS03	WS04	WS05	WS06	WS07	WS08	WS09	WS10	WS11
Date		25 August 2016															
Weather		Overcast, light rain															
Atmospheric Conditions (Steady/Rising/Falling)		Falling															
Atmospheric Pressure	(mb)	1007	1008	1007	1007	1007	1007	1007	1007	1007	1007	1007	1007	1007	1008	1007	1008
Gas Flow Rate	Peak (l/hr)	14.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methane (CH ₄)	Peak (l/hr)	9.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Peak (% v/v)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
Carbon Dioxide (CO ₂)	Steady (% v/v)	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5.0	<0.1	<0.1	<0.1	0.2
	Peak (% v/v)	7.3	8.9	0.4	4.0	7.8	5.3	5.3	5.5	2.6	18.0	18.0	18.0	1.8	1.8	1.6	3.8
Oxygen	Steady (% v/v)	7.3	7.0	0.4	0.8	7.8	0.4	0.4	1.8	2.6	18.0	18.0	18.0	1.8	1.8	1.6	3.8
	Minimum (% v/v)	13.6	12.8	19.9	14.1	11.4	17.6	17.6	15.1	19.2	1.0	1.0	1.0	19.2	19.2	19.8	18.0
Hydrogen Sulphide	Steady (% v/v)	13.6	15.0	20.1	19.6	11.4	20.6	20.6	18.4	19.2	1.0	1.0	1.0	19.2	19.2	19.8	18.0
Hydrogen Sulphide	ppm	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon Monoxide	ppm	<1	<1	<1	10	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	1
Q _{hg} CH ₄	(l/hr)	0.0141	<0.0001	<0.0001	0.0012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		0.0051	<0.0001	<0.0001	<0.0001	0.0002
Q _{hg} CO ₂	(l/hr)	1.0293	0.0089	0.0004	0.0040	0.0078	0.0053	0.0053	0.0055	0.0026	0.0026	0.0180	0.0180	0.0018	0.0016	0.0038	0.0038
Depth to Water	m bgl	1.95	3.50	2.84	2.15	3.99	0.25	0.25	0.20	4.36	4.77	3.15	2.66	4.66	2.86	4.10	1.22
Depth to Base of well	m bgl	10.02	9.18	10.18	10.80	9.94	1.43	3.59	4.36	4.77	2.70	3.15	2.66	4.50	4.77	4.10	1.22
Well Screening	m bgl	2.0-10.0	1.5-9.5	3.0-10.0	6.0-10.0	1.0-10.0	1.0-3.0	1.0-5.0	1.0-5.0	1.0-5.0	1.0-3.0	1.0-5.0	1.0-3.0	1.0-4.0	1.0-5.0	1.0-5.0	1.0-5.0
Geology / Geological Unit	Cohesive	Cohesive	Cohesive	Granular	Granular	Cohesive	Granular	Cohesive	Cohesive	Cohesive	Granular	Cohesive	Cohesive	Cohesive	Mixed	Cohesive	Mixed
	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial	Superficial

Notes:

- mb

Parameter not measured
- % v/v

Millibar
- l/hr

Percentage Volume by ^
- ppm

Litres per hour
- Q_{hg}

Parts Per Million
- m bgl

Hazardous gas flow rate
- >>>

Metres below ground level
- Reading exceeds gas analyser maximum level
- Groundwater elevation above well screening interval
- Groundwater elevation above bung, unable to monitor

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