



Bowral Waste Centre

EPL 13366

Landfill Gas Monitoring Report

July 2024



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Acknowledgement of Country

4Pillars acknowledges the Traditional Owners of the land on which this site is located, the people of the Gundungurra and Tharawal Nation. We acknowledge their continuing connection to land and sea Country, and we pay our respects to their Elders past, present and emerging.

1. Introduction and background

1.1 Objectives and scope of work

Bowral Landfill Pty Ltd engaged 4Pillars Environmental Consulting Pty Ltd (4Pillars) to conduct landfill gas monitoring for Bowral Waste Centre (8 Kiama Street, Bowral, NSW – the Site) in July 2024, to ensure compliance with Environment Protection Licence (EPL) 13366.

4Pillars' scope of work was as follows:

- measure landfill gas accumulation, in accordance with licence requirements;
- assess data against relevant licence limits (where they exist); and
- prepare the monitoring report.

1.2 Site details and monitoring requirements

The subject Site is 8 Kiama Street, Bowral, NSW, 2576 – part lots 13 and 14 DP1022146. The landfill site is located within the Wingecarribee Shire local government area (LGA) and falls within the E4 (General Industrial) development zone under the Wingecarribee Local Environmental Plan 2010. Surrounding land zoning includes E4 (General Industrial), SP2 (Rail Infrastructure), R3 and R2 (Medium and Low Density Residential), RU4 (primary production small lots) and RE1 (Public Recreation). The majority of the surrounding land uses are residential, agricultural or industrial (including horticulture, landscaping supply, self-contained storage, car repairs, etc.). The nearest residential area is medium density and occurs immediately to the east of the Site, along Railway Parade. Residential and business receivers are located to the east and west of the Site (refer Figure 1).

The landfill licence was transferred to Bowral Waste Centre Pty Ltd (the Licensee) in July 2019. The Site was not operational under the Licensee until November 2019. Since the commencement, the Site progressively reached full scale of operations in February 2020.

As noted above, the Site is subject to EPL 13366 (the EPL). Conditions P1.1 and M2.2 of the EPL require landfill gas (methane - CH₄) to be monitored every six months in two locations;

1. anywhere intermediate or final cover has been placed (EPL point 9); and
2. inside all buildings within 250 m of deposited waste (EPL point 10).

Conditions R2.3 and R2.4 of the EPL detail notification requirements if methane is detected above 500 ppm (v/v) (surface gas monitoring), or above 1% (v/v) (gas accumulation monitoring).

2. Monitoring methodology

Where relevant, the sampling and analysis program was undertaken in accordance with the NSW EPA *Environmental Guidelines: Solid Waste Landfills (2016)* and in accordance with the Site Landfill Environmental Management Plan (LEMP).

2.1 Monitoring

Neither intermediate nor final cover was placed in the landfill on the day of monitoring; therefore, landfill gas measurements were not taken on the active cell. As per the Site's EPL, the measurement of methane in buildings within 250 m of deposited waste (see Figure 1) was undertaken.

Attended landfill gas monitoring was carried out on 24 July 2024 by two competent and experienced personnel (Ms K Porter and Mr R McDonald) using a portable gas analyser (see details below). Accumulated landfill gas measurements were taken inside residences and businesses on Alcorn Street, Belmore Street, Carrington Street, Funston Street, Kiama Street, Loftus Street, Moss Vale Road, Oxley Hill Road, and Railway Parade. All buildings were approached, but not all were accessible on the day of sampling, either because the occupant did not allow access, or was not present. Where measurements were possible, they were taken within the first enclosed space encountered inside the door of the property (generally the living room or hallway). A total of 62 individual readings were obtained.

2.2 Description of Gas Analyser

A calibrated Geotech GA5000 portable landfill and contaminated land gas analyser was used for the monitoring. The GA5000 unit measures methane gas and has a range of 0%- 100% (v/v) with typical accuracy of ±0.5% (vol) at 0-70% methane and ±1.5% (vol) at 70-100% methane. The GA5000 unit is suitable for the monitoring requirements of the EPL.

3. Results and discussion

3.1 Landfill gas

Tabulated accumulated landfill gas measurements for each of the accessible residences are provided in Appendix 2. Measurements in all buildings returned a value of 0.0% v/v methane. Therefore, no methane accumulation was identified in any structures within 250 m of the landfill, indicating that the facility was below the threshold specified in Condition R2.3 and R2.4 of EPL 13366. As such, no notifications were required.

4. Conclusion

4.1 Compliance

The result of the attended landfill gas monitoring indicate that the Site is compliant with its legal obligations related to landfill gas management.

4.2 Limitations of this assessment

To the best of our knowledge and based on information provided to us by the client or their representatives, the information contained in this report is accurate at the date of issue. 4Pillars has used a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental sector in Australia. No other warranty, expressed or implied, is made or intended. The opinions and judgements expressed in this report should not be construed as legal opinions or advice. 4Pillars is also not responsible or liable for any third-Party use or reliance on this report.

5. List of appendices

Appendix 1. Figures.

Appendix 2. Gas Accumulation Monitoring.

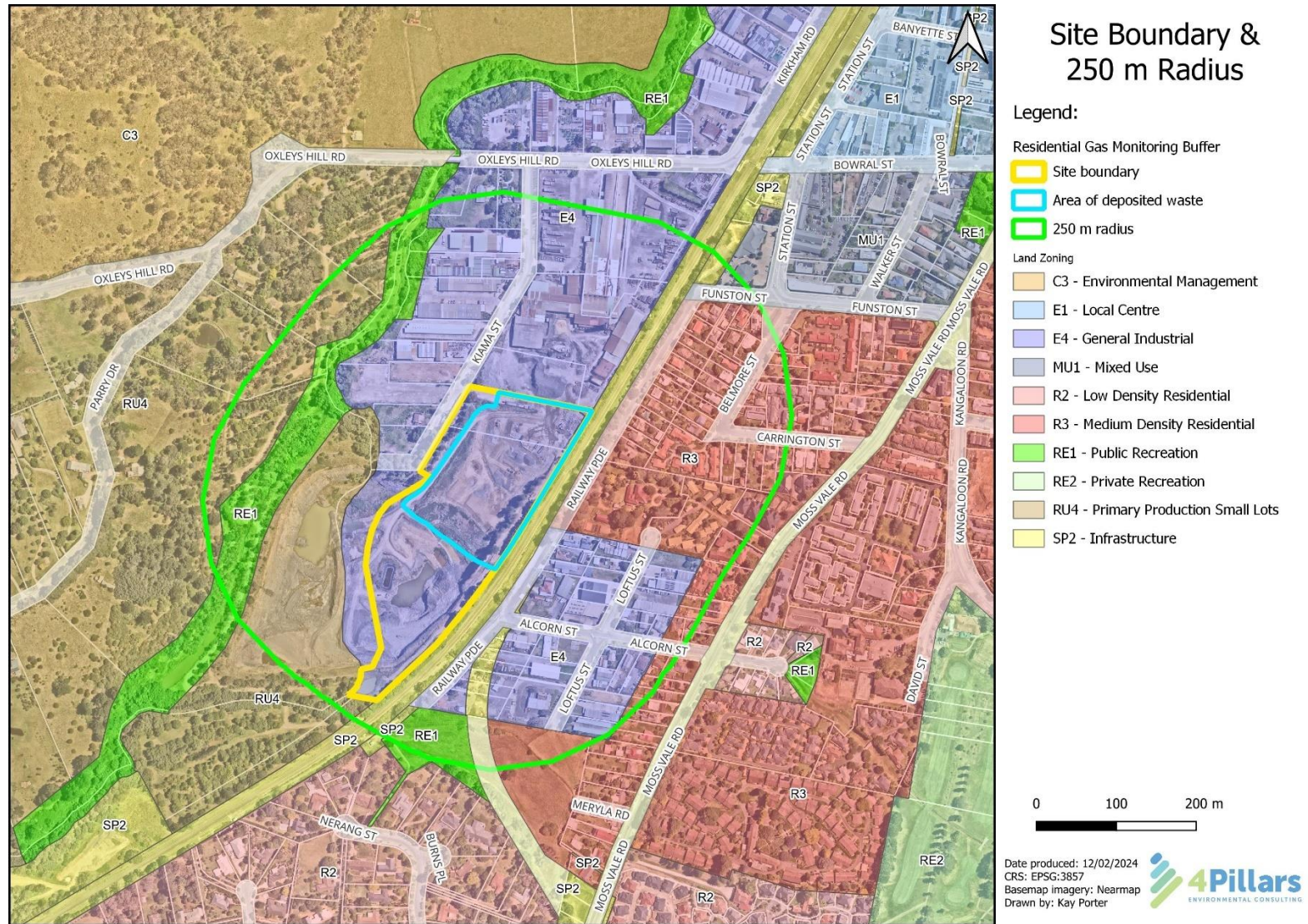


Figure 1: Site boundary, surrounding land zoning and 250 m radius from the approximate area of deposited waste.

Appendix 2 Gas Accumulation Monitoring.

Table 1: Accumulated gas monitoring results obtained from buildings within 250 m of the area of deposited waste.

Sample ID	Date sampled	Address	Access (Y/N)	Methane (CH ₄ % v/v)
1	24/07/2024	1-3 Alcorn Street Bowral NSW 2576	Y	0.0
2	24/07/2024	5 Alcorn Street Bowral NSW 2576	Y	0.0
3	24/07/2024	6A Alcorn Street Bowral NSW 2576	Y	0.0
4	24/07/2024	6A Alcorn Street Bowral NSW 2576	N	
5	24/07/2024	8 Alcorn Street Bowral NSW 2576	Y	0.0
6	24/07/2024	9 Alcorn Street Bowral NSW 2576	N	
7	24/07/2024	10 Alcorn Street Bowral NSW 2576	N	
8	24/07/2024	11 Alcorn Street Bowral NSW 2576	N	
9	24/07/2024	13 Alcorn Street Bowral NSW 2576	Y	0.0
10	24/07/2024	15 Alcorn Street Bowral NSW 2576	Y	0.0
11	24/07/2024	5 Belmore Street Bowral NSW 2576	Y	0.0
12	24/07/2024	6 Belmore Street Bowral NSW 2576	Y	0.0
13	24/07/2024	7 Belmore Street Bowral NSW 2576	Y	0.0
14	24/07/2024	8 Belmore Street Bowral NSW 2576	Y	0.0
15	24/07/2024	9 Belmore Street Bowral NSW 2576	N	
16	24/07/2024	11 Belmore Street Bowral NSW 2576	Y	0.0
17	24/07/2024	13 Belmore Street Bowral NSW 2576	Y	0.0
18	24/07/2024	15 Belmore Street Bowral NSW 2576	N	
19	24/07/2024	17 Belmore Street Bowral NSW 2576	N	
20	24/07/2024	19 Belmore Street Bowral NSW 2576	N	
21	24/07/2024	21 Belmore Street Bowral NSW 2576	N	
22	24/07/2024	1/2-4 Carrington Street Bowral NSW 2576	N	
23	24/07/2024	2/2-4 Carrington Street Bowral NSW 2576	N	
24	24/07/2024	3/2-4 Carrington Street Bowral NSW 2576	Y	0.0
25	24/07/2024	4/2-4 Carrington Street Bowral NSW 2576	N	

Sample ID	Date sampled	Address	Access (Y/N)	Methane (CH ₄ % v/v)
26	24/07/2024	5/2-4 Carrington Street Bowral NSW 2576	Y	0.0
27	24/07/2024	6/2-4 Carrington Street Bowral NSW 2576	Y	0.0
28	24/07/2024	7/2-4 Carrington Street Bowral NSW 2576	N	
29	24/07/2024	8/2-4 Carrington Street Bowral NSW 2576	Y	0.0
30	24/07/2024	9/2-4 Carrington Street Bowral NSW 2576	N	
31	24/07/2024	10/2-4 Carrington Street Bowral NSW 2576	N	
32	24/07/2024	11/2-4 Carrington Street Bowral NSW 2576	Y	0.0
33	24/07/2024	12/2-4 Carrington Street Bowral NSW 2576	N	
34	24/07/2024	1/3 Carrington Street Bowral NSW 2576	N	
35	24/07/2024	2/3 Carrington Street Bowral NSW 2576	N	
36	24/07/2024	3/3 Carrington Street Bowral NSW 2576	Y	0.0
37	24/07/2024	4/3 Carrington Street Bowral NSW 2576	N	
38	24/07/2024	5/3 Carrington Street Bowral NSW 2576	N	
39	24/07/2024	6/3 Carrington Street Bowral NSW 2576	Y	0.0
40	24/07/2024	7/3 Carrington Street Bowral NSW 2576	Y	0.0
41	24/07/2024	8/3 Carrington Street Bowral NSW 2576	N	
42	24/07/2024	9/3 Carrington Street Bowral NSW 2576	Y	0.0
43	24/07/2024	6 Carrington Street Bowral NSW 2576	N	
44	24/07/2024	8 Carrington Street Bowral NSW 2576	Y	0.0
45	24/07/2024	10 Carrington Street Bowral NSW 2576	N	
46	24/07/2024	12 Carrington Street Bowral NSW 2576	Y	0.0
47	24/07/2024	14 Carrington Street Bowral NSW 2576	N	
48	24/07/2024	1 Funston Street Bowral NSW 2576	N	
49	24/07/2024	3 Funston Street Bowral NSW 2576	N	
50	24/07/2024	3A Funston Street Bowral NSW 2576	N	
51	24/07/2024	4-10 Funston Street Bowral NSW 2576	Y	0.0
52	24/07/2024	5 Funston Street Bowral NSW 2576	Y	0.0
53	24/07/2024	7 Funston Street Bowral NSW 2576	Y	0.0

Sample ID	Date sampled	Address	Access (Y/N)	Methane (CH ₄ % v/v)
54	24/07/2024	7 Kiama Street Bowral NSW 2576	Y	0.0
55	24/07/2024	3 Kiama Street Bowral NSW 2576	Y	0.0
56	24/07/2024	5 Kiama Street Bowral NSW 2576	Y	0.0
57	24/07/2024	1/9-11 Kiama Street Bowral NSW 2576	N	
58	24/07/2024	2/9-11 Kiama Street Bowral NSW 2576	Y	0.0
59	24/07/2024	3/9-11 Kiama Street Bowral NSW 2576	N	
60	24/07/2024	4/9-11 Kiama Street Bowral NSW 2576	N	
61	24/07/2024	5/9-11 Kiama Street Bowral NSW 2576	Y	0.0
62	24/07/2024	6/9-11 Kiama Street Bowral NSW 2576	Y	0.0
63	24/07/2024	7/9-11 Kiama Street Bowral NSW 2576	N	
64	24/07/2024	8/9-11 Kiama Street Bowral NSW 2576	Y	0.0
65	24/07/2024	9/9-11 Kiama Street Bowral NSW 2576	Y	0.0
66	24/07/2024	10/9-11 Kiama Street Bowral NSW 2576	Y	0.0
67	24/07/2024	15 Kiama Street Bowral NSW 2576	N	
68	24/07/2024	21 Kiama Street Bowral NSW 2576	N	
69	24/07/2024	29 Kiama Street Bowral NSW 2576	N	
70	24/07/2024	4 Loftus Street Bowral NSW 2576	N	
71	24/07/2024	1/6 Loftus Street Bowral NSW 2576	N	
72	24/07/2024	2/6 Loftus Street Bowral NSW 2576	N	
73	24/07/2024	3/6 Loftus Street Bowral NSW 2576	N	
74	24/07/2024	4/6 Loftus Street Bowral NSW 2576	N	
75	24/07/2024	5/6 Loftus Street Bowral NSW 2576	N	
76	24/07/2024	10 Loftus Street Bowral NSW 2576	N	
77	24/07/2024	1/12 Loftus Street Bowral NSW 2576	N	
78	24/07/2024	2/12 Loftus Street Bowral NSW 2576	N	
79	24/07/2024	3/12 Loftus Street Bowral NSW 2576	N	
80	24/07/2024	4/12 Loftus Street Bowral NSW 2576	Y	0.0
81	24/07/2024	5/12 Loftus Street Bowral NSW 2576	N	

Sample ID	Date sampled	Address	Access (Y/N)	Methane (CH ₄ % v/v)
82	24/07/2024	6/12 Loftus Street Bowral NSW 2576	Y	0.0
83	24/07/2024	13 Loftus Street Bowral NSW 2576	Y	0.0
84	24/07/2024	14-16 Loftus Street Bowral NSW 2576	Y	0.0
85	24/07/2024	15 Loftus Street Bowral NSW 2576	N	
86	24/07/2024	18 Loftus Street Bowral NSW 2576	N	
87	24/07/2024	21 Loftus Street Bowral NSW 2576	Y	0.0
88	24/07/2024	23 Loftus Street Bowral NSW 2576	Y	0.0
89	24/07/2024	25 Loftus Street Bowral NSW 2576	N	
90	24/07/2024	1/26 Loftus Street Bowral NSW 2576	Y	0.0
91	24/07/2024	2/26 Loftus Street Bowral NSW 2576	N	
92	24/07/2024	3/26 Loftus Street Bowral NSW 2576	N	
93	24/07/2024	4/26 Loftus Street Bowral NSW 2576	N	
94	24/07/2024	5/26 Loftus Street Bowral NSW 2576	Y	0.0
95	24/07/2024	6/26 Loftus Street Bowral NSW 2576	N	
96	24/07/2024	7/26 Loftus Street Bowral NSW 2576	N	
97	24/07/2024	8/26 Loftus Street Bowral NSW 2576	Y	0.0
98	24/07/2024	9/26 Loftus Street Bowral NSW 2576	N	
99	24/07/2024	10/26 Loftus Street Bowral NSW 2576	N	
100	24/07/2024	11/26 Loftus Street Bowral NSW 2576	Y	0.0
101	24/07/2024	12/26 Loftus Street Bowral NSW 2576	N	
102	24/07/2024	13/26 Loftus Street Bowral NSW 2576	N	
103	24/07/2024	14/26 Loftus Street Bowral NSW 2576	Y	0.0
104	24/07/2024	15/26 Loftus Street Bowral NSW 2576	Y	0.0
105	24/07/2024	16/26 Loftus Street Bowral NSW 2576	N	
106	24/07/2024	17/26 Loftus Street Bowral NSW 2576	Y	0.0
107	24/07/2024	18/26 Loftus Street Bowral NSW 2576	N	
108	24/07/2024	19/26 Loftus Street Bowral NSW 2576	N	
109	24/07/2024	20/26 Loftus Street Bowral NSW 2576	N	

Sample ID	Date sampled	Address	Access (Y/N)	Methane (CH ₄ % v/v)
110	24/07/2024	27-29 Loftus Street Bowral NSW 2576	N	
111	24/07/2024	31 Loftus Street Bowral NSW 2576	N	
112	24/07/2024	33 Loftus Street Bowral NSW 2576	N	
113	24/07/2024	471 Moss Vale Road, Bowral NSW 2576	N	
114	24/07/2024	1/475 Moss Vale Road, Bowral NSW 2576	N	
115	24/07/2024	2/475 Moss Vale Road, Bowral NSW 2576	N	
116	24/07/2024	3/475 Moss Vale Road, Bowral NSW 2576	N	
117	24/07/2024	4/475 Moss Vale Road, Bowral NSW 2576	N	
118	24/07/2024	5/475 Moss Vale Road, Bowral NSW 2576	N	
119	24/07/2024	2/475 Moss Vale Road, Bowral NSW 2576	N	
120	24/07/2024	3/475 Moss Vale Road, Bowral NSW 2576	N	
121	24/07/2024	4/475 Moss Vale Road, Bowral NSW 2576	Y	0.0
122	24/07/2024	5/475 Moss Vale Road, Bowral NSW 2576	N	
123	24/07/2024	1/481 Moss Vale Road, Bowral NSW 2576	N	
124	24/07/2024	2/481 Moss Vale Road, Bowral NSW 2576	N	
125	24/07/2024	3/481 Moss Vale Road, Bowral NSW 2576	N	
126	24/07/2024	4/481 Moss Vale Road, Bowral NSW 2576	N	
127	24/07/2024	5/481 Moss Vale Road, Bowral NSW 2576	Y	0.0
128	24/07/2024	6/481 Moss Vale Road, Bowral NSW 2576	N	
129	24/07/2024	1/483 Moss Vale Road, Bowral NSW 2576	N	
130	24/07/2024	2/483 Moss Vale Road, Bowral NSW 2576	N	
131	24/07/2024	3/483 Moss Vale Road, Bowral NSW 2576	Y	0.0
132	24/07/2024	4/483 Moss Vale Road, Bowral NSW 2576	Y	0.0
133	24/07/2024	5/483 Moss Vale Road, Bowral NSW 2576	N	
134	24/07/2024	6/483 Moss Vale Road, Bowral NSW 2576	N	
135	24/07/2024	489 Moss Vale Road, Bowral NSW 2576	N	
136	24/07/2024	491 Moss Vale Road, Bowral NSW 2576	Y	0.0
137	24/07/2024	1 Oxleys Hill Road, Bowral NSW 2576	Y	0.0

Sample ID	Date sampled	Address	Access (Y/N)	Methane (CH ₄ % v/v)
138	24/07/2024	7 Oxleys Hill Road, Bowral NSW 2576	Y	0.0
139	24/07/2024	9 Oxleys Hill Road, Bowral NSW 2576	Y	0.0
140	24/07/2024	32 Oxleys Hill Road, Bowral NSW 2576	Y	0.0
141	24/07/2024	41 Oxleys Hill Road, Bowral NSW 2576	N	
142	24/07/2024	4 Railway Parade, Bowral NSW 2576	Y	0.0
143	24/07/2024	5-15 Railway Parade, Bowral NSW 2576	N	
144	24/07/2024	6 Railway Parade, Bowral NSW 2576	N	
145	24/07/2024	8 Railway Parade, Bowral NSW 2576	N	
146	24/07/2024	10 Railway Parade, Bowral NSW 2576	N	
147	24/07/2024	12 Railway Parade, Bowral NSW 2576	N	
148	24/07/2024	14 Railway Parade, Bowral NSW 2576	N	
149	24/07/2024	16 Railway Parade, Bowral NSW 2576	N	
150	24/07/2024	18 Railway Parade, Bowral NSW 2576	N	
151	24/07/2024	20 Railway Parade, Bowral NSW 2576	Y	0.0
152	24/07/2024	22 Railway Parade, Bowral NSW 2576	N	
153	24/07/2024	1/24 Railway Parade, Bowral NSW 2576	Y	0.0
154	24/07/2024	2/24 Railway Parade, Bowral NSW 2576	N	
155	24/07/2024	3/24 Railway Parade, Bowral NSW 2576	N	
156	24/07/2024	4/24 Railway Parade, Bowral NSW 2576	N	
157	24/07/2024	34 Railway Parade, Bowral NSW 2576	N	
158	24/07/2024	36 Railway Parade, Bowral NSW 2576	N	
159	24/07/2024	38 Railway Parade, Bowral NSW 2576	Y	0.0
160	24/07/2024	40 Railway Parade, Bowral NSW 2576	Y	0.0