

Dust Monitoring Test Report

To:	115 Richards Road, Dairy Flat
From:	Waste Management-Redvale
Date:	5 November 2025
Sampling Location:	Driveway fence at 115 Richards Rd and the southern boundary of Redvale Landfill
Sampling Source:	Airborne Dust
Analysis institution:	Capital Environmental Services

Background

Airborne dust levels were monitored at 115 Richards Road on 5 November 2025 from 10:00 am to 5:00 pm, coinciding with the operating hours of the nearby landfill. Inhalable and respirable dust monitoring was undertaken in response to concerns about potential respiratory exposure to airborne dust from the nearby landfill. The monitoring was intentionally conducted under high-risk conditions, characterized by dry and sunny weather, a north-easterly wind direction, and wind speeds of up to 3.4 m/s.

Two dust samples (one inhalable and one respirable) were placed on the driveway fence at 115 Richards Road, with the sampling heads oriented toward the nearby landfill (Figure 1). This location was selected because it is an open, unobstructed area that represents the point of highest dust exposure at the residence.

To characterize potential dust sources, an additional inhalable dust sample was collected at the southern boundary of the landfill (Figure 2), positioned in line with the direction from the landfill toward the residence. The straight-line distance between the monitoring location at 115 Richards Road and the landfill boundary sampling point is 377 m. The spatial relationship between all monitoring locations and the landfill is shown in Figure 3.



Figure 1. Dust monitoring at the driveway fence of 115 Richards Road



Figure 2. Dust monitoring at southern boundary of Redvale Landfill

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Figure 3. Spatial relationship between dust monitoring locations relative to the nearby landfill

Analysis of Results

New Zealand does not have a specific short-term inhalable or respirable dust standard for residential environments. However, the monitoring results can be compared against:

- International health-based ambient air guidelines (e.g., WHO)
- New Zealand's ambient air quality standards (NZ NES-AQ 2004)
- Occupational limits (WorkSafe NZ)
- Typical semi-rural background dust levels in New Zealand

Although the NES-AQ and WHO guidelines are based on PM₁₀ and PM_{2.5} rather than inhalable and respirable dust, these comparisons are conservative and health-protective because PM₁₀ is a subset of inhalable dust, and PM_{2.5} is a subset of respirable dust. Therefore, if inhalable dust is below PM₁₀ limits and respirable dust is below PM_{2.5} limits, this strongly indicates that overall dust levels are well within safe ranges.

As shown in Table 1, at 115 Richards Road, both inhalable (0.018 mg/m³) and respirable dust (0.008 mg/m³) were well below the equivalent PM₁₀ and PM_{2.5} health guidelines, confirming that dust levels at the residence do not pose a health concern.

The results were also compared with typical semi-rural background dust concentrations in New Zealand, which reflect areas with light traffic, occasional unsealed roads, agricultural activities, and limited residential heating, which conditions consistent with the surroundings of 115 Richards Road. As shown in Table 2, the monitored dust levels fall squarely within the normal semi-rural background range, indicating no unusual or elevated dust emissions at the residence.

At the landfill boundary (Table 1), the inhalable dust concentration (0.040 mg/m³) is higher than at the residential location, but it remains well within health-protective limits (0.050 mg/m³), consistent with dust levels typically expected in a working environment. Relative to the relevant WorkSafe NZ occupational standard, the monitored dust level is far below the 8-hour TWA limit of 10 mg/m³. This suggests that dust from landfill operations is not causing excessive airborne dust beyond the site boundary and poses no significant respiratory risk to workers or nearby residents.

Conclusion

Dust levels near the house are low and well below health-based limits. They fall within the typical semi-rural background range, with no indication of additional dust from the landfill or any other abnormal source. The landfill boundary measurement also complies with all relevant standards, indicating that dust from landfill operations is not migrating at levels that would pose a health or nuisance concern.

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Overall, there is no evidence of elevated dust emissions affecting residential property, even under dry, windy, and otherwise high-risk conditions.

Thanks,

Dr. Na Zhang (she/her)

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Table 1. Comparison of Tested Dust Concentrations with Relevant Standards and Guidelines

Locations	Dust Type	Test Results	NZ NES-AQ (2004) - Residential	WHO Guideline (2021)- Residential	WorkSafe NZ (2022) - Worker
115 Richard Rd- Driveway Fence	Inhalable dust	0.018 mg/m ³	0.05 mg/m ³ (PM ₁₀ NES standard)	0.045 mg/m ³ (PM10 guideline)	-
115 Richard Rd- Driveway Fence	Respirable dust	0.008 mg/m ³	-	0.015 mg/m ³ (PM _{2.5} guideline)	-
Landfill South Boundary	Inhalable dust	0.040 mg/m ³	0.05 mg/m ³ (PM ₁₀ NES standard)	-	10 mg/m ³ (8-hr TWA)

Table 2. Comparison of Tested Dust Concentrations with NZ Sem-Rural Background

Pollutant	Your Result	NZ Typical Semi-Rural Background	Interpretation
Inhalable (PM₁₀-equivalent)	0.018 mg/m ³	0.012–0.02 mg/m ³	Within normal semi-rural levels
Respirable (PM_{2.5}-equivalent)	0.008 mg/m ³	0.004–0.001 mg/m ³	Within normal semi-rural levels