

Air Quality Annual Monitoring Report 2024

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Approvals

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Executive Summary

This report provides a review of the air quality monitoring programme carried out by OceanaGold New Zealand Limited (OGNZL) in and around Waihi, and related matters. The report is produced annually to provide a continuing record of the air quality performance of OGNZL. This report covers the 2024 calendar year and is produced in accordance with the Favona, Trio, Correnso & Martha Mines Air Quality Management Plan, 2023.

The information presented mainly relates to OGNZL's routine ambient air monitoring programme, which has been underway since 1982. The 2024 routine monitoring included measurements of total suspended particulate (TSP) and deposited particulate (DP) at 13 sites. There are 6 monitors for TSP and 9 monitors for DP.

Also included in this report are quality assurance measures, the results of any additional air quality monitoring and complaints received, as required by the consent conditions.

The conclusions of the 2024 review are:

- No exceedances of the threshold limits or breaches of the trigger levels occurred for the routine TSP and DP monitoring programme.
- OGNZL received one air quality complaint during 2024 (cf. one in 2023), this was regarding nuisance dust from the TSF1A crest raise.



1 Introduction

Surface and underground mining operations can generate dust from drilling, blasting, ripping, grading, loading, haulage, tipping, crushing, conveying, and general vehicle movements. Dust can also be generated from exposed areas and stockpiles. Other mining air emissions include combustion gases (carbon monoxide and dioxide, nitrogen oxides and sulphur dioxide), directly from blasting and via exhaust emissions from machinery.

Several Discharge to Air consents (Consent 109741 for the Favona Mine, Consent 121697 for the Trio Mine, and Consent 124859 for the Golden Link Project Area) regulate the site air emissions. The requirement to provide an annual written report is a condition in each of the consents and the condition states:

The consent holder shall provide to the Waikato Regional Council a written annual report each year that addresses at least the following:

- (a) A summary of the results of the monitoring required by this consent.
- (b) Any environmentally important trends arising from the monitoring programme.
- (c) Comments on compliance with all conditions.
- (d) Any reasons for non-compliance or difficulties in achieving compliance with the conditions of this resource consent.
- (e) Any works that have been undertaken to improve environmental performance or that are proposed to be undertaken in the up-coming year to improve environmental performance in relation to the activities included in this consent.

This report is prepared to satisfy that requirement. In particular, it gives a review of the air quality monitoring programme carried out by OGNZL at Waihi. The review covers the 2024 calendar year with reference to earlier years as appropriate.

This report also covers other air quality activities including other (non-routine) air quality monitoring, quality assurance measures and any complaints received.

2 Air Resource Consents & Air Quality Management Plan

The site's Discharge to Air resource consents authorise OGNZL to discharge contaminants to the air from the surface project area, mine portal, and vent shafts. The consents require OGNZL to develop an Air Quality Management Plan (discussed below) to address air quality objectives, management, and monitoring. It is to be reviewed and updated at least once every two years. This report is in accordance with the 2023 Air Quality Management Plan which was approved by Waikato Regional Council (WRC) in January 2023; the 2023 Plan is the latest approved version.

The Air Quality Management Plan is the guiding document for air quality management at OGNZL, the contents of which are defined in the consents. If there is a conflict or inconsistency



between the conditions of the consents and the provisions of the Air Quality Management Plan, the Discharge to Air resource consents shall prevail.

The Discharge to Air resource consents prescribe various process-type measures to reduce atmospheric emissions and assessments of environmental impacts. The resource consents also set down the required content of this report.

A requirement of the Air Quality Management Plan is to specify air quality control measures. To meet this requirement OGNZL have adopted the concept of "trigger levels" as being ambient concentrations of air pollutants of concern, rather than ambient air quality guidelines that were more commonly used previously in air quality management. The trigger levels are set at about two-thirds the level of previous limits, and they are recorded in the Air Quality Management Plan.

When the trigger levels are exceeded, OGNZL is required to investigate and report on the reason for the elevated result and identify corrective action(s) to prevent a repeat occurrence where possible. The ambient air "trigger levels" specified in the Air Quality Management Plan are displayed in Table 1.

 Total suspended particulate
 Deposited particulate

 Sample period
 7-day average
 30-day average

 Unit of measure
 μg/m³
 g/m²/month

 OGNZL trigger level
 45
 4

Table 1. Air Quality Parameters and Trigger Levels

3 Routine Monitoring Programme

There are two types of dust measurement included in the routine ambient air monitoring programme: total suspended particulate (TSP) and deposited particulate (DP).

Although not part of the routine weekly/monthly monitoring programme, PM_{10} and silica monitoring has in the past been done biennially. After years of data collection by both OGNZL and WRC (with results within accepted limits), monitoring for PM_{10} and silica has been suspended, with a provision to reinstate a programme if/when considered necessary.

3.1 Monitoring Sites

Details of all 2024 dust monitoring sites are given in Table 2. During the calendar year, there have been a total of 13 sites in use for the routine monitoring programme (Figure 1).



Table 2. Description of 2024 Permanent Monitoring Sites

Site No	Description	Location	Air Monitor Type(s)
6.59	Alexander's, Golden Valley	N of Devt Site	DP
6.60	Torrens, Golden Valley	N of Mill	DP
6.61	Leaches	NE of Pit	DP
6.61	Grey St	NE of Pit	TSP (and Real-time TSP)
6.63	Met Station, Barry Rd	SE of Pit	TSP, DP (and Real-time TSP)
6.64	Courthouse, Haszard Street	S of Pit	TSP
6.65	Moresby Avenue	SW of Pit	TSP
6.66	Waihi College, Rata Street	W of Pit	TSP and DP
6.71	Morrison's Farm, Trig Road	SE of Devt Site	DP
6.72	Ruddock's Farm, Baxter Road	W of Devt Site	DP
6.73	TSF East	E of Devt Site	DP
6.74	Bulltown Road	N of Pit	DP (and Real-time TSP)
6.78	Cnr Grey & Slevin Streets	E of Pit	TSP

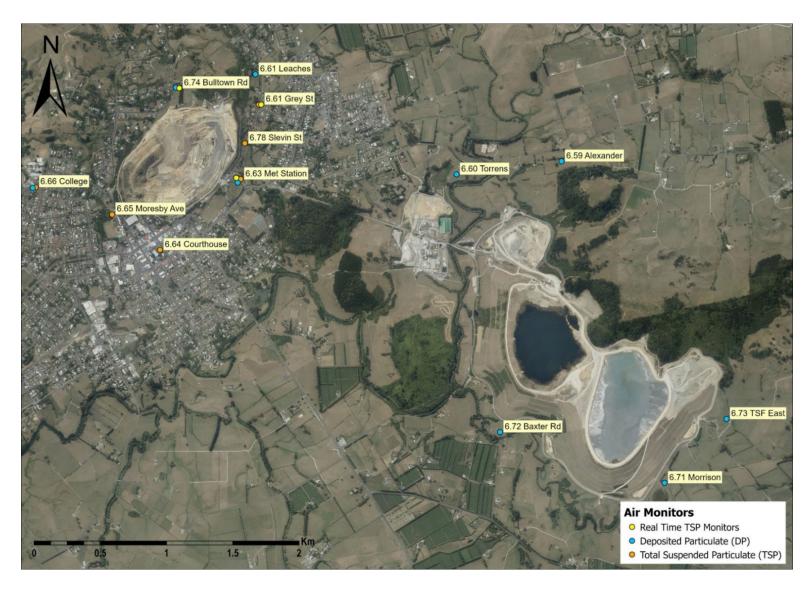


Figure 1. Waihi Dust Monitoring Sites



3.2 Quality Assurance

There are two key aspects of the quality assurance programme – annual gas meter calibrations and balance calibrations.

- The TSP gas meters at the suspended particulate monitoring sites were replaced with new calibrated units in June 2024.
- OGNZL's Precisa XT220A balance was calibrated on 7 June 2024. The "best accuracy" level was determined for the balance of up to 0.0007g in the 0-40g calibration range. This is considered satisfactory.

The Real-time TSP monitors are flow calibrated quarterly.

3.3 Quality Control

No TSP samples were affected during 2024.

One DP sample was contaminated during 2024. The sample was from 6.71 Morrison for the March monitoring period and was unable to be filtered due to contamination of the sample with fertiliser pellets.

4 Summary of Results

4.1 Total Suspended Particulate

The results of the weekly TSP monitoring for 2024 are given in Figure 2 and Appendix A. Total Suspended Particulate Monitoring Results 2024 (µg/m³)

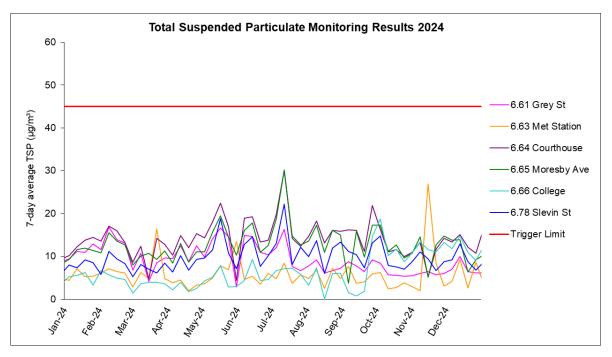


Figure 2. Total Suspended Particulate Results for 2024 (µg/m³).



No results exceeded the OGNZL TSP trigger limit of 45 μ g/m³, seven-day average during 2024. The highest recording during the year was 30.2 μ g/m³ at the 6.65 Moresby Ave monitor for the week ending 12 July (no other monitor exceeded 30 μ g/m³ during the week concerned). This result may be related to a decrease in temperature compared to the previous month (mean monthly temperature was 11.6°C in June and 9.96°C in July), which could have led to an increase in household heating and therefore higher TSP results. Previous year's results show a general trend of higher TSP concentrations during autumn and winter months. There was also a spike of 26.9 μ g/m³ at the 6.63 Met Station monitor for the week ending 15 November. However, no dust generating activities from this area of the mine site occurred during this time. The average weekly result across all sites was 9.7 μ g/m³ (*c.f.* 11.4 μ g/m³ in 2023).

4.2 Deposited Particulate

The results of the monthly DP monitoring for 2024 are given in Figure 3 and Appendix B. Deposited Particulate Monitoring Results 2024 (g/m²/month)

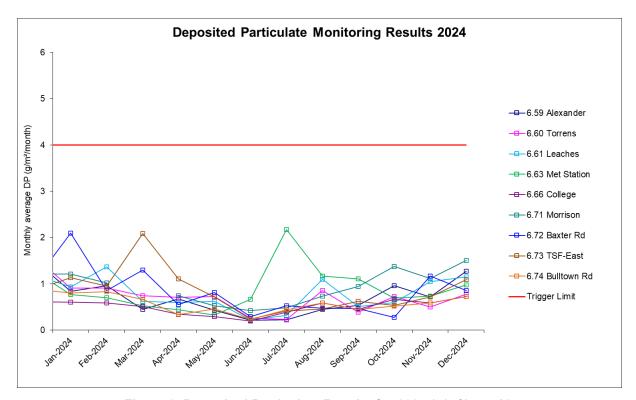


Figure 3. Deposited Particulate Results for 2024 (g/m²/month)

No results exceeded the OGNZL DP trigger limit of 4.0 g/m²/month during 2024. The highest recording during the year was 2.2 g/m²/month at the 6.63 Met Station monitor for the month of July, however no dust generating activities from this area of the mine site occurred during this time. No other site exceeded 2.2 g/m²/month for the reporting period. The average monthly reading across all sites was 0.7 g/m²/month (c.f. 0.7 g/m²/month in 2023).



4.3 Trends

The criteria of air quality trigger levels have applied for 25 years, and the dust concentrations are below those trigger levels most of the time. It can be concluded that the air quality in and around Waihi is not deteriorating.

Figure 4 shows the long-term results of the TSP monitoring. The phases of active mining activities do not seem to have been reflected in corresponding changes in TSP levels, indicating that control measures during mining have been effective.

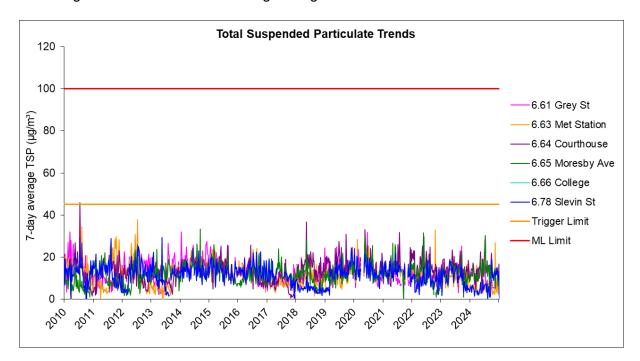


Figure 4. Total Suspended Particulate Trends from 2010 to 2024

Figure 5 shows the long-term DP results from the Waihi monitors. The 2024 results show a stable trend and compare well with results from the previous years.



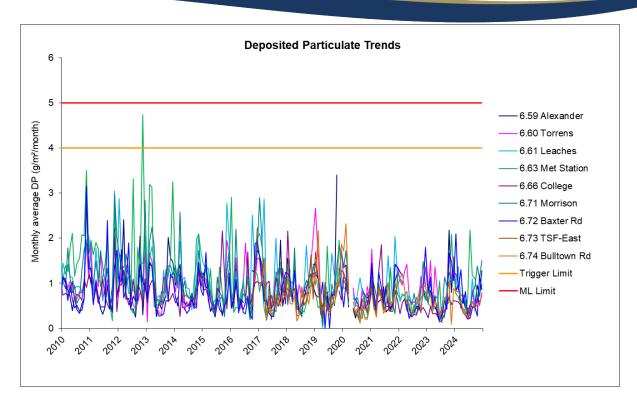


Figure 5. Deposited Particulate Trends from 2010 to 2024

4.4 Discretionary Monitoring

Emission testing of the Martha Pit ventilation discharge was undertaken in March 2024 by Air Matters Ltd. The testing period captured three blast events and measured particulate matter, carbon monoxide, oxides of nitrogen and silica. The results found that CO was elevated over blast events, while PM, NO & NO₂ were low and in line with the previous 2007 ventilation testing. Silica concentrations were also low. Dispersion modelling was carried out to estimate the off-site effects of the ventilation's discharge following the completion of the testing. The discharges contribution to off-site concentrations for the assessed contaminants were low when compared to the relevant criteria.

The report on this monitoring was submitted to WRC on 18 July 2024.

No other discretionary monitoring was undertaken in 2024.



5 Compliance with Consent Conditions

5.1 General Operations 2024

Mining activities in 2024 remained as normal for most of the site's operations. Ore stockpiling continued as normal, with more ore processed in 2024 compared to 2023. Overall, the site's operations experienced regular levels of activity compared with previous years. The Favona waste stockpile was used to store waste rock from the Martha Underground and is now at capacity. At the Development Site, earthworks were commenced for the TSF1A crest raise. Mining in the Martha Pit remains in abeyance, however in-pit waste dumping from the Martha Underground commenced in August 2023 and continues to do so.

5.2 Complaints

Complaints about dust, smoke and blasting odour coming from the site's operations are matters of concern to OGNZL. One complaint was received in relation to the above issues in 2024.

The complaint received on 12 November, was related to nuisance dust from the TSF1A crest raise. There are two deposited particulate monitoring sites between TSF1A and the complainant. The results for Oct and Nov were well below the trigger limit of 4 g/m2/month. Refer to Appendix B. Deposited Particulate Monitoring Results 2024 (g/m²/month).

Environmental staff notified the TSF1A crest raise supervisor who advised that two watercarts were running on the haul roads with a smaller cart operating in the active work area. The complainant was relayed the relevant information and was told to let OGNZL know if further issues continued. No other follow-up was needed.

Details of any complaints or concerns received by OGNZL are recorded in a complaints/concerns register, along with information about any follow-up action. The register covers complaints on all operational matters, not just air quality, and has been in use since 1987. The number of complaints received about air quality each year are recorded in the register and listed in Table 3.



Table 3. Air Quality Complaints Recorded in the Company's Register

Year	Number	Year	Number
1987	15	2006	3
1988	6	2007	8
1989	0	2008	7
1990	0	2009	5
1991	2	2010	6
1992	4	2011	26
1993	5	2012	11
1994	6	2013	10
1995	1	2014	5
1996	0	2015	7
1997	0	2016	4
1998	1	2017	5
1999	5	2018	2
2000	10	2019	0
2001	2	2020	1
2002	10	2021	3
2003	5	2022	2
2004	18	2023	1
2005	2	2024	1

5.3 Mitigation

Dry periods require OGNZL to be proactive with mitigating any dust emissions occurring from operating areas. Actions taken to mitigate dust emissions, particularly during drier periods, include the use of the sprinklers and watering roads in high activity areas. Speed restrictions on unsealed roads also reduce dust generation. Other mitigation methods are listed in the Air Quality Management Plan.

The average monthly rainfalls can be seen in Figure 6. The resultant 2024 annual rainfall (1279 mm) was less than the previous year (2898 mm in 2023) and less than the historical average of 2106 mm. Actions to mitigate dust emissions throughout the year were implemented as required.



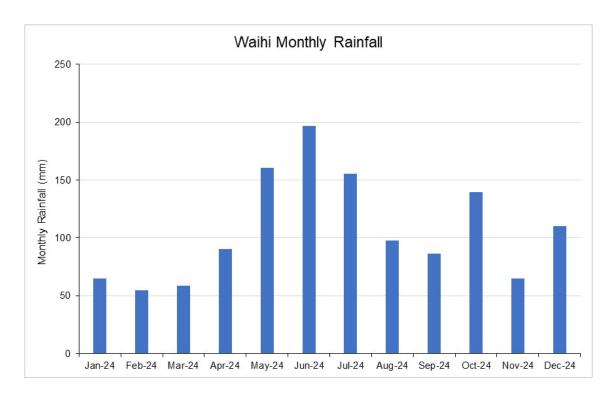


Figure 6. Waihi Monthly Rainfall 2024

Wind speed and direction followed typical seasonal patterns in 2024, with predominantly northeast and southwest winds. There were mostly light winds in late summer and again in late autumn to early winter, while the strongest winds occurred in September (west-southwesterlies). The 2024 monthly wind roses for Waihi are displayed in Appendix C. 2024 Monthly Wind Roses, Waihi and compare well with data from the previous year.

5.4 Hydro-seeding, Tarsealing and Rehabilitation

Hydro-seeding and pasture establishment is normally carried out in response to new earthworks (e.g. pit cutbacks, TSF crest raising). No new hydro-seeding or pasture planting was undertaken during the year.

In 2024, the Development Site Perimeter Road was partially re-sheeted, and minor repairs to roads were completed; no significant new areas were sealed.



6 Other Monitoring

6.1 PM₁₀ and Silica Monitoring

 PM_{10} and silica community monitoring was not conducted in 2024. Along with the suspension of production mining in the open pit, data has indicated that the mine is complying with standards and that Waihi is regarded as a 'complying airshed.' In consultation with WRC, it was agreed that PM_{10} and silica monitoring can be suspended until such time that it is considered necessary.

6.2 Real-time TSP Monitoring

Three 'real-time' TSP monitors around the open pit were installed in 2021 to provide prompt feedback on TSP levels, ensuring that future earthworks in the open pit will have an established real-time system ready in advance. The monitors are located at 6.61 Grey St, 6.63 Met Station, and 6.74 Bulltown Rd (Figure 1) and can also be adapted to analyse for specific dust fractions (PM_{10} , $PM_{2.5}$, using special cyclones), should the need arise in the future.

The real-time TSP monitoring results for 2024 are given in Figure 7; currently there are no set trigger limits. The peaks identified in the results are not considered mine-related and are more likely a function of atmospheric conditions (e.g. fog) or localised activities (domestic fires etc.). The highest peak for Grey St in week ending 14 Jul was due to a high daily result that is considered to be anomalous.

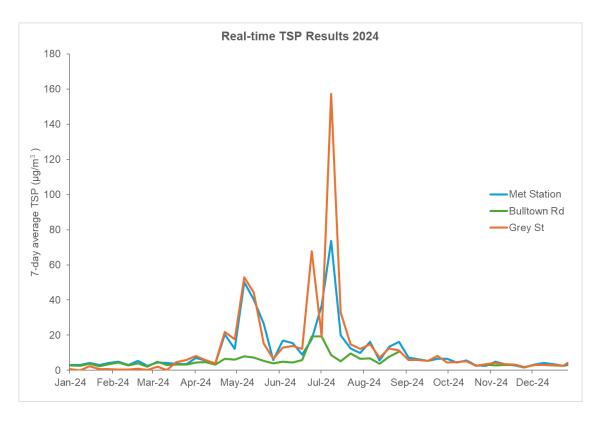


Figure 7. Real-time TSP Results for 2024



7 Future Monitoring

7.1 Deposited and Total Suspended Particulates

Ongoing operational activities followed by rehabilitation activities at Waihi will require dust control activities to be maintained and monitored for some time. At present, there is no consideration for fundamentally altering the current DP and TSP programmes.

7.2 PM₁₀ and Silica

Future decisions to reinstate PM₁₀ and silica monitoring will be based on any trends from the ongoing air quality monitoring programmes, as well as the implications of future mining activity.

8 CONCLUSION

Monitoring of the air quality in and around Waihi was undertaken by OGNZL during 2024 in accordance with the consent conditions and the approved monitoring plan.

The 2024 routine monitoring included measurements of total suspended particulate (TSP) and deposited particulate (DP) at 13 sites. No exceedances of the threshold limits or breaches of the trigger levels occurred for the routine TSP and DP monitoring programme.

Also included in this report are complaints received, as required by the consent conditions. OGNZL received one air quality complaint during 2024 (*cf.* one in 2023), this was regarding nuisance dust from the TSF1A crest raise.



Appendix A. Total Suspended Particulate Monitoring Results 2024 (µg/m³)

AIR QUALITY TOTAL SUSPENDED PARTICULATE (TSP) RESULTS

Co-ordinates refer to NZMS 260 T13 Paeroa All Measurements in $\mu g/m^3$

Above trigger limit (45)
Near trigger limit (40-45)

Period		6.61	6.63	6.64	6.65	6.66	6.78
Ending	Year						
Date		Grey St	Met Station	Courthouse	Moresby Ave	College	Slevin St
5-Jan-24		9.4	4.4	10.2	9.3	5.2	8.0
12-Jan-24		11.2	7.1	12.3	11.6	5.5	7.4
19-Jan-24		11.0	5.3	13.8	12.0	6.3	9.2
26-Jan-24		13.0	5.3	14.5	11.3	3.3	8.6
2-Feb-24		11.5	6.1	13.6	10.8	6.6	5.8
9-Feb-24		16.8	7.1	17.1	15.6	5.7	11.1
16-Feb-24		13.8	6.5	16.0	13.6	5.0	9.4
23-Feb-24		13.1	6.2	13.3	12.7	4.6	8.3
1-Mar-24		6.8	2.8	8.6	8.0	1.4	5.3
8-Mar-24		10.8	6.2	12.3	10.1	3.6	8.1
15-Mar-24		4.2	4.8	4.7	10.8	4.0	7.0
22-Mar-24		8.5	16.4	14.2	9.3	3.9	6.1
29-Mar-24		9.6	4.8	12.8	11.3	3.6	8.4
5-Apr-24		9.6	3.8	10.3	8.4	2.2	6.3
12-Apr-24		12.5	4.5	14.9	13.0	4.0	10.2
19-Apr-24		8.7	2.0	12.0	8.6	1.8	6.7
26-Apr-24		12.5	3.2	15.3	11.1	2.5	9.3
3-May-24		9.9	3.6	14.4	11.0	4.2	9.7
10-May-24		14.1	4.9	18.1	15.7	5.2	11.5
17-May-24		16.6	7.7	22.4	19.5	7.9	18.9
24-May-24		14.5	6.9	16.9	14.6	2.9	10.9
31-May-24		2.8	13.5	4.4	10.3	2.9	7.1
7-Jun-24		14.9	4.6	18.9	16.1	4.4	12.8
14-Jun-24		14.7	5.3	19.2	17.8	9.3	14.5
21-Jun-24		10.9	3.5	13.3	11.0	4.4	7.7
28-Jun-24		10.4	6.1	13.8	12.6	4.6	10.1
5-Jul-24		12.0	4.8	19.8	18.7	6.6	13.1
12-Jul-24		16.3	8.4	30.1	30.2	7.1	22.2
19-Jul-24		7.6	3.7	14.3	14.7	7.3	8.1
26-Jul-24		6.6	5.7	12.4	12.7	5.9	12.1
2-Aug-24		7.7	4.8	14.7	13.6	3.3	9.9
9-Aug-24		9.2	6.8	18.3	17.3	7.3	13.7
16-Aug-24		6.2	2.5	13.1	10.9	0.0	6.1
23-Aug-24		6.7	7.2	16.1	16.1	6.0	12.0
30-Aug-24		7.2	4.9	15.9	15.0	6.0	13.3
6-Sep-24		8.7	7.6	16.2	3.8	1.5	11.2
13-Sep-24		7.8	3.7	16.1	15.9	0.8	10.3
20-Sep-24		6.4	4.0	11.1	9.8	1.9	7.3
27-Sep-24		9.2	5.9	21.9	17.3	14.7	13.1
4-Oct-24		8.5	6.3	16.3	17.3	18.8	14.8
11-Oct-24		5.7	2.4	11.1	11.1	10.2	7.9
18-Oct-24		5.5	2.8	11.6	12.7	11.7	7.5
25-Oct-24		5.3	3.9	10.0	9.6	8.8	7.0
1-Nov-24		5.5	2.9	11.0	10.7	10.9	8.7
8-Nov-24		6.0	2.9	13.2	14.6	13.3	11.0
8-NOV-24 15-Nov-24		6.4	26.9	5.2	5.1	11.6	9.4
22-Nov-24		5.7	8.4	11.7	12.7	11.0	6.6
22-Nov-24 29-Nov-24		6.0	3.1	14.3	14.8	13.2	8.7
6-Dec-24							
		7.0 10.0	4.1 9.2	13.3 15.1	13.7 13.9	11.8 14.8	9.2 13.0
13-Dec-24 20-Dec-24		6.4	2.6	12.2	6.4	14.8	8.7
ZU-Dec-Z4		0.4	2.0	12.2	0.4	10.9	8./

Appendix B. Deposited Particulate Monitoring Results 2024 (g/m²/month)

AIR QUALITY DEPOSITED PARTICULATE (DP) RESULTS

All measurements in g/m²/month

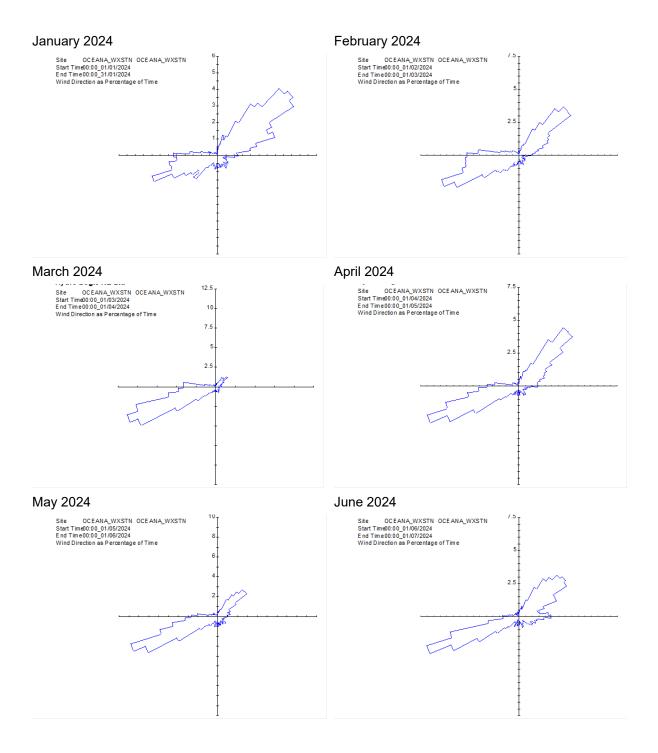
	Above trigger limit				
>3 g/m²/month	Near trigger limit				

YEAR		6.59 Alexander	6.60 Torrens	6.61 Leaches	6.63 Met Station	6.66 College	6.71 Morrison	6.72 Baxter Rd	6.73	6.74 Bulltown Rd
		Alexander	Torrens	Leaches	Wet Station	College	Wornson	Daxier Ru	ISF East	Builtown Ru
	Jan-24	0.8	0.9	0.9	0.8	0.6	1.2	2.1	1.1	0.8
	Feb-24	1.0	0.9	1.4	0.7	0.6	1.0	0.9	1.0	0.8
4	Mar-24	0.5	0.7	0.6	0.5	0.5	С	1.3	2.1	0.7
	Apr-24	0.7	0.7	0.6	0.4	0.3	0.7	0.6	1.1	0.3
7	May-24	0.4	0.7	0.6	0.3	0.3	0.5	0.8	0.7	0.5
	Jun-24	0.2	0.3	0.2	0.7	0.2	0.4	0.3	0.2	0.2
	Jul-24	0.2	0.2	0.3	2.2	0.4	0.5	0.5	0.4	0.4
0	Aug-24	0.4	0.9	1.1	1.2	0.6	0.7	0.5	0.5	0.6
	Sep-24	0.5	0.4	0.5	1.1	0.5	0.9	0.5	0.6	0.5
8	Oct-24	1.0	0.7	0.6	0.7	0.7	1.4	0.3	0.5	0.5
	Nov-24	0.7	0.5	1.1	0.7	0.6	1.1	1.2	0.7	0.6
	Dec-24	1.3	0.8	1.2	1.0	0.7	1.5	0.9	1.1	0.7

CODE	DEFINITION
С	Contamination/Sample tampered with

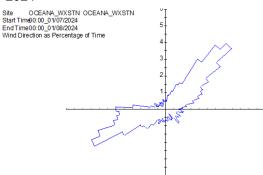


Appendix C. 2024 Monthly Wind Roses, Waihi

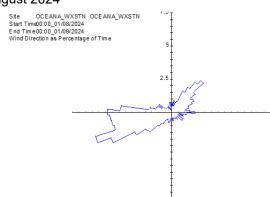




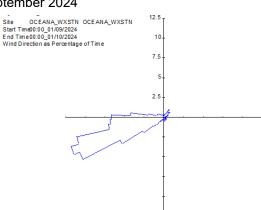




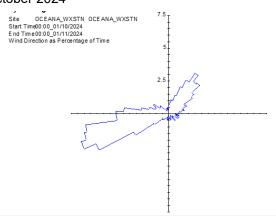
August 2024



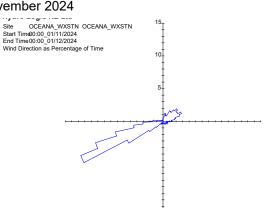
September 2024



October 2024



November 2024



December 2024

