

BEFORE THE INDEPENDENT COMMISSIONER

AT DUNEDIN

IN THE MATTER the Resource Management Act 1991 (“**RMA**”)

AND

IN THE MATTER of Application RM23.185 by Dunedin City Council
to undertake various activities for the purpose of
continued operation, closure, and aftercare of the
Green Island Landfill.

**STATEMENT OF EVIDENCE OF TRACY FREEMAN
ON BEHALF OF OTAGO REGIONAL COUNCIL**

**AIR QUALITY
14 FEBRUARY 2025**

BRIEF OF EVIDENCE OF TRACY FREEMAN

Introduction

1. My name is Tracy Joanne Freeman. I am employed as a Principal Air Quality Consultant at Jacobs Group (New Zealand) Ltd (Jacobs), currently based in Jacobs' Christchurch office.
2. I have been engaged by Otago Regional Council ("**ORC**") to provide technical review of the air quality assessment for the consent application by Dunedin City Council ("**DCC**") for continued operation, closure, and aftercare of the Green Island Landfill.
3. I have a Masters Degree in Chemical Engineering from the National University of Singapore, and a First Class Honours Bachelor Degree in Chemical and Process Engineering from the University of Canterbury, New Zealand.
4. I have over 32 years' experience in air quality consulting. The first 18 years of my experience were based in New Zealand, before moving to Australia in March 2011 and then returning to Christchurch in March 2022.
5. I am a financial member of the Clean Air Society of Australia and New Zealand ("**CASANZ**"), and a current member of the NZ Branch Committee.
6. I have assessed environmental effects from the discharge of contaminants to air on many occasions throughout my years of experience, including emissions from a wide range of industries.
7. I have provided expert evidence on odour issues for the Environment Court of New Zealand, the Victorian Civil and Administrative Tribunal ("**VCAT**"), Planning Panels Victoria, and resource consent hearings in New Zealand on many occasions. I have completed the Ministry for the Environment's "Making Good Decisions" course.

8. I was one of the two authors of the original technical report on odour assessment methods¹ where the concepts of chronic and acute odour effects first entered the New Zealand national guidance for odour assessment. This technical report later formed the basis for the development of the Ministry for the Environment's "Good Practice Guide for Assessing and Managing Odour in New Zealand" (first published in 2003), which I was also involved with.
9. I have been involved in many planning applications involving amenity conflicts between neighbouring incompatible land uses due to odour emissions from an activity causing, or having the potential to cause, nuisance for dwellings on neighbouring properties.
10. I have investigated and assessed odour issues for a wide range of activities including landfills, refuse transfer stations, recycling parks, composting plants, wastewater treatment plants, industrial waste treatment facilities, broiler farms, turkey farms, pig farms, rendering plants, abattoirs and fellmongeries. In these matters I have advised a range of stakeholders at various times, including applicants, local government, and environmental regulators.
11. Recent relevant project experiences include:
 - a) Southern Landfill. I was engaged by Greater Wellington Regional Council ("GWRC") to provide technical review of the air discharge consent application by Wellington City Council for extension of the Southern Landfill. Consents were granted for this landfill in early 2024 following a hearing in December 2023.
 - b) Spicer Landfill. I was engaged by GWRC to provide technical advice on odour matters related to odour emissions from the existing Spicer Landfill near Porirua and community odour monitoring.
 - c) Hampton Downs Landfill. I am currently engaged by Waikato Regional Council ("WRC") to provide technical review of the air

¹ Ministry for the Environment, Technical Report no. 24, Review of Odour Management in New Zealand, prepared by Tracy Freeman and Roger Cudmore, August 2002.

discharge consent application by EnviroNZ for replacement consents for the Hampton Downs Landfill.

- d) Bonny Glen Landfill. I was engaged by Horizons Regional Council over 2023-2024 to provide technical advice on odour matters related to problematic odours from the Bonny Glen Landfill near Marton.
- e) Tirohia Landfill. I was engaged by WRC to provide technical advice and expert witness evidence for the consent applications and appeals for extension of the Tirohia Landfill near Paeroa. The appeals for those applications were heard in front of the Environment Court in May 2023.
- f) Bald Hill Quarry Landfill (New South Wales). I was engaged by the New South Wales Environment Protection Authority (“**NSW EPA**”) in 2023 to provide an expert report relating to air discharges from the Bald Hill Quarry Landfill in regional NSW during a 2022 landfill fire, and in 2024 to participate in a sentencing hearing for prosecutions related to the same event.
- g) Veolia Woodlawn. I am currently engaged by New South Wales Department of Planning and Environment (“**NSW DPE**”) to provide a technical review of an application by Veolia to construct a waste to energy plant at the existing bioreactor (landfill) facility in Woodlawn, south of Sydney. My scope of work is to review the potential odour impacts of the application, including cumulative effects with existing odour emissions from the bioreactor facility.
- h) Wyndham Landfill Expansion VCAT Appeal, VIC, 2018. I was engaged by Environmental Justice Australia to represent a group of concerned neighbours of the Wests Road Refuse Disposal Facility in Melbourne (also known as the “Werribee Landfill”). The neighbours were concerned about potential odour impacts from the proposed extension of current landfill operations at the landfill.

12. In addition, over my career I have conducted odour assessments at various landfills in New Zealand and Australia, including Redvale (Auckland), Ravenhall (Victoria, Australia), Burwood (Christchurch), Kate Valley (Canterbury Regional Landfill), Horotiu (Waikato), Oamaranui (Hawke's Bay), Gisborne (both Regional Landfill and Paokahu Landfill), and the biosolids landfill at Puketutu Island (Auckland). My work on these landfills covered a variety of stakeholders and work scopes including regional councils, local government, neighbours, and the landfill developer/operator.
13. I visited the Green Island Landfill site in April 2023, and again on 4th February 2025.
14. I have also visited other landfills in New Zealand over the last two years, namely Tirohia, Southern, Spicer, Bonny Glenn, and Hampton Downs.
15. I was also engaged by ORC to provide technical review of the air discharge consent application by DCC to construct and operate the Green Island Resource Recovery Park Precinct ("**RRPP**"), for which consents were granted in late 2024 following a hearing.
16. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023 (the "**practice note**"). Although this is an ORC hearing, this evidence has been prepared in accordance with the practice note and I agree to comply with it. My qualifications as an expert are set out above, and I confirm that the issues addressed in this statement of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

Technical Report

17. I am the author of the letter by Jacobs entitled "RM23.185 – Dunedin City Council – Technical Audit Responses – October 2024 Update; Air Discharges" dated 30 October 2024 (the "**Technical Review Letter**"). This letter is attached as Annex A. I confirm that I am not aware of errors or omissions in that report, and I adopt that letter as my main evidence.

18. In preparing the Technical Review Letter, I relied on the air quality assessment provided in the report prepared by GHD Ltd (“**GHD**”) originally Revision 01 dated 13/3/2023, which was included in Appendix 07 of the Assessment of Environmental Effects (“**AEE**”) that supported the application, and two minor updates to that air quality assessment that were issued on 27 September 2023 and 4 October 2024. I will refer to the GHD report (October 2024 version) as “**the AQ Report**”.
19. I am not aware of any new information that changes the review and advice detailed in my Technical Review Letter. However, as the odour complaint information in the AQ Report only assesses complaints up to August 2022, I have obtained more recent odour complaint data from ORC and provide some additional assessment and comments in the next section.

Odour complaint information

20. The complaint dataset assessed in the AQ Report covers the period July 2017 to August 2022. As noted in my Technical Review Letter in Annex A, the two updates to the AQ Report in 2023 and 2024 presented an opportunity for the applicant to provide and analyse an additional two years of complaint data, however this was not incorporated. ORC has provided me with odour complaint data associated with odour emanating from Green Island Landfill dating from 1st March 2017 to 28th January 2025. I have attached this data as Annex B. I have summed the number of complaints each year, and compared these with the numbers provided in the AQ Report. The tallies are shown in Table 1. Odour complaints have continued to be registered in 2023 and 2024, although a lower number was received in 2024.
21. I do not have sufficient information to assess whether the reduction in complaints in 2024 was due to an actual reduction in odour emissions from the landfill, or some other factor such as prevailing winds or change in complaint behaviour by a prevalent complainant. I do consider that it is possible that fugitive odour emissions from the landfill have reduced due to the implementation of lime stabilization of

wastewater sludges, the progressive implementation of kerb-side food and organic waste collection in Dunedin, and the removal of composting operations from the landfill site. However, with five complaints received in the first 28 days of January 2025, and the description of odour impacts provided with some of the complaints as detailed in the last column of the table in Annex B, there are clearly still some odour issues experienced by local residents.

Table 1 – Odour complaint tallies

Year (Jan-Dec)	AQ Report		ORC spreadsheet	
	Number of complaints	Notes	Number of complaints	Notes
2017	2	from July	1	March 2017
2018	44		15	
2019	49		31	Including 10 complaints on 15-16 Feb
2020	6*		4	
2021	18*		14	
2022	26*	to August	18	17 to end of August
2023			24	
2024			8	
2025			5	to 28 January

* numbers inferred from graph in Figure 5.1 of the AQ Report

22. There are fewer complaints in the ORC database for 2017-2022 compared with those reported by GHD which suggests to me that ORC may not be aware of all the odour complaints being made. Condition 54 of the proposed General Conditions Relevant to All Consents (the “**General Conditions**”) requires DCC to make the complaints record available to ORC on request. I support this condition but consider that there needs to be a requirement that the details of all complaints and the outcomes of any investigations and outcomes should be provided to ORC as soon as reasonably possible so that the ORC can initiate their own investigations if needed.
23. In the new consents for the Southern Landfill in Wellington, the consent holder is required to notify Greater Wellington Regional Council of any

complaints received “as soon as practicable and within 1 working day of the complaint being received”, and the outcomes of any investigations, remedial actions or other steps taken to resolve the complaint are to be reported to the regional council within 10 working days of the complaint being received. I have proposed similar wording here.

Submissions

24. I understand that four submissions were received in response to the notification of the application. The submission by Te Rūnanga o Ōtakou does not specifically mention air quality impacts, nor does the Fish and Game submission except a comment in paragraph 12 about Fish and Game Officers mentioning “filthy odours” in Kaikorai Lagoon contributing to a spoiled recreational experience.
25. The submission by Mr Weatherall supports the application but notes possible concerns about odour, however these concerns are not elaborated.
26. The submission by the Venables describes existing and ongoing odour impacts from the landfill in their submission. From their stated address, I estimate that they are located about 870 m south of the landfill active face. They request that the applicant minimise odours at the landfill so that there are no odours beyond its boundaries.
27. The applicant has proposed a range of mitigation measures for odour. These are listed in Section 6.1.2 of the AQ Report. From my site visit on 4th February 2025, I understand that most of these mitigation measures are now implemented, including
 - Treating the majority of wastewater biosolids (stabilised with lime) prior to arriving at the site, so that they are now co-mingled with municipal refuse at the tip head rather than being deposited at the sludge pit.
 - Commissioning and operation of the organic receivals building and removal of the previous practice of composting green waste.
 - Replacing the existing candlestick flare with an enclosed flare.

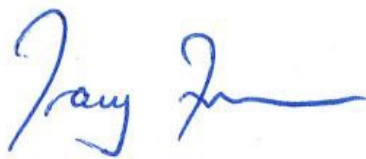
28. I am not aware of any other proposed mitigation measures that have not yet been introduced that would cause a further significant reduction in odour emissions, other than ongoing efforts to monitor for, and minimise fugitive LFG emissions.
29. In my Technical Review Letter, I stated and explained my opinion that the proposed odour mitigation measures listed in the AQ Report (and that I understand are now largely implemented) should result in a reduction in odour emissions from landfill operations. I did think after the second site visit that fugitive odour emissions around the landfill were less than I noticed during the first site visit two years ago. However, my observations on any particular day are influenced by operations occurring on the day and meteorological conditions, so the observations from my two site visits do not necessarily reflect the longer-term experience.
30. In my Technical Review Letter I also stated that I did not agree with conclusion in the AQ Report regarding the potential impacts of odour emissions, insofar as I did not agree that the impacts from odour emissions after the implementation of recommended mitigation measures are unlikely to cause more than a minor effect. Whilst it is possible that they might achieve this objective, it is also possible that odour emissions will continue to occur at some level that constitutes a more than minor effect, even if that degree of effect is less than has been experienced in previous years. I stated the opinion that the air quality assessment had not established that off-site odour impacts will reduce to the extent that there is no offensive or objectionable odour effect due to landfill activities. I still hold this opinion, and I consider that this opinion is supported by the ongoing receipt of odour complaints as well as the Venables' submission.

Conditions

31. I acknowledge that even with best practice management measures it is not possible to eliminate odours at any landfill. If consent is granted for this application, I have provided ORC with some recommended modifications and additions to the conditions proposed by the applicant to include the following:

- a) Field odour monitoring and adaptive management of on-site operations and mitigation measures in response to monitoring outcomes, using the same wording accepted by DCC for the RRPP consents.
 - b) Amendment of the landfill surface methane monitoring condition to clarify the anticipated methodology and increase the monitoring frequency until landfill closure, consistent with the wording in the consents for Southern Landfill.
 - c) Monitoring of biogas hydrogen sulphide composition and gas flow rates at the engine and flare, for reasons elaborated in Annex A.
 - d) Clauses added to the Annual Monitoring Report requirements to ensure that outcomes of (a) to (c) above are included in the report.
 - e) Annual independent review of odour management, monitoring and complaints to ensure that the landfill operates with as little emission of odour as possible.
32. My proposed condition amendments are attached in Annex C as tracked changes to the proposed conditions version provided by the applicant.

Date: 21 February 2025



Tracy Freeman

ANNEX A – TECHNICAL REVIEW LETTER AIR QUALITY

**ANNEX B – LIST OF ODOUR COMPLAINTS PROVIDED
BY ORC, MARCH 2017 – JANUARY 2025**

**ANNEX C – RECOMMENDED AMENDMENTS TO
APPLICANT’S PROPOSED CONSENT CONDITIONS**