IN THE MATTER	of the Fast-track Approvals Act 2024 (**FTAA**)
AND	
IN THE MATTER	of an application for approvals under the FTAA for the Stella Passage **Development FTAA-2512-1163**

STATEMENT OF EVIDENCE OF Professor Simon Edward Paul Hales

21 July 2026

Tu Pono Legal Ltd
Solicitor: Jason Pou
[redacted]

Counsel: Rob Enright
[redacted]
magdalenechambers.nz

Introduction

1 My full name is Simon Edward Paul Hales.

2 I am a medically qualified epidemiologist and a research professor in the Department of Public Health at the University of Otago, Wellington.

3 I have been engaged by Ngāti Kuku hapū and Whareroa Marae to provide an independent scientific appraisal of potential health impacts of the Port of Tauranga Ltd's Stella Passage fast-track proposal (second substantive application), (**the proposal**).

4 I confirm that I have read the Environment Court Practice Note 2023 – Code of Conduct for Expert Witnesses (**the Code**), and have complied with it in the preparation of this evidence. I also agree to follow the Code when participating in any subsequent processes, such as expert conferencing, directed by the Panel. I confirm that the opinions I have expressed are within my area of expertise and are my own, except where I have stated that I am relying on the work or evidence of others, which I have specified.

5 My qualifications relating to the subject matter of this evidence are BA (Natural Sciences); MB BChir (Medicine): University of Cambridge, UK; and MPH (Public Health); PhD (Epidemiology): University of Otago, NZ.

6 I specialise in environmental health, including quantitative health impact assessment of air pollution. I have over 25 years' experience studying the health impacts of environmental pollution in New Zealand and globally, as an academic, and employed by the World Health Organisation (WHO). I have acted as an expert advisor or consultant on environmental health to several United Nations organisations including WHO, UNDP, UNEP, IPCC and IPBES.

7 I have authored numerous publications on public health risks of air pollution. Appendix 1 to my evidence provides a selected list of such publications.

Scope of evidence

8 I will cover the following issues:

9 My assessment of the current health status of Ngāti Kuku hapū and Whareroa Marae, based on routinely collected data and my knowledge of medical and public health science.

10 My analysis of the applicant's exposure assessment and resulting human health risk from emissions to air from the proposal.

11 My own assessment of potential health effects of air pollution inhalation particulate matter, ($PM_{2.5}$) and nitrogen dioxide (NO_2) resulting from the applicant's proposal.

12 My recommendations for scientific studies which would define the health impact more precisely and inform mitigation (and related) policies.

Summary

13 The Mount Maunganui airshed, which includes the Port of Tauranga and adjacent industrial area is polluted, mainly due to emissions to air from shipping, but with contributions from activities related to the port, including the manufacture, loading and unloading of cargo and use of toxic industrial chemicals.

14 The community of Mount Maunganui has a higher mortality rate (~10 deaths per year per 1000 population) than the national average (~7 deaths per year per 1000 population).

15 The community has reported symptoms that are consistent with exposure to respiratory irritants which are known to have existed in concentrations exceeding air quality standards.

16 Readings from three air quality monitoring sites in the vicinity of the port and industrial area indicate that WHO annual air quality standards were exceeded in 2024-2025.

17 Air pollution readings at these monitoring stations are affected by wind direction. Readings were systematically higher when the wind direction meant that a monitor was downwind of the port.

18 The overall pattern of readings is consistent with a major influence of air pollution emissions from the port and industrial area, although local roads will also contribute.

19 The air quality assessment for the applicant was limited in scope and failed to account for several important factors likely to affect health outcomes.

20 Three sources of information are needed to quantify the main health impacts of air pollution exposure:

a. the population-averaged long-term exposure;
b. the count or rate of health impacts observed;
c. the dose response relationship between exposure and health impact.

21 A previous assessment of the impact of air pollution on premature mortality in Mount Maunganui concluded that about 5 deaths per year were attributable to air pollution from the port and industrial area.

22 My own analysis, using a different method of exposure assessment, reached a similar conclusion.

23 In my opinion, current levels of air pollution should be mitigated and no further development by the Port should be permitted under the proposal until levels are brought below the WHO guideline levels.

24 I recommend scientific studies that can quantify adverse health impacts of air pollution in Mount Maunganui more precisely.

Discussion

25 The proposal includes dredging and expansion of wharf areas to increase capacity of the port. The proposal would result in increased activity in the port and industrial area.

26 The Mount Maunganui airshed, which includes the port and adjacent industrial area, is defined as polluted because air pollution standards have been exceeded on many occasions in recent years (ESR, 2024).

27 Emissions from shipping dominate the airshed and are measurable by remote sensing (Table 1, Figure 1).

28 The level of sulphur dioxide (SO_2) in the airshed has improved since about 2020, which has been attributed in large part to reductions in the sulphur content of fuel for shipping vessels.

29 An inventory of air pollution sources in the airshed for the year 2022 has been published (Environet, 2023). The main sources of $PM_{2.5}$ were industrial activities, shipping and port activities (total of 38 tonnes/year (Table 1). Shipping was by far the largest source of

nitrogen oxides (NO_x) accounting for about 749 tonnes/year, 72% of the annual total. Vehicles accounted for a further 171 tonnes/year.

30 The emissions of NO_x were concentrated in the port area (Figure 2).

31 Below, I consider all sources of air pollution from shipping and port activities, and the industrial area, including rail and road transport together.

32 The Ballance fertilizer plant is currently a source of SO_2 emissions, which will stop when the plant is closed. Because SO_2 is oxidised to sulphate aerosol in the atmosphere this increases $PM_{2.5}$. Therefore, levels of $PM_{2.5}$ will also be reduced by the closure, but to a much lesser extent than SO_2.

Health status of Ngati Kuku and Whareroa Marae

33 For purposes of my evidence, I have treated the Ngāti Kuku takiwa as approximated by the Mount Maunganui statistical area 3 (SA3) for which air pollution and demographic data are available (Figure 3).

34 Residents of Whareroa Marae have been reported to experience migraines, vomiting, respiratory illnesses, asthma attacks, rashes, soreness of eyes, nose and throat. Many of these symptoms are consistent with exposure to respiratory irritants which are known to have existed in concentrations exceeding air quality standards.

35 As these symptoms are not specific to air pollution exposure, attribution to air pollution would require epidemiological study.

36 In the early, 1990s, a national study of asthma and allergy in children found high rates of asthma (25–30%), eczema (13–15%), and rhinoconjunctivitis (10–19%) in the Bay of Plenty (Asher et al, 2001). Air pollution is an established risk factor for asthma.

37 Although, to my knowledge, the levels of exposure have not been measured systematically, the local community may have been exposed to toxic industrial chemicals used in the port, including methyl bromide and phosphine used as fumigants, volatile organic compounds and and polycyclic aromatic hydrocarbons.

38 Overall, the population of Mount Maunganui is slightly older than the national average.

39 In general, Māori and/or less affluent communities are known to have a greater prevalence of chronic health problems, including

cardio-respiratory diseases that are most sensitive to air pollution exposure.

40 Mount Maunganui includes communities with high levels of socio-economic deprivation, as measured by the New Zealand Index of Socio-economic Deprivation, (NZDep, 2025).

41 In 2023-2025, there were 220 deaths per year on average among 21,800 residents, rate of 10.1 per 1,000 people (all ages, all ethnicities, all causes of death). This is significantly higher than the national average mortality rate over the same period (7.3 per 1000 population per year, StatsNZ, 2026). Exposures to air pollution from the port, as well as the issues raised in paras 37 to 49 contribute to this inequity, as discussed below.

My assessment of air pollution exposure in Mount Maunganui

42 From the Bay of Plenty Regional Council website, I downloaded and processed hourly air pollution measurements from three monitoring stations in the vicinity of the port (BoPRC, 2026; see Figure 2):

- for Rata St (EP102897) which is near the port boundary to the north: $PM_{2.5}$ and SO_2.
- for Whareroa Marae (ref. EP079602) to the south of the port: $PM_{2.5}$, SO_2 and NO_2;
- for Ranch Rd (EP301713) which is in a residential area to the east of the port: $PM_{2.5}$ and NO_2;

43 It is preferable to average air pollution data over complete years of measurement, since this accounts for seasonal patterns.

44 The most important pollutants leading to health impacts for which dose-response data are available are $PM_{2.5}$ and NO_2. For this reason, I focus on these pollutants.

45 For Rata St, $PM_{2.5}$ data were available from September 2024, with reasonably complete data for the whole of 2025. Reasonably complete data were available for SO_2, $PM_{2.5}$ and NO_2 for Whareroa Marae for 2024 and 2025, and $PM_{2.5}$ and NO_2 at Ranch Rd for 2025.

46 For Rata St, (2025) the annual average $PM_{2.5}$ concentration was 6.48 $\mu g/m^3$, above the WHO guideline of 5 $\mu g/m^3$. Average levels of $PM_{2.5}$ and SO_2 pollution were higher during south-westerly winds: that is, winds from 180°S to 270°W, (or by analogy of a clock face,

clockwise from 6 o'clock to 9 o'clock). This is the direction of the port from that monitor.

47 At Whareroa Marae (2024 to 2025), the annual average $PM_{2.5}$ was 5.19 μg/m^3 and NO_2 was 10.02 μg/m^3. These concentrations are just above WHO annual guideline levels of 5 and 10 μg/m^3 respectively (WHO, 2021). Average levels of pollution were higher during northerly winds, and especially during winds in the north-westerly quadrant (direction 270W° to 0°N; 9 o'clock to 12 o'clock). (Table 2). This is the direction of the port from that monitor.

48 At Ranch Rd (2025), the annual average $PM_{2.5}$ was 5.66 μg/m^3, again above the WHO guideline, and NO_2 was just below at 8.46 μg/m^3. Concentrations of NO_2 were higher during winds from the westerly quadrants, (direction 180°S to 0°N) which is the direction of the port from that monitor.

49 The overall pattern of air pollution by wind direction is consistent with the major source of emissions being from the port and industrial area. Local roads will also contribute to pollution, especially State Highway 2 which is north of the Marae. Sea salt might explain some of the patterns for particulate matter but cannot explain patterns of NO_2 or SO_2.

50 I attribute the difference in annual averages of hourly pollutant concentrations between northerly and southerly winds at Whareroa Marae to emissions from the port and industrial area. This not precise but is a conservative approximation for a rapid analysis.

51 This is a conservative assessment, since differences in pollutant concentrations by wind direction were greater for Rata St and Ranch Rd.

52 I assumed that the exposure and the proportion attributable to the 2024-2025 port activities was uniform throughout the Mount Maunganui statistical area (SA3). Again, this is not precise but is a necessary approximation in the absence of more detailed data.

53 Comparing concentrations measured during northerly and southerly wind direction, the concentration attributed to the port and industrial area was ~1.9 μg/m^3 for $PM_{2.5}$ and ~4 μg/m^3 for NO_2 (Table 2). These increments of exposure contribute to breaches of the WHO air quality guidelines.

Adjusting for occasional missing values made no appreciable difference to these estimates.

Air quality assessment completed for the applicant

54 The assessment of air pollution exposure for the applicant was based on dispersion modelling of pollution from hypothetical shipping vessels using the expanded port (Tonkin and Taylor, 2025). The dispersion model used estimates changes in surface concentrations of pollutants based on quantified emissions from a point source, along with hourly weather data. Limitations of this approach include:

a. No account was taken of emissions from the ship's main propulsion engine when entering or leaving the port, or other changes to port activities, including increases in road and rail traffic resulting from the proposal.
b. Impacts were estimated for Whareroa Marae only: the size of the population exposed is much larger, but was not considered.
c. The existing health status of the exposed population was not considered.

55 I disagree with their conclusions that: *"For annual average NO_2 and $PM_{2.5}$, the predicted cumulative concentrations remain below the WHO 2021 guideline (and, in the case of annual average $PM_{2.5}$, the effects are immeasurably small) and therefore the overall effects are assessed as being low."* (Tonkin and Taylor, 2025)

56 Contrary to the above statement, a change in pollutant concentration of 0.1 $\mu g/m^3$ is measurable as an annual average.

57 In 2024-2025 (the only years with nearly complete data for $PM_{2.5}$) the cumulative concentrations of $PM_{2.5}$ already exceed the annual WHO air quality guideline at three monitoring stations in the vicinity of the port and industrial area.

58 NO_2 concentrations were slightly above the annual WHO air quality guideline at Whareroa Marae (2024-2025), slightly below the guideline at Ranch Road (in 2025) and not measured at Rata St.

59 Since WHO air quality guidelines have been and continue to be exceeded for a population of ~20,000 people, I am confident that air pollution exposure is responsible for adverse health outcomes, including increases in morbidity and mortality.

60 I recommend that current levels of air pollution be managed and mitigated. No further development under the Port's proposal should be permitted until levels are brought below the WHO guideline levels.

Premature mortality related to air pollution in the population of Mount Maunganui

61 Three sources of information are needed to quantify the main health impacts of air pollution exposure:

- The population-averaged long-term exposures
- The count or rate of health impacts observed
- The dose response relationship between exposure and health impact

62 Previous estimates of air pollution-related health impacts in Mount Maunganui in 2019 have been published (ESR, 2023).

63 That study compared health outcomes in Mount Maunganui with those in Otūmoetai (a less polluted area) and found that, compared with in Mount Maunganui there were: "Around five additional premature deaths in adults (>30 years) each year associated with exposure to long-term concentrations of $PM_{2.5}$ and NO_2… four cardiovascular and six respiratory hospitalisations per year associated with long-term exposure to $PM_{2.5}$ and NO_2…Two additional cases of asthma per year in under 18-year-olds associated with long-term exposure to NO_2." (ESR, 2023)

64 Since that study was completed, more comprehensive monitoring of $PM_{2.5}$ and NO_2 concentrations have become available.

65 In order to (a) assess mortality from all sources of air pollution and (b) assess mortality attributable to air pollution from the port and industrial area, I used two estimates of air pollution exposure:

a. Annual averages (all wind directions: 5 μg/m^3 for $PM_{2.5}$ and 10 μg/m^3 for NO_2), similar to the levels at Whareroa Marae and equivalent to the WHO guideline levels.
b. The time-weighted annual average exposure difference between northerly and southerly winds at Whareroa Marae(~1.9 μg/m^3 for $PM_{2.5}$ and ~4 μg/m^3 for NO_2).

66 Combining the exposure estimates by the mortality (220 deaths per year, all ages) and the dose-response (based on the HAPiNZ study: ~1% /µg/m^3 for both $PM_{2.5}$ and NO_2) there were approximately:

a. 36 premature deaths per year attributed to all sources of $PM_{2.5}$ and NO_2.

b. 5 of these 36 deaths per year (~14%) attributed to emissions of $PM_{2.5}$ and NO_2 from the port and industrial area.

67 These estimates are indicative and might be 50% higher or lower, mainly due to uncertainties in the true exposures.

68 Ideally, more precise estimates of health impact would be based on recent (eg 2023-2025) observed mortality in adults aged over 30 years, from natural causes only, since that was the population giving rise to the original dose-response estimates (HAPiNZ, 2021).

69 Counts of mortality and of hospital admissions for small statistical areas (SA1 and SA2) by cause, age, sex and ethnicity can be obtained from official sources, but this requires ethical approval and was not feasible in the time available to me.

70 However, it is possible to estimate the proportion of deaths by specific age and cause, by assuming that the national patterns are similar throughout NZ.

71 Scaling the 220 deaths per year in Mount Maunganui by the national proportion of deaths in adults from natural causes reduces the total to approximately 200 deaths per year (2023 to 2025).

72 I re-ran the estimates of mortality attributable air pollution emitted from the port and industrial area, including the refinement at [71], while also accounting for statistical uncertainties. These uncertainties were represented by the 95% confidence intervals (CI) of the findings from: (a) Hales et al, (2021) as previously applied above and in the HAPiNZ study; and (b) those used by WHO (2021).

73 The updated mortality estimates[1] are more robust, and are comparable to those derived by Dr Denison using the same "population attributable fraction" (PAF) method[2].

74 Dr Denison's use of an *age standardized mortality rate* for her incremental method is invalid. In the Mount Maunganui population

[1] [Joint Witness Statement, Schedule 4, Attachment A]
[2] [Joint Witness Statement, Schedule 4, Attachment B]

of 21,800, a rate of 303/100,000 implies there were a total of only 303x21800/100000=66 deaths. In fact there were an average of 220 deaths per year, (2023 to 2025) of which I estimate that ~200 were from natural causes in adults [69-71]. The incorrect mortality rate used by Dr Denison can explain her very low estimates of mortality attributable to air pollution using incremental risk.

75 Different methods of exposure assessment, both of which are approximate, nevertheless result in comparable estimates of mortality impacts from exposure to air pollution from the port and industrial area.

Recommended epidemiological studies

76 As described in the previous section, burden of disease estimates can be based on external dose-response relationships, such as the HAPiNZ study. However, since the community in the vicinity of the port have been exposed to a range of industrial pollutants in addition to the pollutants considered here and in the HAPiNZ study, further specific epidemiological studies are recommended.

77 Three types of study are recommended:

a. a descriptive study of the prevalence of chronic cardio-respiratory diseases in Mount Maunganui.
b. a time series study of the Tauranga population
c. a cohort study of the Tauranga population

78 Of these, only the descriptive study would be feasible given the $250,000 funding proposed by the applicant. The time series and cohort studies would require funding of approximately $2 million.

79 Routinely collected data on mortality, emergency department visits and hospital admissions are available, following ethical approval. These data can provide a detailed baseline of current health status and allow more accurate estimates of the burden of disease related to air pollution in the region.

80 Since about 10,000 people work at the port and most live locally, epidemiological studies should include the whole population of Tauranga (about 160,000 people).

81 Accurate estimates of air pollution exposure should be based on detailed dispersion modelling of emissions from all main sources in the area (shipping, port activities, industrial emissions, land

transport and household heating).

82 Time series studies can identify short-term associations between air pollution exposure and health outcomes, by analysing measurements of weather variables (temperature, rainfall, wind speed and direction) and air pollution ($PM_{2.5}$, SO_2, NO_2).

83 The atmospheric data are linked spatially and temporally to routinely collected counts of historical health outcomes (morbidity and mortality) by date, time and cause within the geographic boundary of Tauranga city. Well established statistical methods are available, which can account for the effect of wind direction and place of work on exposure.

84 A cohort study of long-term associations of health outcomes by small statistical areas within Tauranga city is also recommended.

85 Long-term exposure to air pollution generally leads to a much greater burden of disease than short term exposure, but the long-term relationship is more difficult to study. A cohort study requires, in addition to the information for a time series study, individual level information relevant to the health status, which can be obtained by anonymous linkage of health outcomes to census data in the Statistics New Zealand Integrated Data Infrastructure.

Dated 21 July 2026

Signed: S. Hales.

(Simon Edward Paul Hales)

References

Asher, 2001. Asher MI, et. al; International Study of Asthma and Allergies in Childhood (ISAAC) Phase One. The burden of symptoms of asthma, allergic rhinoconjunctivitis and atopic eczema in children and adolescents in six New Zealand centres: ISAAC Phase One. N Z Med J. 2001 Mar 23;114(1128):114-20. PMID: 11346157. https://pubmed.ncbi.nlm.nih.gov/11346157/

BoPRC, 2026. Environmental Data Portal. Environment Bay of Plenty. https://envdata.boprc.govt.nz/Data/Dashboard/92

Environet, 2023. Mount Maunganui Airshed Emission Inventory 2022. https://atlas.boprc.govt.nz/api/v1/edms/document/A4372657/content

ESR, 2023. Air Pollution: Health Risk Assessment Mount Maunganui. https://www.phfscience.nz/digital-library/environmental-health-report-air-pollution-health-risk-assessment-mount-maunganui/

ESR, 2024. Mount Maunganui Air Quality Monitoring Review 2024. https://www.phfscience.nz/media/h0djz5ff/esr-review-mount-maunganui-air-quality-2024.pdf

HAPiNZ, 2022. Health and Air Pollution in New Zealand. https://ehinz.ac.nz/projects/hapinz3/

Latch, 2025. Latsch, M., et al., Improved detection of global NO2 signals from shipping in Sentinel-5P TROPOMI data. Atmos. Meas. Tech., 2025. **18**(17): p. 4373–4395. https://amt.copernicus.org/articles/18/4373/2025/

NZDep, 2025. New Zealand Index of Socio-economic Deprivation. https://www.ehinz.ac.nz/indicators/population-vulnerability/socioeconomic-deprivation-profile/

Proposed consent conditions (Stella Passage) Appendices 5 and 5A

StatsNZ, 2026. https://tools.summaries.stats.govt.nz/places/SA3/mount-maunganui

Tonkin and Taylor, 2025. Stella Passage Development. Air quality assessment. https://www.fasttrack.govt.nz/__data/assets/pdf_file/0024/19860/Appendix-15-Tonkin-and-Taylor-Air-Quality-Assessment-POTL-Stella-Passage_Redacted.pdf

WHO, 2021. WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. World Health Organisation: Geneva. https://www.who.int/publications/i/item/9789240034228

In preparing this evidence, I have also had opportunity to review the draft evidence of tangata whenua witnesses on behalf of Ngāti Kuku and Whareroa Marae, and (to the extent relevant) the Application documents on the fast-track website

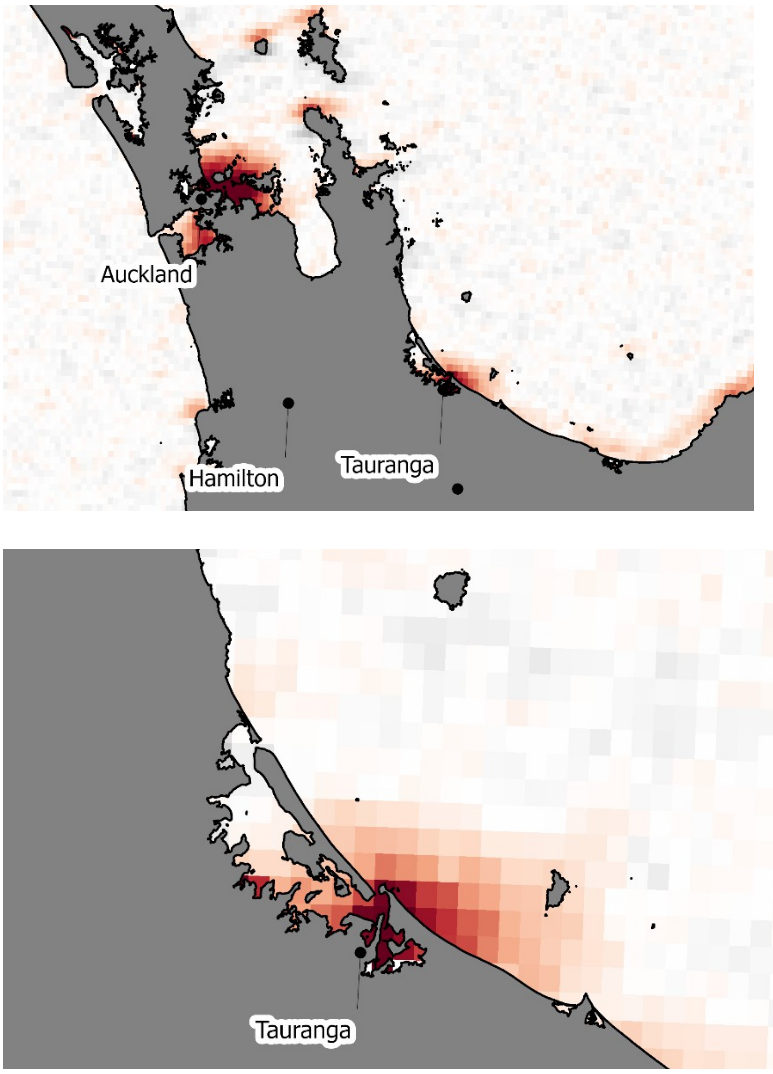

Figure 1. Measurements of tropospheric nitrogen dioxide from shipping by remote sensing (darker red indicates higher concentration). (Latch, 2025)

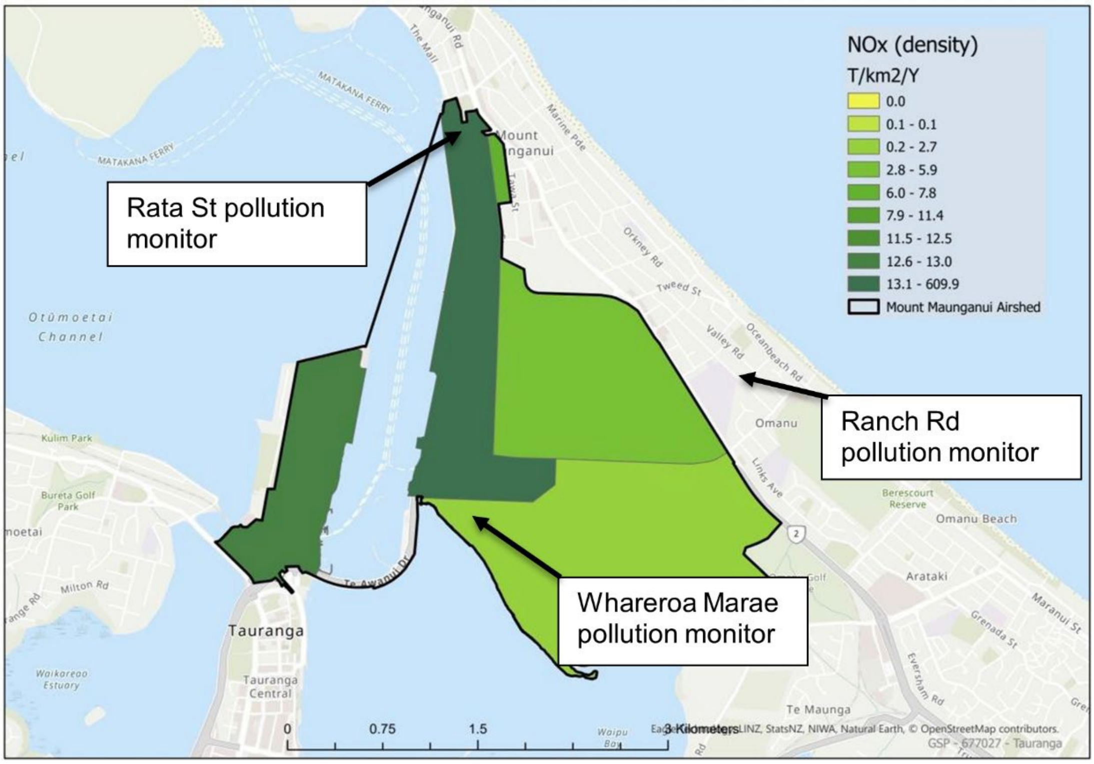

Figure 2. Map of the Mount Maunganui airshed, showing the estimated density of NOx emissions and the approximate locations of the three air pollution monitors. (source: Environet, 2023, annotated to show monitor locations).

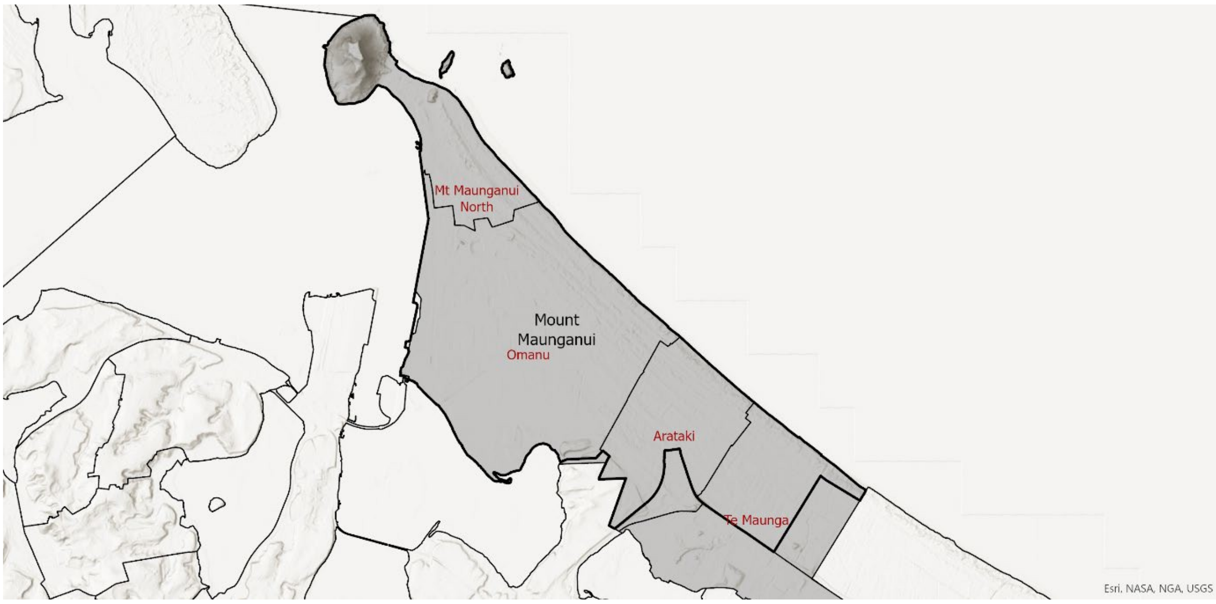

Figure 3. Mount Manganui Statistical Area 3 (SA3, grey shading). Red text within light black outlines indicates older boundaries called Census Area Units.

	PM_{10} tonnes/year	CO tonnes/year	NOx tonnes/year	SOx tonnes/year	$PM_{2.5}$ tonnes/year
Port Activities					
- shipping	17	59	749	113	17
- cargo handling	47	0	0	0	11
- trucks/ off road vehicles/handling equipment - exhaust	11	57	171	0.1	11
- trucks/ off road vehicles - brake & tyre wear	0.1				0.3
- trucks/ off road vehicles – road dust	0.4				0.1
Total Port	75	116	920	113	38
Aviation	0	18	28	2	0
Rail	0.2	2	8	0	0
Total other-transportation	75	136	957	116	38

Table 1. Aviation, rail, shipping and port emissions (Table 7.9 from Environet, 2022)

Pollutant concentration (µg/m³)			
	SO_2	$PM_{2.5}$	NO_2
Annual Average	4.96	5.19	10.02
By wind direction			
NE (0N to 90E)	7.64	5.90	6.85
SE (90E to 180S)	1.83	3.92	5.07
SW (180S to 270W)	1.26	4.55	9.31
NW (270W to 0N)	11.57	6.58	15.82
Southerly (90E to 270W)	1.39	4.42	8.37
Northerly (270W to 90E)	10.08	6.33	12.43
differences between northerly and southerly wind	8.69	1.91	4.06

Table 2. Pollutant concentrations at Whareroa Marae monitoring station, based on hourly data averaged over 2024 to 2025. (from BoPRC, 2026)

Appendix 1: Selected publications (expertise)

Yiwen Zhang, Rongbin Xu, Wenzhong Huang (et al) … Simon Hales, Wenbiao Hu , Dung Phung, Yuming Guo (2025). Respiratory risks from wildfire-specific PM2.5 across multiple countries and territories. Nature Sustainability (in press).

Wenhua Yu, Rongbin Xu, Tingting Ye, (et al) … Simon Hales, Guy B Marks, Alistair Woodward, Michelle L Bell, Jonathan M Samet, Jiangning Song, Shanshan Li, Yuming Guo (2024). "Estimates of global mortality burden associated with short-term exposure to fine particulate matter (PM2.5)." The Lancet Planetary Health 8(3): e146-e155.

Kuschel, G., Metcalf, J., Berentson-Shaw, J., Hales, S., Atkinson, J., & Woodward, A. (2022). Health and air pollution in New Zealand 2016 (HAPINZ 3.0): Volume 1–Finding and implications. Waka Kotahi NZ Transport Agency.

Kuschel, G., Metcalfe, J. L., Sridhar, S., Davy, P., Hastings, K., Mason, K., Denne, T., Woodward, A., Hales, S., & Atkinson, J. (2022). Health and air pollution in New Zealand 2016 (HAPINZ 3.0): Volume 2–Technical report. Waka Kotahi NZ Transport Agency.

Hales, S., Atkinson, J., Metcalfe, J., Kuschel, G., & Woodward, A. (2021). Long term exposure to air pollution, mortality and morbidity in New Zealand: Cohort study. Science of The Total Environment, 801, 149660.

Hales, S., Blakely, T., & Woodward, A. (2012). Air pollution and mortality in New Zealand: Cohort study. Journal of Epidemiology & Community Health, 66 (5), 468-473.

Markandya, A., Armstrong, B. G., Hales, S., (et al) … Wilkinson, P. (2009). Public health benefits of strategies to reduce greenhouse-gas emissions: Low-carbon electricity generation. Lancet, 374 (9706), 2006-2015.

McMichael, A. J., Woodruff, R. E., & Hales, S. (2006). Climate change and human health: Present and future risks. Lancet, 367 (11), 859-869.

Hales, S., Salmond, C., Town, G. , Kjellstrom, T., & Woodward, A. (2000). Daily mortality in relation to weather and air pollution in Christchurch, New Zealand. Australian & New Zealand Journal of Public Health, 24, 89-91