24 July 2023

Research and Evaluation Unit | RIMU

Auckland Air Quality Report

Monthly update

Introduction

Auckland Council's Research and Evaluation Unit (RIMU) collects air quality data to ensure compliance with national standards and inform policy development and evaluation. The data we collect provides a better understanding of ambient air quality in the region, including spatial and temporal variations.

This monthly update is prepared using validated data that is available about one month after raw data collection. This report covers data up to 30 June 2023. This regular update on air quality aims to promote awareness and encourage actions to improve air quality in the region.

This update is divided into four sections, with sections A and B featuring tables and graphics that illustrate air quality status in Tāmaki Makaurau / Auckland, and is based on data collected from continuous monitoring sites across the region.

For this edition, section C focuses on one monitoring site – Penrose. Section D provides monthly averages for 2023 and the past two to five years of pollutant concentrations (when data is available).

Summary

No exceedance of the National Environmental Standard for Air Quality (NESAQ) has occurred year to date. As in the previous year, the highest concentrations of both PM_{10} and $PM_{2.5}$ were recorded at the city centre Queen Street site. The dust generated by the ongoing construction activities in the city centre (e.g., the City Rail Link project) is a primary factor.

As expected, the city centre sites have also recorded the highest levels of nitrogen dioxide (NO_2) concentrations. The average NO_2 concentration recorded within the first six months of this year at the Queen Street site is 37% higher than the same period of the previous year. Increased traffic volume is the likely cause. During the first quarter of the year, Auckland Transport's data on traffic volume at the City Centre Screenline intersections indicates an 18% increase in monthly traffic volume compared to the previous year.

It is important to note that air quality at a monitoring site can vary from year to year due to weather and other influences (See *Auckland air quality report, October 2021*). For a brief short-term trend analysis of key pollutants concentration changes, please see Table 2.

Where to view our data

Data can be viewed on the council's environmental data portal, the LAWA website LAWA or requested from environmentaldata@aucklandcouncil.govt.nz

Full state and trends analyses and reports are prepared every few years (the most recent report is *Trends in Auckland's air quality 2006-2018*).

The *2022 Annual data report* is available on the Knowledge Auckland website.

See also, the frequently asked questions about the Auckland air quality monitoring programme.

Glossary of terms

Term	Meaning
Aerodynamic diameter	Used to describe the behaviour of a particle as it moves around in the air; it compares the behaviour with that of a spherical particle of unit density.
Air pollutant/contaminant	Any substance in the air that could harm humans, animals, vegetation, or other parts of the environment when present in high enough concentrations.
Air pollution	The presence of one or more air pollutants in high enough concentrations to cause harm.
Air quality	Is the degree to which air is suitable or clean enough for humans, animals, or plants to remain healthy.
Ambient air	The external air environment (does not include the air environment inside buildings or structures)
Black carbon (BC)	Is an air pollutant made up of tiny soot-like particles discharged into the atmosphere from combustion processes.
CO	Carbon monoxide, a type of air pollutant.
Exceedance	An exceedance defines a period of time during which the concentration of a pollutant is greater than the appropriate air quality criteria.
Ground-level ozone (O_3)	At ground level, ozone is considered an air pollutant that can seriously affect the human respiratory system. It is a major component of photochemical smog.
Monitoring site	A facility for measuring the concentration of one or more pollutants in the ambient air; also referred to as 'monitoring station'
NESAQ	National Environmental Standard for Air Quality.
NO_2	Nitrogen dioxide, a type of air pollutant
PM	Particulate matter is made up of a mixture of various sizes of solid and liquid particles suspended in air.
PM_{10}	Particulate matter with an aerodynamic diameter of 10 micrometres or less; a type of air pollutant.
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of 2.5 micrometres or less; a type of air pollutant.
SO_2	Sulphur dioxide, a type of air pollutant
$\mu g/m^3$	Microgram of pollutant (1 millionth of a gram) per cubic metre of air, referenced to temperature of 0°C (273.15 K) and absolute pressure of 101.325 kilopascals (kPa)
n/a	Not applicable

What we monitor		Why we monitor
Air	Particulate matter (PM) – PM_{10} and $PM_{2.5}$	Tiny particles (particulate matter) from polluting sources such as vehicles and smoke get into the air. Breathing them may cause health problems.
	Nitrogen dioxide (NO_2)	Vehicles are the main source of NO_2 in Auckland. It can irritate the lungs, increasing susceptibility to asthma and lowering resistance to respiratory infections.
	Other pollutants	Air pollutants ozone, sulphur dioxide, carbon monoxide, black carbon and volatile organic compounds (VOCs) like benzene cause adverse health effects at elevated concentrations.
Greenhouse gas emissions	Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3)	The climate is warming due to increased greenhouse gas (GHG) levels in the atmosphere caused by human activities. Reducing GHG emissions will limit temperature rise.

Section A – Data tables

Table 1. Summary information about Auckland air quality monitoring programme 1 January to 30 June 2023

Number of exceedances of NESAQ in 2023	0	
Number of exceedances of Auckland ambient air quality targets in 2023	0	
Maximum PM_{10} 24-hours mean (January to June 2023)	35.2 µg/m^3 (70.4% of NESAQ)	Recorded at Queen Street on 19 April 2023
Maximum $PM_{2.5}$ 24-hour mean (January to June 2023)	17.3 µg/m^3 (69.2% of Auckland target)	Recorded at Patumahoe on 8 Feb 2023
Maximum NO_2 1-hour mean (January to June 2023)	163.0 µg/m^3 (81.5% of NESAQ)	Recorded at Queen Street on 31 May 2023
Maximum SO_2 1-hour mean (January to June 2023)	24.0 µg/m^3 (6.8% of NESAQ)	Recorded at Customs Street on 27 April 2023
Maximum O_3 1-hour mean (January to June 2023)	69.0 µg/m^3 (46.0% of NESAQ)	Recorded at Patumahoe on 21 May 2023
Maximum CO running 8-hour mean (January to June 2023)	1.1 mg/m^3 (11.0% of NESAQ)	Recorded at Khyber Pass Rd on 17 May 2023
Number of continuous monitoring sites	10	
Location of monitoring sites	Queen Street, Customs Street, Khyber Pass Road, Penrose, Henderson, Takapuna, Glen Eden, Pakuranga, Papatoetoe, and Patumahoe	

Table 2. General changes in concentration of key contaminants monitored for the last 30, 42 and 54 months.

↑ indicates an increase ↓ indicates a decrease ↗ increase but not significant ↘ decrease but not significant

	PM_{10}			$PM_{2.5}$			NO_2			Black carbon			Ozone			CO			SO_2			
Site	*Last 30 months*	*Last 42 months*	*Last 54 months*	*Last 30 months*	*Last 42 months*	*Last 54 months*	*Last 30 months*	*Last 42 months*	*Last 54 months*	*Last 30 months*	*Last 42 months*	*Last 54 months*	*Last 30 months*	*Last 42 months*	*Last 54 months*	*Last 30 months*	*Last 42 months*	*Last 54 months*	*Last 30 months*	*Last 42 months*	*Last 54 months*	**Site**
Customs Street*	n/a	n/a	n/a	↗	↘	n/a	↓	↓	n/a	↗	↗	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	↑	n/a	**Customs Street***
Glen Eden*	↘	↘	↓	↗	↘	↘	↗	↑	↑	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Glen Eden***
Henderson	↗	↗	↓	n/a	n/a	n/a	↗	↗	↗	↗	↗	↘	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Henderson**
Khyber Pass Road	↑	↑	↑	n/a	n/a	n/a	↘	↘	↓	n/a	n/a	n/a	n/a	n/a	n/a	↘	↓	↓	n/a	n/a	n/a	**Road**
Pakuranga*	↗	↑	↘	↗	↗	↘	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Pakuranga***
Papatoetoe	↓	↘	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Papatoetoe**
Patumahoe	↘	↓	↓	↗	↗	↘	↑	↑	↑	n/a	n/a	n/a	↗	↗	↘	n/a	n/a	n/a	n/a	n/a	n/a	**Patumahoe**
Penrose	↘	↘	↓	↘	↓	↓	↗	↘	↘	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	↑	↑	↑	**Penrose**
Queen Street	↗	↑	↑	↗	↑	↑	↘	↓	↓	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Queen Street**
Takapuna	↑	↑	↘	↗	↗	↘	↗	↗	↘	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**Takapuna**
	PM_{10}			$PM_{2.5}$			NO_2			Black carbon			Ozone			CO			SO_2			

Notes

Change significance was determined using the Theil-Sen method: ↑ and ↓ mean change is statistically significant at the 0.05 level, 95% confidence intervals.

Effective dates: 30 months (1 January 2021 to 30 June 2023), 42 months (1 January 2020 to 30 June 2023), and 54 months (1 January 2019 to 30 June 2023)

PM_{10} is monitored at Glen Eden, Henderson, Khyber Pass Rd, Pakuranga, Papatoetoe, Patumahoe, Penrose, Takapuna, and Queen St.

$PM_{2.5}$ is monitored at Customs St, Glen Eden, Pakuranga, Patumahoe, Penrose, Takapuna, and Queen St.

NO_2 is monitored at Customs St, Glen Eden, Henderson, Khyber Pass Rd, Patumahoe, Penrose, Takapuna, and Queen St.

Black carbon is monitored at Customs St, and Henderson.

CO is monitored at Khyber Pass Rd.

Ozone is monitored at Patumahoe.

SO_2 is monitored at Customs St, and Penrose.

*$PM_{2.5}$ data coverage for Glen Eden, Customs Street and Pakuranga is less than 75% due to instrument failure between September 2021 and January 2022. Weather changes significantly affect concentrations of air contaminants (see *Auckland air quality report, October 2021*). No data for Takapuna in January and February 2023 due to the Auckland floods.

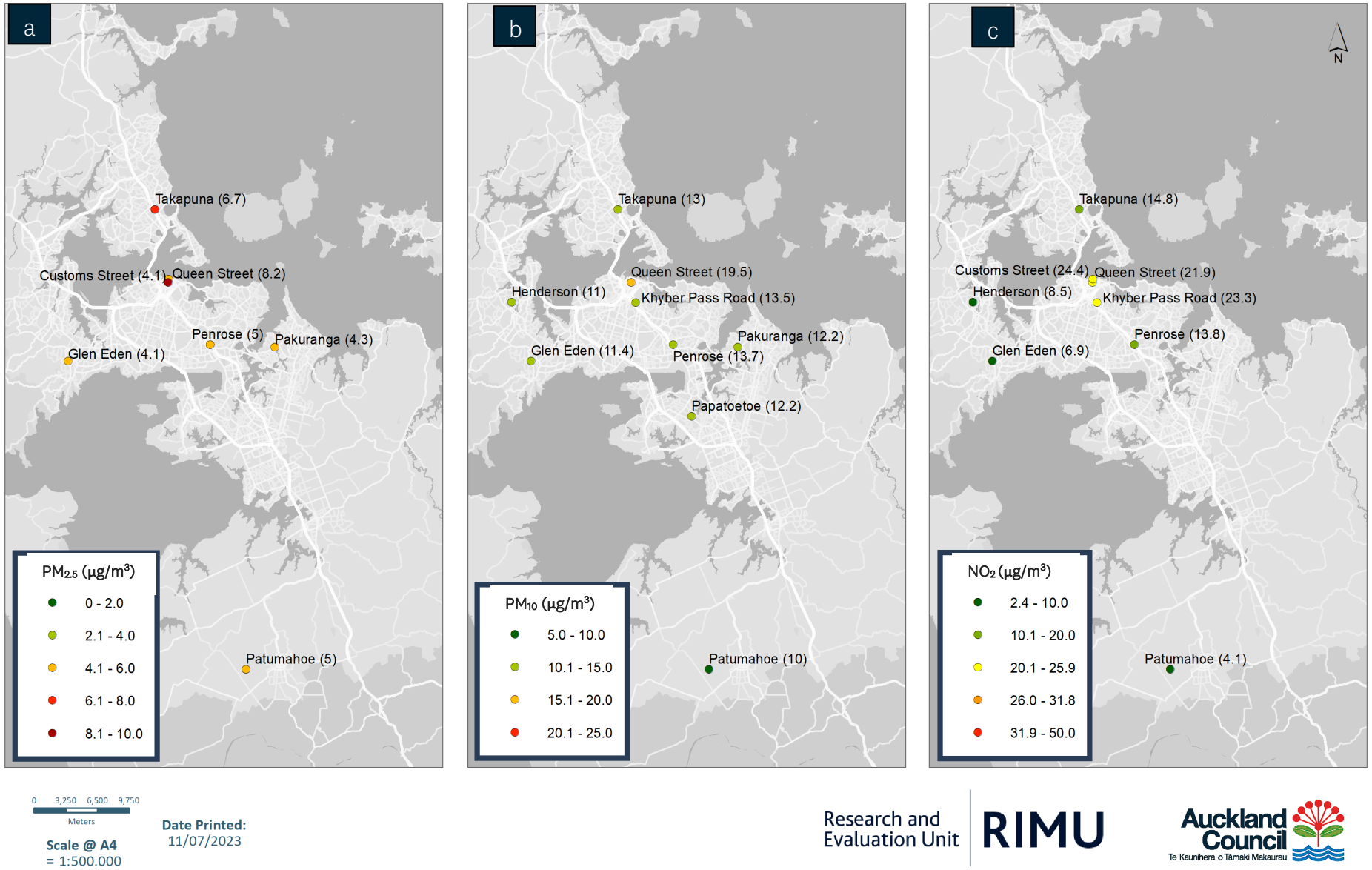

Figure 1. Maps a, b and c show the air quality monitoring sites and their last 12 months (1 July 2022 to 30 June 2023) average PM and NO_2 concentrations in brackets. Auckland city centre monitoring sites recorded the highest PM and NO_2 concentrations.

Section B. Key air contaminants across the 10 air quality monitoring sites (1 January 2023 to 30 June 2023)

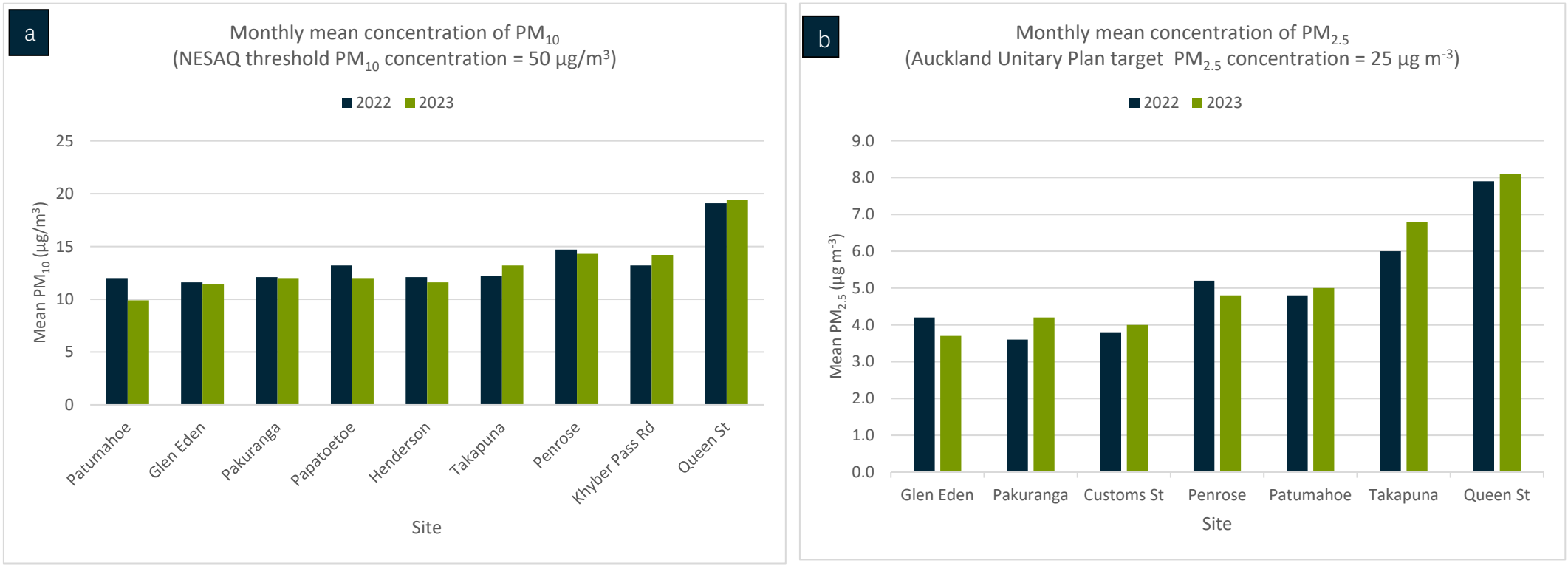

Figure 2. Monthly mean particulate matter concentration – 2023 compared to 2022. As in the previous year, the highest concentrations of both PM_{10} and $PM_{2.5}$ were recorded at Queen Street site. Plots a and b represent PM_{10} and $PM_{2.5}$, respectively. The average particulate matter concentration at Queen Street is slightly higher than the same period of the previous year. PM_{10} and $PM_{2.5}$ have multiple sources including home heating, motor vehicles, sea salt, marine diesel, and soils (windblown soil, road dust, and dust generated by earthworks, construction, and road works).

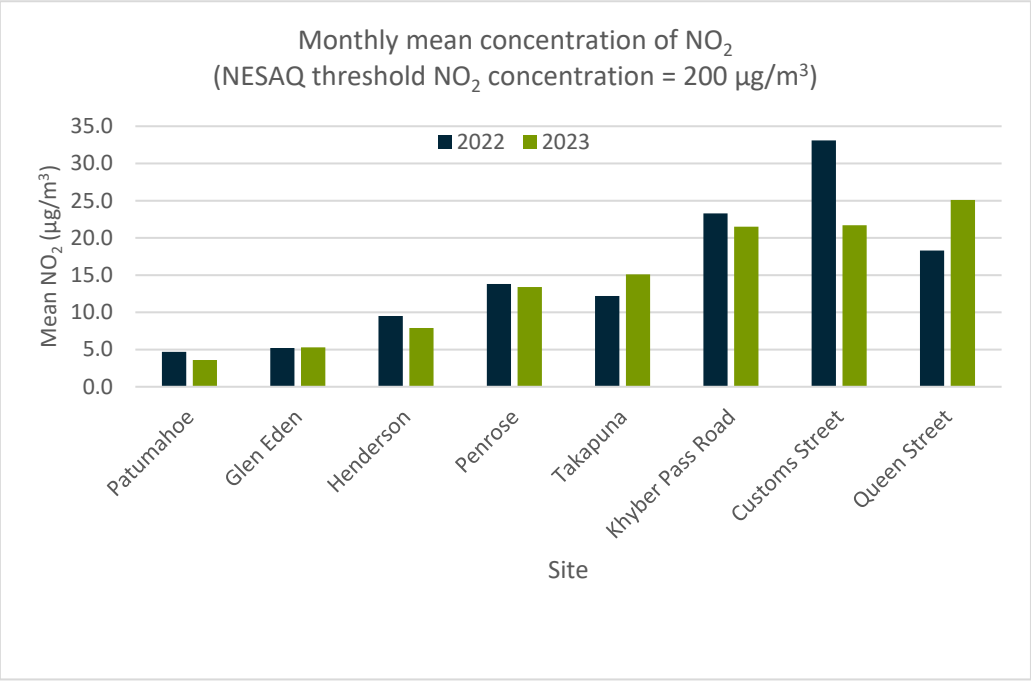

Figure 3. Monthly mean NO_2 concentration in Auckland. The highest concentrations were recorded at Queen Street monitoring sites in the city centre. Motor vehicles are the primary source of NO_2. During the first three months of the year, Auckland Transport's data on Traffic volume at the 16 City Centre Screenline intersections indicates a 18% (from 17,482 to 20,549) increase in monthly traffic volume compared to the previous year.

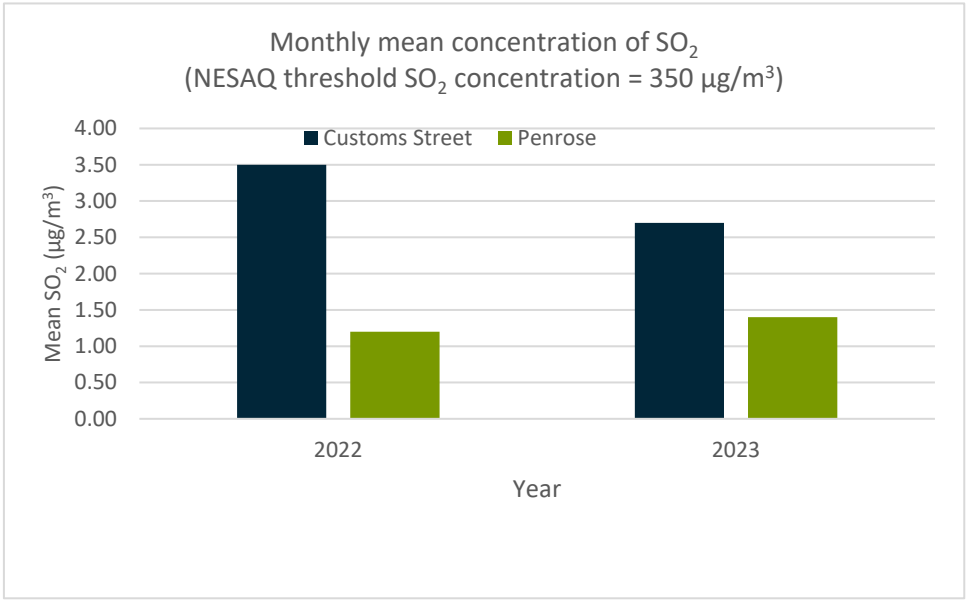

Figure 4. Monthly mean SO_2 levels at Customs Street and Penrose sites. The highest concentrations were recorded at the Customs Street monitoring site in the city centre. The mean concentration at Penrose site is higher than the previous year. SO_2 is produced from the combustion of fossil fuels that contain sulphur, such as coal and oil (used for home heating, industry, and shipping). Motor vehicles also contribute to SO_2 levels in urban air.

Section C. Focus on a monitoring site: Penrose

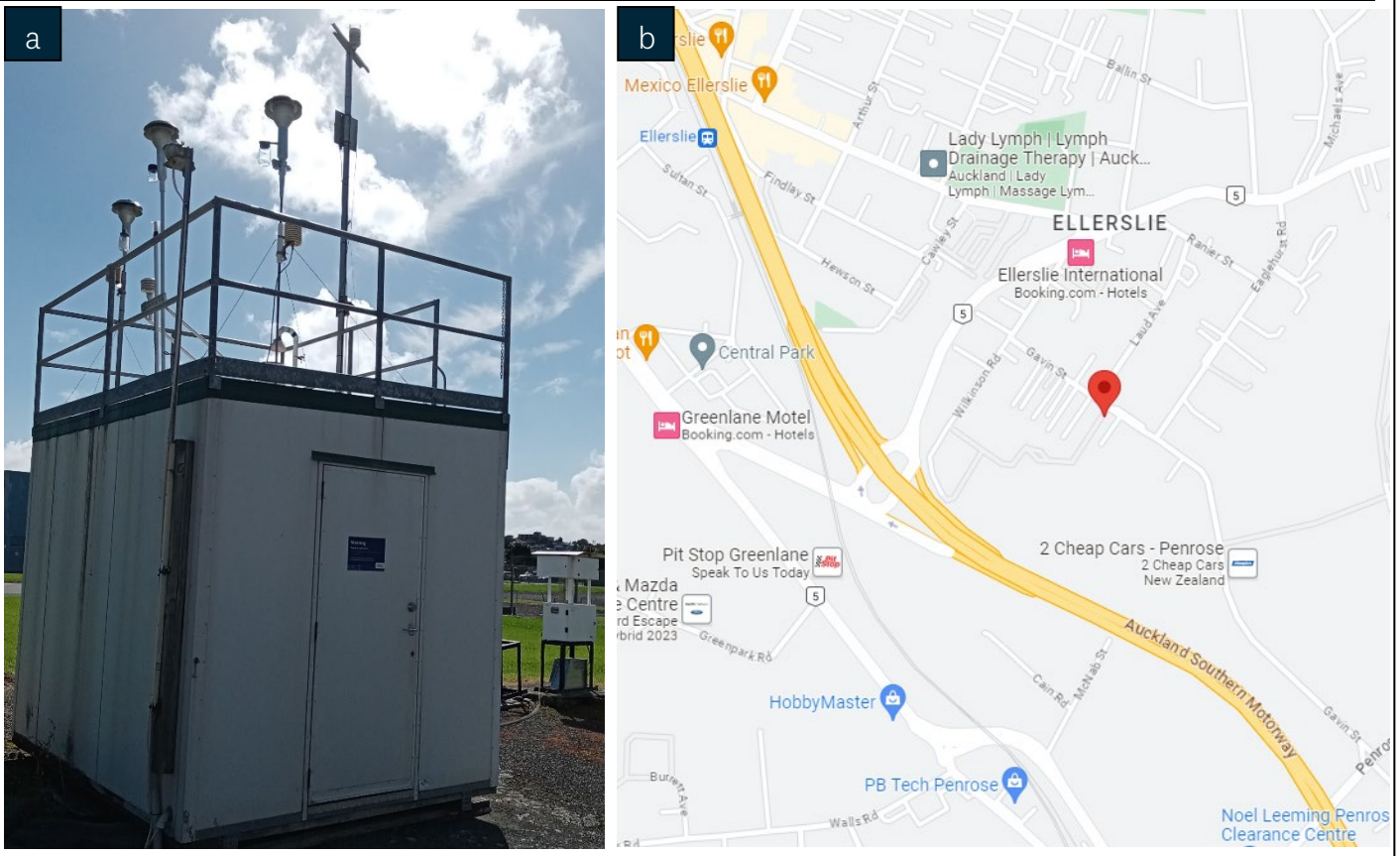

Figure 5. The Penrose air quality monitoring site is located at 19 Gavin Street. Image a shows the air quality monitoring shed. Image b is an aerial view of the monitoring site and surroundings taken in July 2023 (Source: Google Maps). Air quality monitoring at this site commenced on November 2000. PM_{10}, $PM_{2.5}$, NO_2, SO_2, and ambient meteorological parameters are monitored at this site. The main sources of air contaminants are motor vehicles, home heating (during winter) and industrial activities.

Key findings:

- Overall, the Penrose site average $PM_{2.5}$ concentration is 20.0 % higher than Auckland's average and 43.5 % higher than Patumahoe (a rural site). The average PM_{10} concentration is 5.5 % higher than Auckland's average and 30.5 % more than Patumahoe site.
- In general, Penrose's average NO_2 concentration is 3.7 % higher than Auckland's average and 6-fold more than the Patumahoe site.
- This monitoring site is located at the 'urban peak' for air pollutant exposure, so it is expected that the average PM_{10} and NO_2 concentrations will be higher than Auckland's average.
- Overall, the Penrose site average SO_2 concentration is 56.8 % lower than Customs Street site average. The deseasonalised long-term trend analysis results at the Penrose site show there is a downward trend in PM_{10}, $PM_{2.5}$, NO_2, and SO_2 concentrations. However, there is a short-term upward trend in SO_2 average concentrations (January 2020 to June 2023).

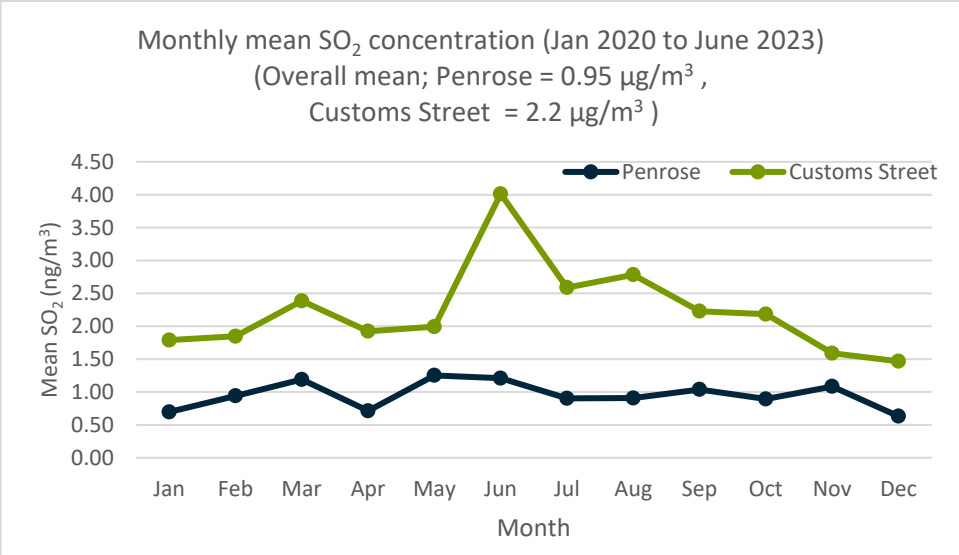

Figure 6. Temporal variation in monthly SO_2 concentrations – Penrose site compared to Customs Street site. Overall, Penrose site average SO_2 concentration is 56.8 % lower than Customs Street site average.

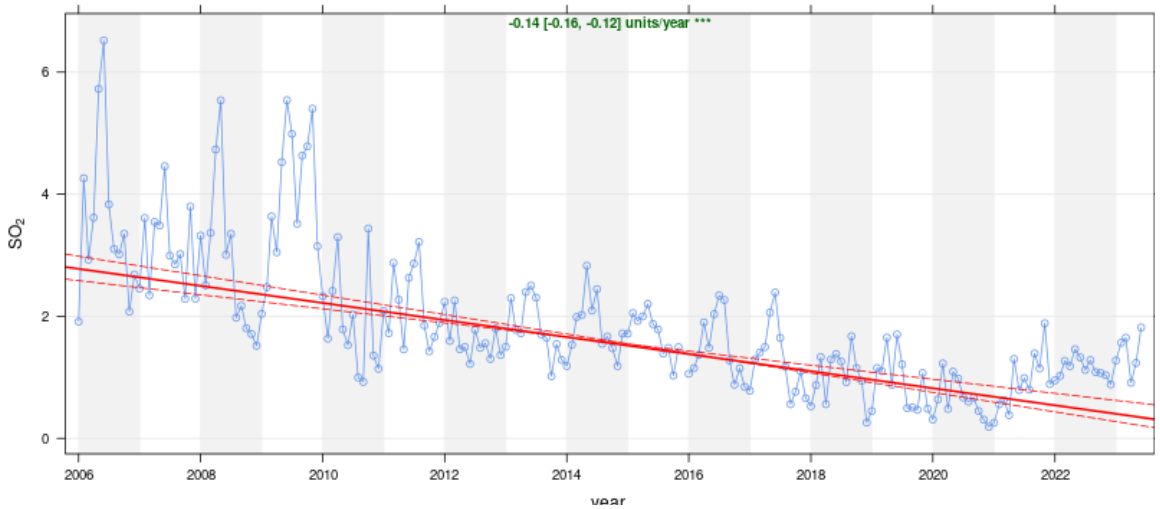

Figure 7. Long-term trends in SO_2 at Penrose site. The plot shows the deseasonalised monthly mean concentrations. The solid red line shows the trend estimate and the dashed red lines show the 95% confidence intervals for the trend. The overall trend is shown at the top-left as -0.14 (µg/m^3) per year and the 95% confidence intervals in the slope from -0.16 – (-0.12) µg/m^3/year. The '***' show that the trend is significant to the 0.001 level

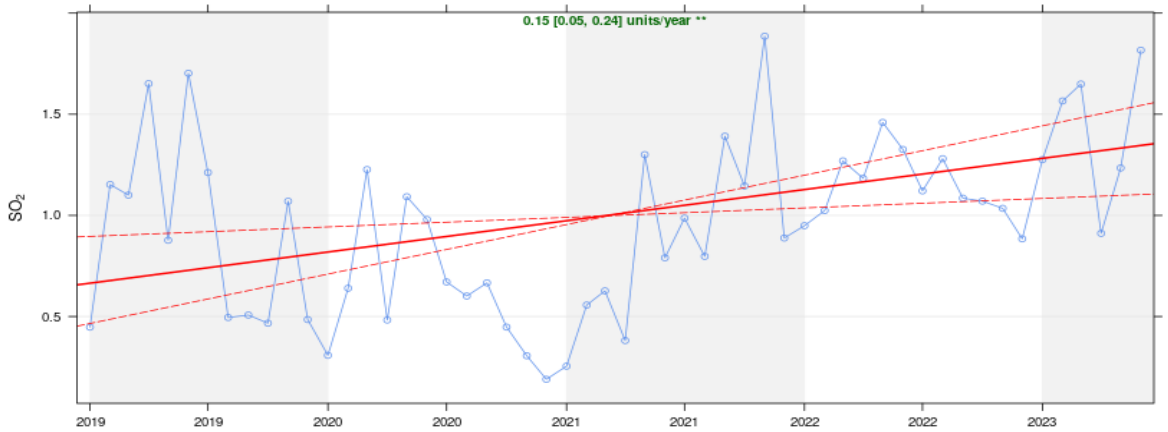

Figure 8. Short-term trends in SO_2 at Penrose site. The '**' show that the trend is significant to the 0.01 level.

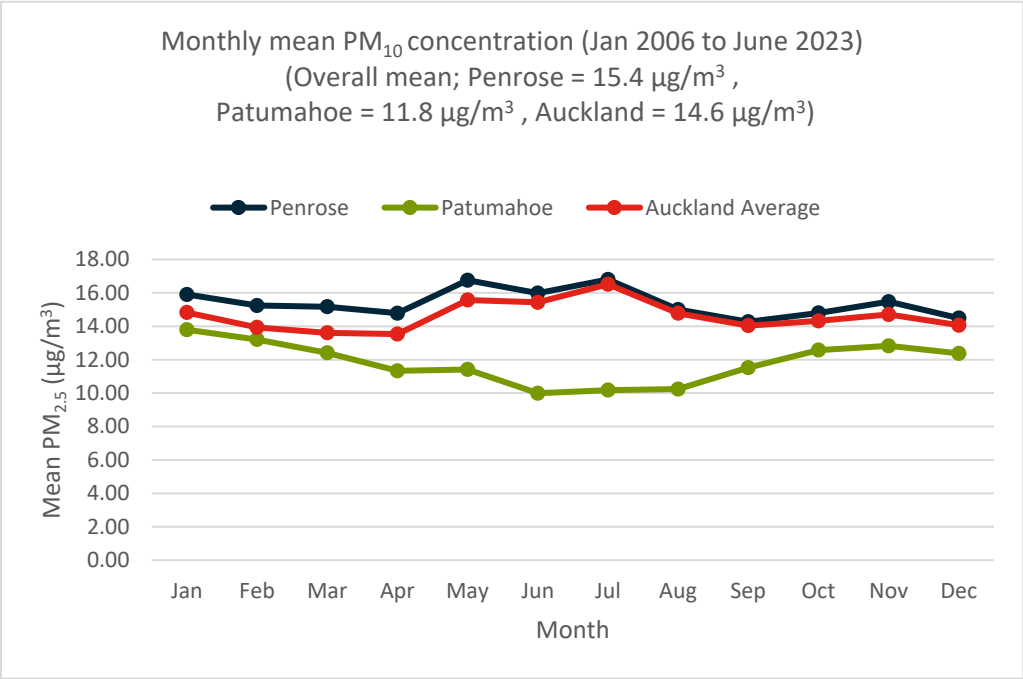

Figure 9. Temporal variation in monthly PM_{10} concentrations – Penrose site compared to Patumahoe (rural site) and Auckland average. Overall, Penrose site average PM_{10} concentration is 5.5 % higher than Auckland's average and 30.5 % more than Patumahoe site.

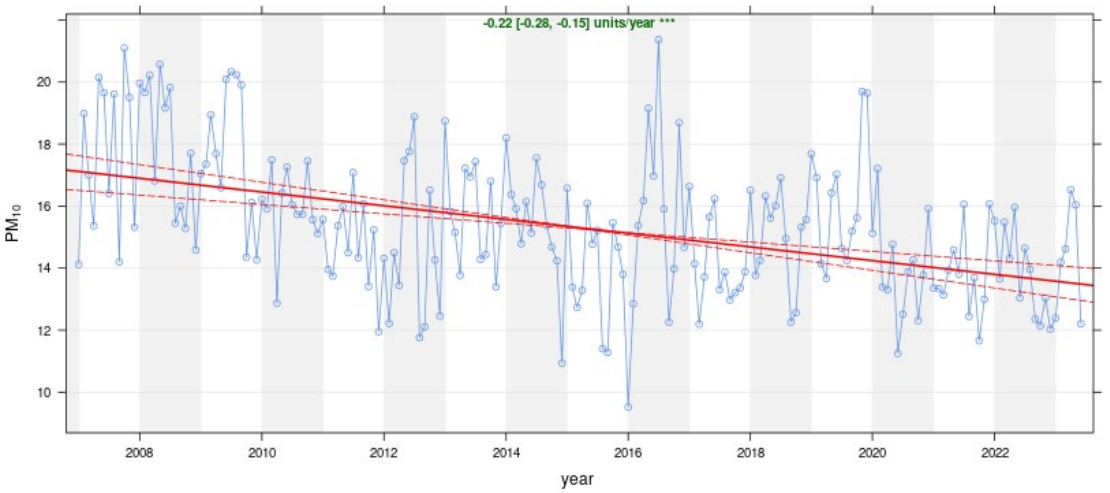

Figure 10. Long-term trends in PM_{10} at Penrose site. The plot shows the deseasonalised monthly mean concentrations of PM_{10}. The solid red line shows the trend estimate and the dashed red lines show the 95% confidence intervals for the trend based on resampling methods. The overall trend is shown at the top-left as – 0.22 (µg/m^3) per year and the 95% confidence intervals in the slope from -0.28 – (- 0.15) µg/m^3/year. The '***' show that the trend is significant to the 0.001 level.

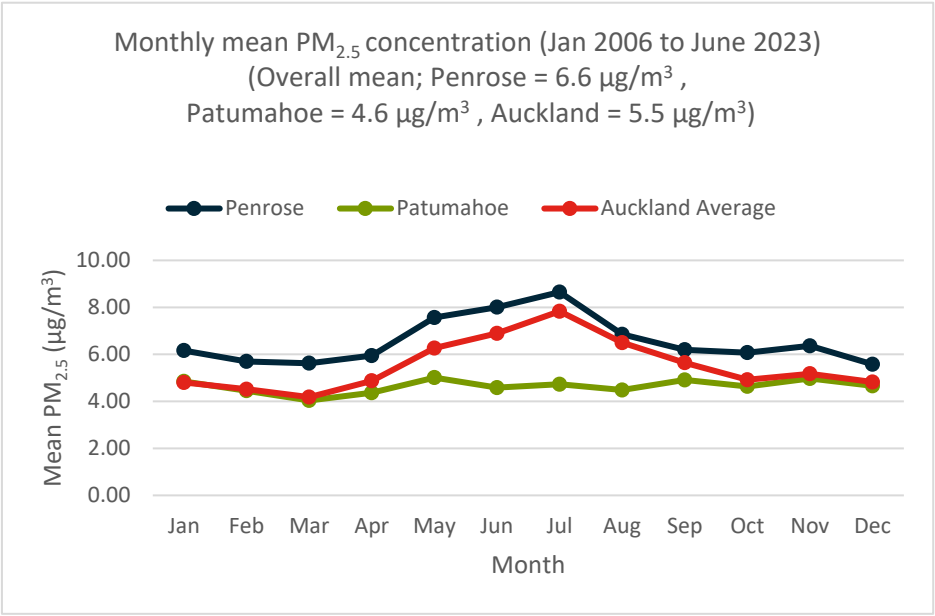

Figure 11. Temporal variation in monthly $PM_{2.5}$ concentrations – Penrose site compared to Patumahoe (rural site) and Auckland average. Overall, Penrose site average $PM_{2.5}$ concentration is 20.0 % higher than Auckland's average and 43.5 % more than Patumahoe site.

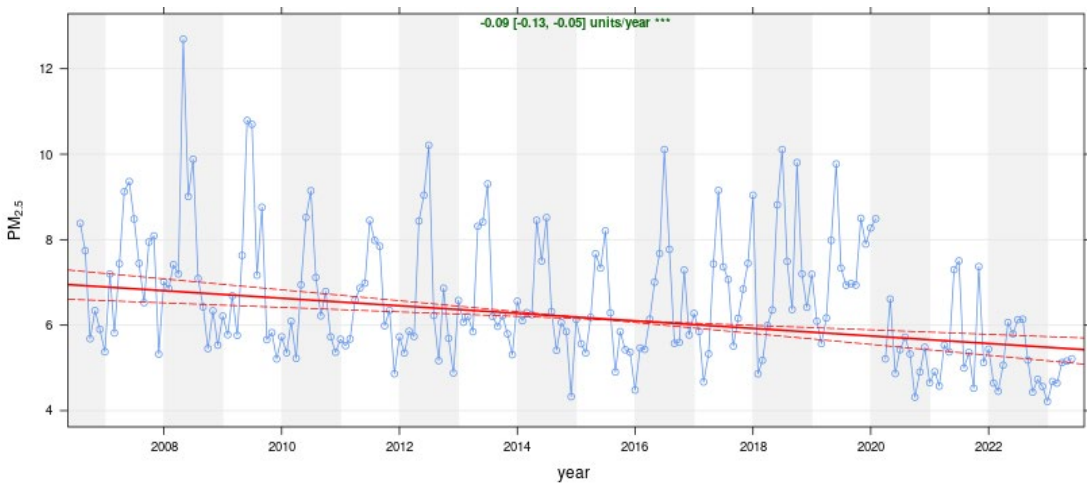

Figure 12. Long-term trends in $PM_{2.5}$ at Penrose site. The plot shows the deseasonalised monthly mean concentrations of $PM_{2.5}$. The solid red line shows the trend estimate and the dashed red lines show the 95% confidence intervals for the trend based on resampling methods. The overall trend is shown at the top-left as -0.09 (µg/m³) per year and the 95% confidence intervals in the slope from -0.13 – (-0.05) µg/m³/year. The '***' shows that the trend is significant to the 0.001 level.

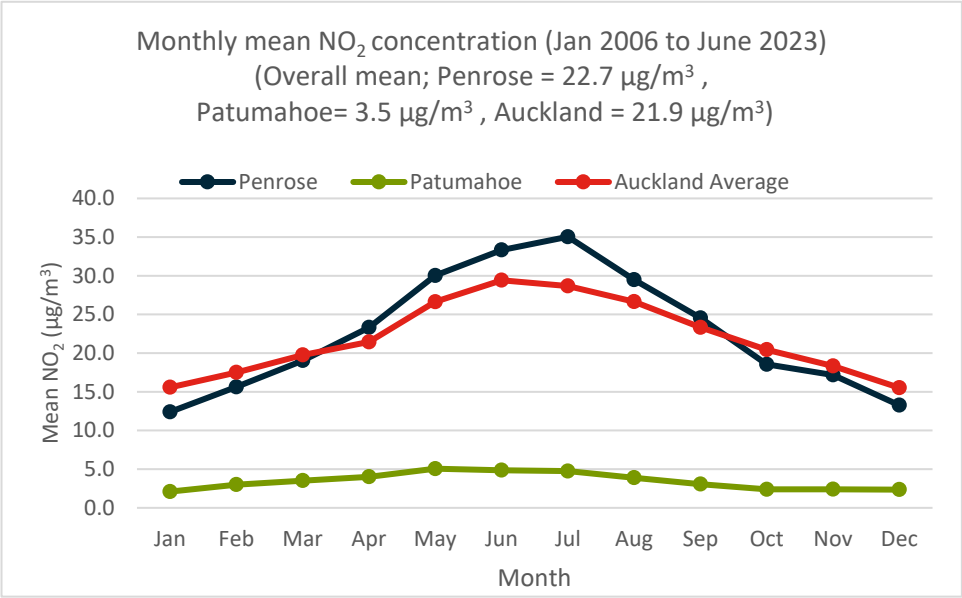

Figure 13. Temporal variation in monthly NO_2 concentrations – Penrose site compared to Patumahoe (rural site) and Auckland average. Overall, Penrose average NO_2 concentration is 3.7 % higher than Auckland's average and 6-fold more than Patumahoe site.

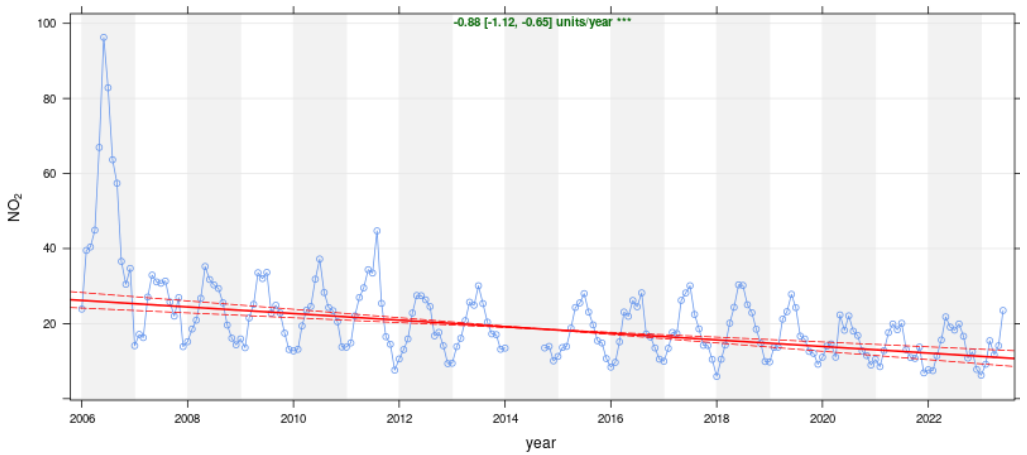

Figure 14. Long-term trends in NO_2 at Penrose site. The plot shows the deseasonalised monthly mean concentrations of NO_2. The solid red line shows the trend estimate and the dashed red lines show the 95% confidence intervals for the trend based on resampling methods. The overall trend is shown at the top-left as – 0.88 (µg/m^3) per year and the 95% confidence intervals in the slope from -1.12 – (- 0.65) µg/m^3/year. The '***' show that the trend is significant to the 0.001 level.

Section D. Table 4. Monthly averages: 2023 and past two to five years (when data is available)

Pollutant	Site	Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PM_{10} ($\mu g/m^3$)	Glen Eden	2023	8.9	10.9	10.0	13.0	14.5	11.1	-	-	-	-	-	-
		Past 5 years	11.6	11.1	9.6	11.1	12.9	15.4	15.6	13.8	11.5	10.2	11.9	12.9
	Henderson	2023	10.1	12.2	10.6	12.5	13.8	10.4	-	-	-	-	-	-
		Past 5 years	12.0	11.5	11.0	11.7	12.5	12.9	13.1	12.1	11.1	10.5	12.5	12.8
	Khyber Pass Road	2023	12.2	14.6	14.0	16.0	16.6	11.8	-	-	-	-	-	-
		Past 4 years	11.8	11.4	10.8	11.4	10.9	11.1	11.9	11.3	11.2	11.0	12.9	13.8
	Pakuranga	2023	9.6	11.1	11.4	13.0	14.9	12.1	-	-	-	-	-	-
		Past 5 years	12.1	11.5	10.0	10.7	12.4	13.3	14.2	13.0	11.4	10.9	12.6	12.7
	Papatoetoe	2023	9.8	12.0	12.8	12.6	14.1	10.9	-	-	-	-	-	-
		Past 5 years	14.2	13.6	12.4	13.1	14.0	14.0	15.6	14.3	13.5	13.0	14.5	14.7
	Patumahoe	2023	8.9	10.7	12.0	11.0	9.7	7.1	-	-	-	-	-	-
		Past 5 years	14.9	14.3	12.5	12.2	11.8	9.9	10.5	10.8	11.4	11.1	13.3	14.9
	Penrose	2023	12.4	14.2	14.6	16.5	16.0	12.2	-	-	-	-	-	-
		Past 5 years	15.6	14.9	14.1	14.3	15.5	14.2	14.9	13.9	13.5	12.9	15.0	15.9
	Queen Street	2023	16.8	19.5	19.2	21.7	22.7	16.8	-	-	-	-	-	-
		Past 5 years	17.5	16.7	16.0	16.5	16.9	16.7	18.4	18.2	17.8	17.9	19.1	19.4
	Takapuna	2023	11.5	ND	12.6	15.0	15.9	10.9	-	-	-	-	-	-
		Past 5 years	13.1	12.3	11.0	12.4	12.8	13.3	14.1	12.9	11.7	11.3	13.0	13.4
$PM_{2.5}$ ($\mu g/m^3$)	Customs Street	2023	3.7	3.8	3.1	4.5	5.2	3.7	-	-	-	-	-	-
		Past 3 years	4.4	3.7	3.3	3.9	4.0	4.7	4.8	5.6	5.5	3.8	3.8	3.7
	Glen Eden	2023	2.1	2.7	2.2	3.3	6.2	5.6	-	-	-	-	-	-
		Past 4 years	2.7	2.5	2.0	3.1	5.7	9.8	9.7	7.7	5.0	3.2	3.5	3.2
	Pakuranga	2023	2.9	3.2	3.1	4.0	6.0	5.8	-	-	-	-	-	-
		Past 4 years	3.0	2.9	2.5	3.5	5.3	6.3	9.3	5.7	4.4	3.2	3.9	3.5
	Patumahoe	2023	4.9	6.4	4.8	5.2	4.8	4.0	-	-	-	-	-	-
		Past 5 years	5.4	4.5	4.3	5.0	5.4	5.1	4.7	4.8	4.7	4.4	5.2	5.3
	Penrose	2023	4.2	4.7	4.6	5.1	5.1	5.2	-	-	-	-	-	-
		Past 5 years	6.8	5.3	5.0	5.6	6.5	7.3	7.3	6.3	5.8	5.8	6.5	5.9
	Queen Street	2023	7.2	8.0	7.5	9.0	9.8	7.4	-	-	-	-	-	-
		Past 5 years	7.1	6.5	6.0	6.7	7.2	7.4	8.0	7.7	7.3	7.3	7.7	7.9
	Takapuna	2023	ND	ND	5.3	7.1	8.3	6.7	-	-	-	-	-	-
		Past 5 years	5.9	5.4	4.9	5.7	6.8	8.2	8.8	7.7	6.6	6.1	6.7	6.3
NO_2 ($\mu g/m^3$)	Customs Street	2023	18.7	17.8	20.1	21.3	23.8	28.5	-	-	-	-	-	-
		Past 3 years	34.8	36.9	39.1	30.8	37.1	52.4	37.4	35.6	30.8	29.1	24.1	23.9
	Glen Eden	2023	6.0	5.0	4.0	4.1	5.8	6.6	-	-	-	-	-	-
		Past 5 years	2.0	3.0	4.0	4.6	7.4	8.2	7.9	6.1	4.7	4.6	3.8	2.9
	Henderson	2023	4.5	5.1	7.0	7.6	9.8	13.2	-	-	-	-	-	-
		Past 5 years	3.9	7.3	8.4	8.7	12.0	12.8	11.7	9.2	7.5	6.5	6.1	4.7
	Khyber Pass Road	2023	11.4	18.7	26.0	11.2	23.5	31.1	-	-	-	-	-	-
		Past 4 years	21.5	19.5	22.4	23.8	32.8	33.8	35.1	30.8	30.2	24.9	30.0	20.1
	Patumahoe	2023	2.1	2.5	3.2	4.6	4.8	4.6	-	-	-	-	-	-
		Past 5 years	1.4	2.0	2.9	2.8	3.8	4.2	4.3	3.4	2.5	2.4	2.4	2.1
	Penrose	2023	6.3	9.2	15.4	11.7	14.1	23.5	-	-	-	-	-	-
		Past 5 years	9.0	10.8	13.4	16.9	22.3	22.8	22.8	18.7	16.6	12.6	12.9	8.5
	Queen Street	2023	10.8	10.0	30.1	29.7	34.3	35.6	-	-	-	-	-	-
		Past 5 years	28.2	28.8	30.8	31.0	37.4	39.5	43.2	42.1	37.7	36.4	32.2	28.0
	Takapuna	2023	5.3	ND	19.0	12.6	16.1	22.3						
		Past 5 years	6.5	8.4	10.7	14.6	20.2	21.1	22.1	18.5	15.2	12.7	11.8	7.9
SO_2 ($\mu g/m^3$)	Customs Street	2023	2.3	2.4	2.5	3.2	2.5	2.9	-	-	-	-	-	-
		Past 3 years	1.6	1.6	2.3	1.5	1.7	4.4	2.6	2.8	2.2	2.2	1.6	1.5
	Penrose	2023	1.2	1.6	1.7	0.9	1.7	1.8	-	-	-	-	-	-
		Past 5 years	0.5	0.8	1.1	0.8	1.2	1.2	1.0	0.8	1.0	0.8	1.0	0.5
O_3 ($\mu g/m^3$)	Patumahoe	2023	26.1	25.8	26.3	40.1	26.3	42.3	-	-	-	-	-	-
		Past 5 years	26.6	29.3	33.4	38.9	41.2	43.1	46.8	52.6	51.4	46.9	41.0	31.4
CO (mg/m^3)	Khyber Pass Road	2023	0.105	0.159	0.220	0.160	0.053	0.143	-	-	-	-	-	-
		Past 4 years	0.206	0.180	0.192	0.216	0.268	0.258	0.297	0.220	0.204	0.178	0.183	0.164
Black carbon (ng/m^3)	Customs Street	2023	1095	1286	1735	1429	1735	1767	-	-	-	-	-	-
		Past 3 years	1447	1535	1316	1094	1356	3363	1350	1326	1034	1016	1127	1047
	Henderson	2023	247	316	510	455	510	824	-	-	-	-	-	-
		Past 5 years	265	458	566	540	995	1204	1113	879	542	412	381	301

ND = No data measured due to Auckland flood

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