Our Ref: 4.22593

10 June 2025

Hon Penny Simmonds
Minister for the Environment
Private Bag 18-041
Parliament Buildings
Wellington 6160

Tēna koe Minister

Application under National Environmental Standards for Air Quality: 16A - Exceptional Circumstances causing Breach of Standard

Bay of Plenty Regional Council (BOPRC) is making an application under Regulation 16A of the National Environmental Standards for Air Quality (NESAQ). Regulation 16A allows for exceedances of the ambient air quality standards to be considered on a case-by-case basis by the Minister.

BOPRC's application is to request the exclusion of three exceedances of the PM_{10} standard recorded on 17 and 19 April 2025 at the Rata Street and Ranch Road air quality monitoring stations located within the Mount Maunganui and Bay of Plenty Regional Airsheds, respectively. BOPRC's investigation indicates that the exceedances were due to an increased volume of sea salt particles originating from specific weather conditions that combined elevated wave height with onshore winds.

BOPRC has assessed the exceedance against the five criteria specified in the NESAQ User Guide for considering exceptional circumstances. BOPRC has concluded that the exceedance of the PM_{10} standard was caused by a weather event which created a situation that directly led to the exceedance. Such an event is beyond the reasonable control of BOPRC, is infrequent and is not able to be reasonably predicted or planned for. Finally, due to the cause of the exceedance, there is no evidence that it was due to poor resource management of air; consequently, BOPRC has not been inconsistent with the purpose of the Resource Management Act (1991). Therefore, this exceedance can be considered as being caused by exceptional circumstances.

Please find BOPRC's application and supporting technical information attached. If further technical information is required, please contact Shane Iremonger, Science Team Leader at BOPRC.

Thank you for your consideration in this matter.

Ngā mihi

Mark Hamilton
Senior Policy Analyst

OFFICE USE ONLY

Application no:

Date received:

Ministry for the Environment
Manatū Mō Te Taiao

Resource Management (National Environmental Standards for Air Quality) Regulations 2004 – Regulation 16A Exceptional Circumstances

APPLICATION FORM

Before completing this form please read section 3.8 of the 2011 User's Guide to the revised National Environmental Standards for Air Quality.

Need more help? If you have any questions email info@mfe.govt.nz.

Please send your completed application form and all attachments to info@mfe.govt.nz

1 Applicant details

Name of regional council	Bay of Plenty Regional Council
Contact person	Mark Hamilton/Shane Iremonger
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Telephone number	0800 884 880
Mobile number	n/a
Postal address	Bay of Plenty Regional Council, PO Box 364, Whakatāne 3158

2 Details of exceedance event

Containment	PM_{10} (24-hour average)
Date of exceedance (*application must be received within 3 months from date of the exceedance*)	17 April 2025 19 April 2025

Relevant airshed	Mount Maunganui Airshed - Rata Street site Bay of Plenty Regional Airshed – Ranch Road site
Monitoring station and technical specifications of monitor	**Rata Street, Mount Maunganui.** Location: 50m south of Rata Street, Mount Maunganui. Located within the Mount Maunganui Airshed. Instrument specifications: Thermo model 5014i Beta Attenuation Monitor (BAM) with PM_{10} size selective inlet. **Ranch Road, Mount Maunganui.** Opposite 89 Ranch Road on the northern boundary of the Mount Maunganui College sports fields. Located within the Bay of Plenty Regional Airshed. Instrument specifications: Thermo model 5014i Beta Attenuation Monitor (BAM) with PM_{10} size selective inlet.
Summary of monitoring reading showing exceedance event	Rata Street: PM10 53 $\mu g/m^3$ – 17 April 2025. Ranch Road: PM10 59 $\mu g/m^3$ – 17 April 2025; PM10 51 $\mu g/m^3$ – 19 April 2025.
Analysis of baseline data	Refer to supporting documentation.
Source speciation or other analysis	Refer to supporting documentation.

Explanation of any previous exceedance event/s from this monitoring station in the past 5 years	Rata Street: Due to anthropogenic activities within the Mount Maunganui Airshed, elevated PM_{10} levels are common. Consequently, values above the NES PM_{10} standard value have been recorded at the Rata Street site within the past five years: • 14 July 2021 (Council's investigation concluded the cause was particulates from the surface of neighbouring yard) • 1 December 2022 (Council's investigation concluded the cause was particulates from neighbouring bulk solid material handling operation) • 12 December 2023 (Council's investigation concluded the cause was possibly from neighbouring railway land) • 11 March 2024 (Council's investigation concluded the cause was particulates from the surface of a neighbouring site) In each instance, Council investigations concluded that the exceedance events were attributed to particulates from the surface of yards, or activities at neighbouring operations. However, a strong influence can be seen in the monitoring record from the nearby marine environment when sea state conditions are conducive. Sea spray (sea salt) particles related to a specific weather pattern are considered to have been the cause of exceedances recorded at the Rata Street monitoring station on: • 9 and 10 June 2021 • 21 April 2022 • 18 and 19 August 2022 • 19 April 2023 The Minister approved the Bay of Plenty Regional Council's exceptional circumstances applications for each of those exceedances. Ranch Road: This is a more recently installed site within the Mount Maunganui residential area, within the Bay of Plenty Regional airshed, adjacent to the Mount Maunganui Airshed. Records started in March 2024. One previous exceedance event was recorded at this site on 3 October 2024. Meteorological conditions conducive to elevated wave heights, and the transport and inland deposition of sea spray particles were responsible for the recorded exceedance. The Minister approved the Bay of Plenty Regional Council's exceptional circumstances application for this exceedance on 17 February 2025.	
Monitoring readings covering exceedance event	☒ Attached X	☐ Not attached

3 Details of exceptional circumstances

Exceptional circumstances leading to exceedance	☐ Localised impact on a monitor	☐ Anthropogenic extreme event	☒ Natural disaster or natural extreme event X	☐ Other
Explanation of circumstances leading to exceedance event	An increased presence of sea spray particles originating from an elevated sea state and onshore winds is considered to have been the cause of the exceedances occurring on 17 and 19 April 2025 at the Rata Street and Ranch Road air quality monitoring stations within the Mount Maunganui and Bay of Plenty Regional Airsheds, respectively.			

Reasons why these circumstances were beyond the reasonable control of the regional council	Meteorological conditions conducive to elevated wave heights, and the transport and inland deposition of sea spray particles were responsible for the recorded exceedance. These conditions are well beyond the reasonable control of the Bay of Plenty Regional Council. Page 43 of the "2011 Users' Guide to the revised National Environmental Standards for Air Quality 2011: Updated 2014 guide" (the Users' Guide) states: *"Generally, unforeseeable emergencies and natural disasters cannot be prevented or controlled and are likely to satisfy this criterion."* All evidence that we have examined points to sea spray particles being the source of the PM_{10} exceedances on 17 and 19 April 2025. In reference to the requirements of page 44 of the Users' Guide, these exceedances can credibly be considered an unplanned circumstance that could not reasonably be predicted or planned. The events causing the exceedance of the PM_{10} air standard on 17 and 19 April 2025 can be considered exceptional due to their nature as a weather event responsible for the exceedance. The events created a situation where salt spray particles were formed in abundance and then transported under suitable wind patterns, so a conducive weather event that directly led to the exceedance. Page 45 of the Users' Guide states that: *"The majority of exceptional circumstances are likely to be related to a natural disaster or extreme weather event…".* These exceedances are considered to have been caused by sea salt from unusually high waves being transported by winds as part of a weather event. Weather events are cited in the Users' Guide as an example of exceptional events. The RMA framework is based on the principle of sustainable management when making resource management decisions. There is no evidence that this event is related to poor resource management of air as a resource. It is considered that the source of the PM_{10} exceedance on 17 and 19 April 2025 is an increased ratio of sea salt particles within the local profile. This was generated by the elevated sea state and wind patterns associated with a subtropical depression system located to the northwest of the North Island, and then the presence of a sizable anticyclone system acting in a blocking fashion centred to the east of New Zealand. Both events pushed a north-easterly wind flow into the western area of the Bay of Plenty. This connected series of meteorological events provided a means of particle generation and transportation and appears to be not uncommon as evidenced both by past external SEM analysis and our expanding data collection and consideration. It is unreasonable to expect the Bay of Plenty Regional Council to control an emission when it originates from a specific weather pattern. The 2022 HAPINZ 3.0 report and the Evaluation of New Zealand's background particulate matter sources, GNS Science Consultancy Report 2024/53, indicates that sea spray is a source of particulate matter within New Zealand. In the Mount Maunganui Airshed, bordering Ranch Road (which is itself within the Bay of Plenty Regional Airshed) sea spray has been identified as a source through a variety of monitoring programmes and was a key contributor to two weather-related PM_{10} exceedances in June 2021, and further exceedances in April 2022, August 2022 (two) and April 2023, all six of which were considered exceptional circumstances by the Minister. The October 2024 exceedance at the Ranch Road monitoring station in the Bay of Plenty Regional Airshed is a further instance of a specific combination of meteorological events resulting in an exceedance of the PM_{10} standard in the Mount Maunganui area. The Bay of Plenty Regional Council's monitoring of air quality has led to an increasing body of historical data within the Mount Maunganui area, including the Mount Maunganui Airshed (and increasingly at Ranch Road, within the Bay of Plenty Regional Airshed). This indicates that specific weather conditions can lead to increased salt spray and elevated PM_{10} readings, sometimes resulting in exceedances of the NES PM_{10} standard. For several earlier exceedances at the Rata Street monitoring site, Council commissioned Scanning Electron Microscope (SEM) analysis of filter samples to contribute to exceptional circumstances applications. In addition, because the October 2024 exceedance was the first at the Ranch Road site SEM analysis of filter samples was undertaken as a matter of completeness. However, the cost to the ratepayer of this external analysis and the subsequent staff processing and evaluation is considerable. Therefore, given our growing datasets and understanding of the contributing causes of PM_{10} exceedances from specific

	meteorological events, we tend to commission such analysis only when the causes of an exceedance are more questionable. In the instance of these April 2025 exceedances, we believe that the meteorological conditions recorded prior and up to the period 17-19 April, strongly resemble those that accompanied the five earlier events at Rata Street and Ranch Road for which the Regional Council applied to the Minister (and received confirmation) as exceptional circumstances. For the reasons outlined above we are requesting the exceedance be considered an exceptional event because the exceedance was not foreseeable, not likely to reoccur, beyond the reasonable control of the council and not within the intent of the RMA framework.	
Supporting evidence **(eg, *meteorological report*)**	☒ Attached X	☐ Not attached

10 June 2025

Shane Iremonger

Principal Advisor, Science.

Reuben Fraser

General Manager, Regulatory Services.

Supporting documentation

Background

The Rata Street monitoring station is an integral part of the wider ambient air quality monitoring network within the Mount Maunganui Airshed. The Ranch Road monitoring station is a more recent addition to the Regional Council's monitoring network and an integral part of the wider ambient air quality monitoring network adjacent to the Mount Maunganui Airshed. Like all the sites within this network, it is operated by WaterCare Ltd under contract for the Regional Council. Quality assessed and controlled data is provided from WaterCare on a following month basis. The data used in this supporting document is part of that monthly delivery QA/QC data batch.

Located at the most northerly and eastern-most positions within the network (Figure 1) means that the Rata Street, and Ranch Road sites, respectively, are fully exposed to a wide range of anthropogenic and natural sources.



Figure 1. Ambient air quality monitoring sites within the Mount Maunganui Airshed.

Previous exceedances recorded at Rata Street are mentioned below (Table 1). One previous exceedance (61 µg/m³) was recorded at the Ranch Road site, in October 2024.

Table 1. Rata Street PM_{10} exceedances.

Date	PM10 24-hour average
6/12/2019	53µg/m³ *
31/01/2020	68µg/m³
17/03/2020	87µg/m³
9/06/2021	58µg/m³ *
10/06/2021	53µg/m³ *
14/07/2021	62µg/m³
21/4/2022	53µg/m³ *
18/08/2022	64µg/m³ *
19/08/2022	73µg/m³ *
1/12/2022	80µg/m³
19/04/2023	51µg/m³ *
12/12/2023	65 µg/m³
11/3/2024	52 µg/m³

** Caused by an exceptional circumstance and approved by the Minister.*

The PM10 exceedances can be seen in the full daily timeseries plot in Figure 2.

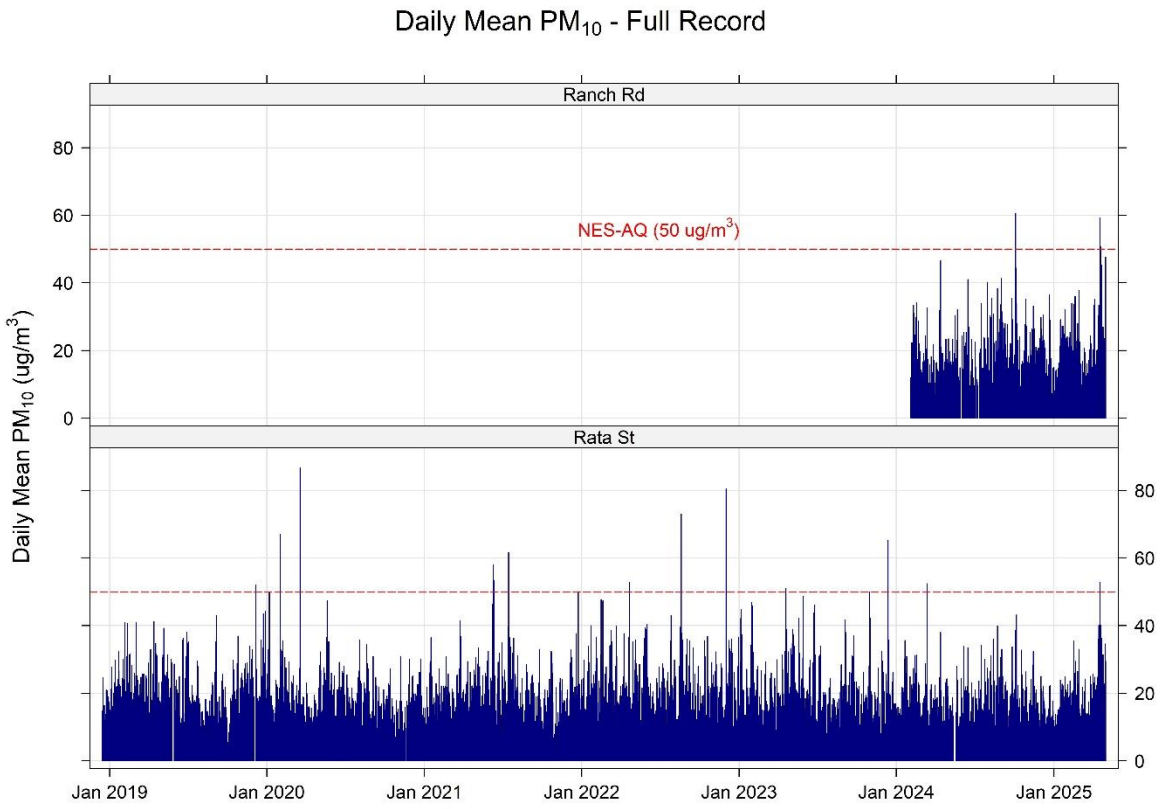


Figure 2. Ranch Road and Rata Street PM_{10} 24-hour timeseries, full record.

Like all ambient air quality monitoring sites located within urban areas, the full timeseries from the Mount Maunganui Airshed exhibits considerable variability (Figure 3). The only real difference from other urban areas is the absence of a dominant wintertime domestic heating signature, such as that shown at the Council monitoring sites in Rotorua. Analysis shows that the opposite is often the case with the Mount Maunganui monitoring sites, where an elevated summer pattern can be statistically defined, which is a result of climatic/meteorological drivers, coupled with anthropogenic activity.

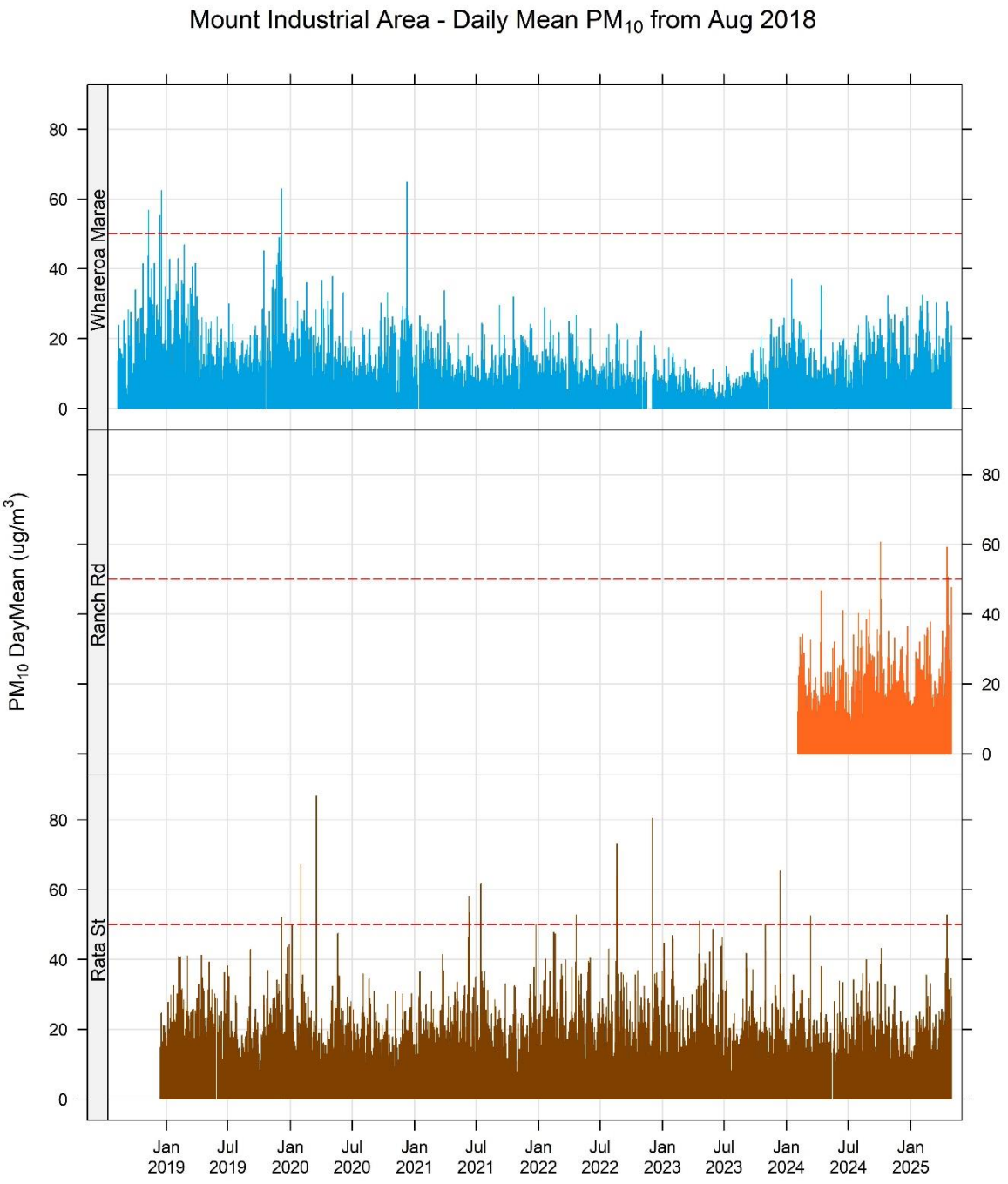
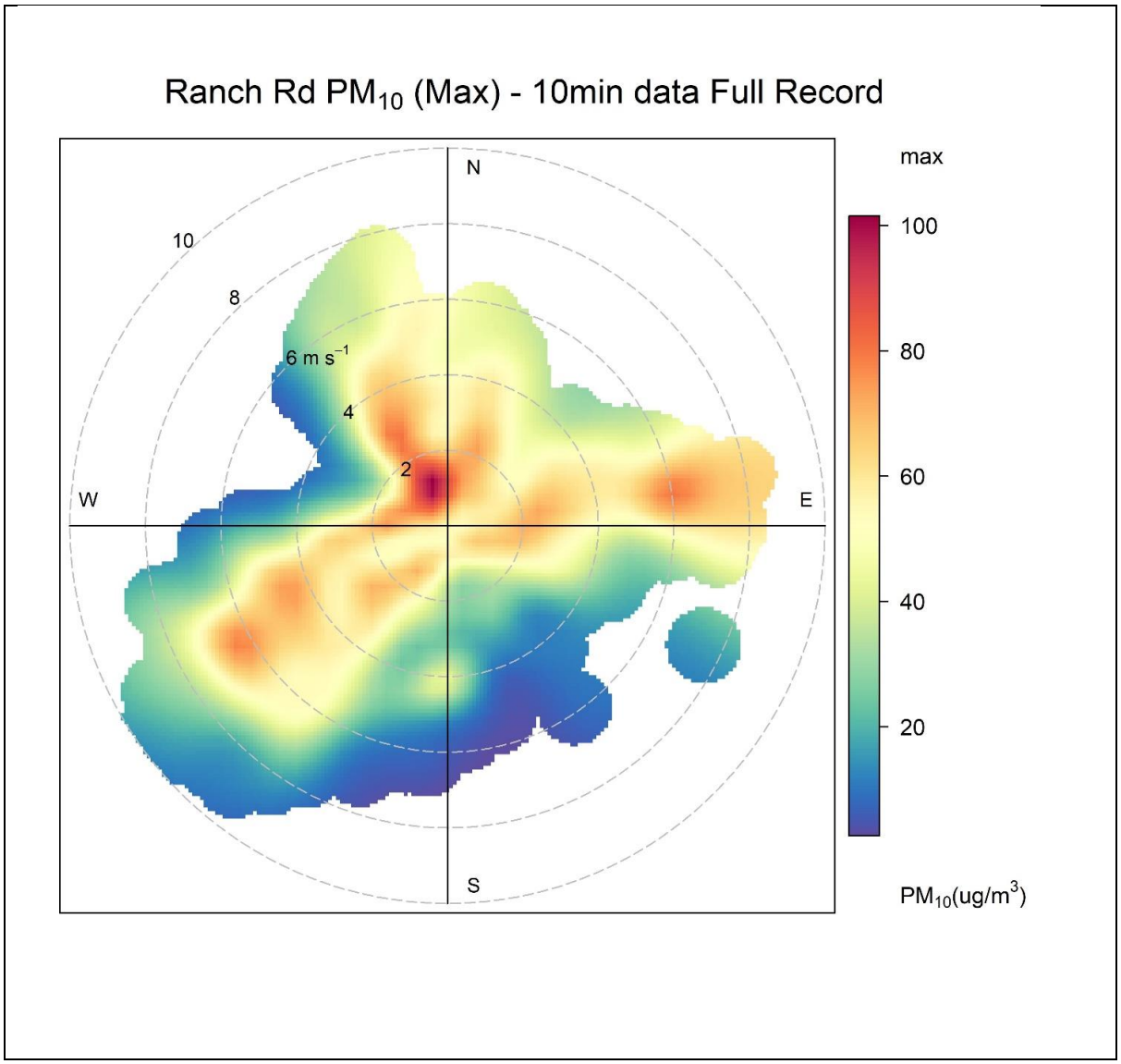


Figure 3. Full PM_{10} data for a selection of sites within the Mount Maunganui Airshed.

The Ranch Road "Max" polar plot at Figure 4 shows several source patterns whereby higher PM_{10} concentrations are experienced at the site when winds are from the southwest, northwest and east. The eastern PM_{10} signature is when winds are stronger and, interestingly, there is a situation when very light conditions from the northwest result in high concentrations, which could be a local transport signature or even a home heating contribution. For the "Mean" polar plot, there is a strong signature for a range of windspeeds from the arc in which the coastal environment is situated. However, this signature is more prominent when the windspeeds increase. Other sectors of the compass do show instances of elevated PM_{10} values but winds from the coastal sector typically have high particle concentration loads in comparison.


Ranch Rd PM10 (Max) - 10min data Full Record
N
E
S
W
10
8
6 m s−1
4
2
max
100
80
60
40
20
PM10(ug/m3)

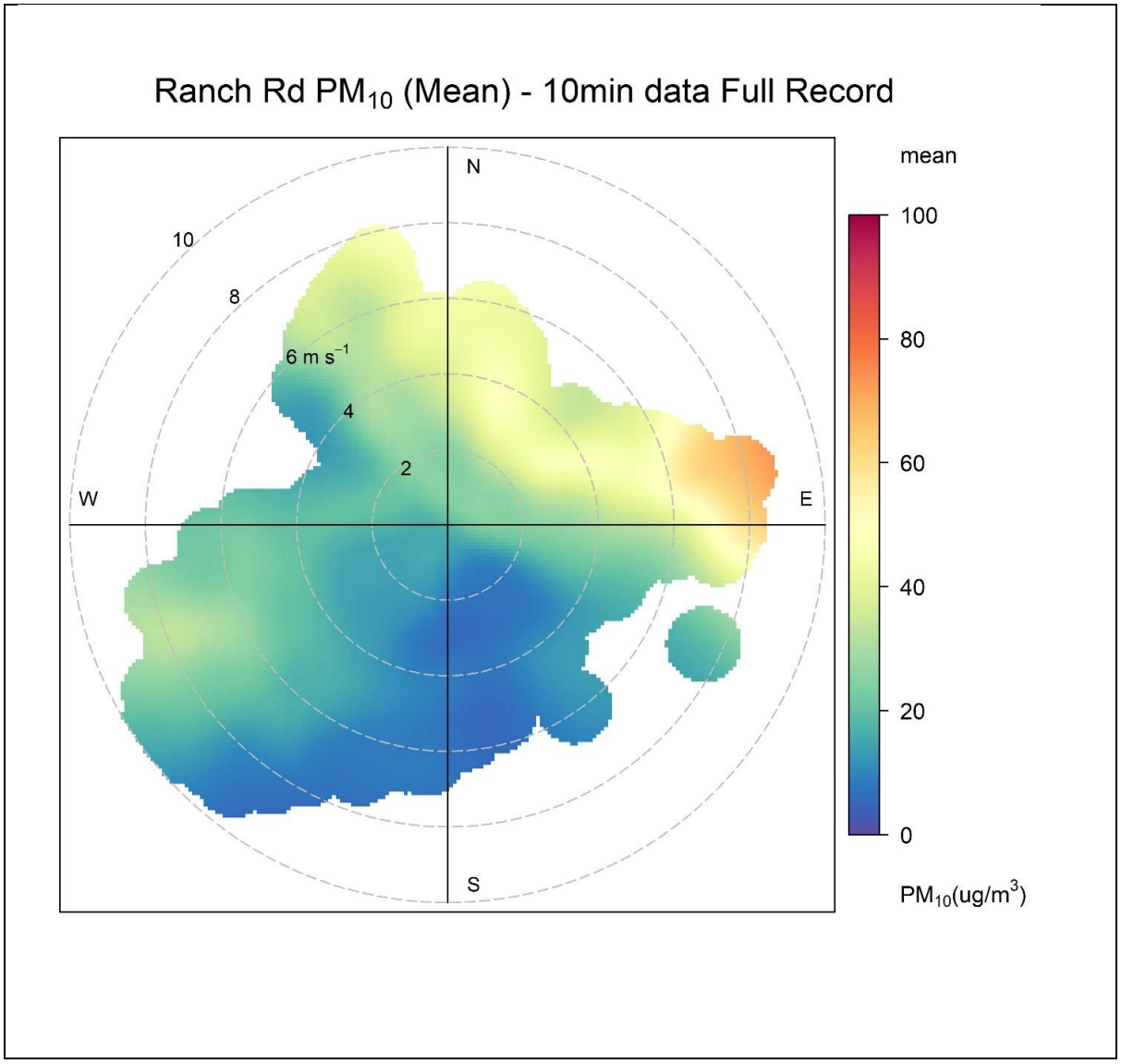
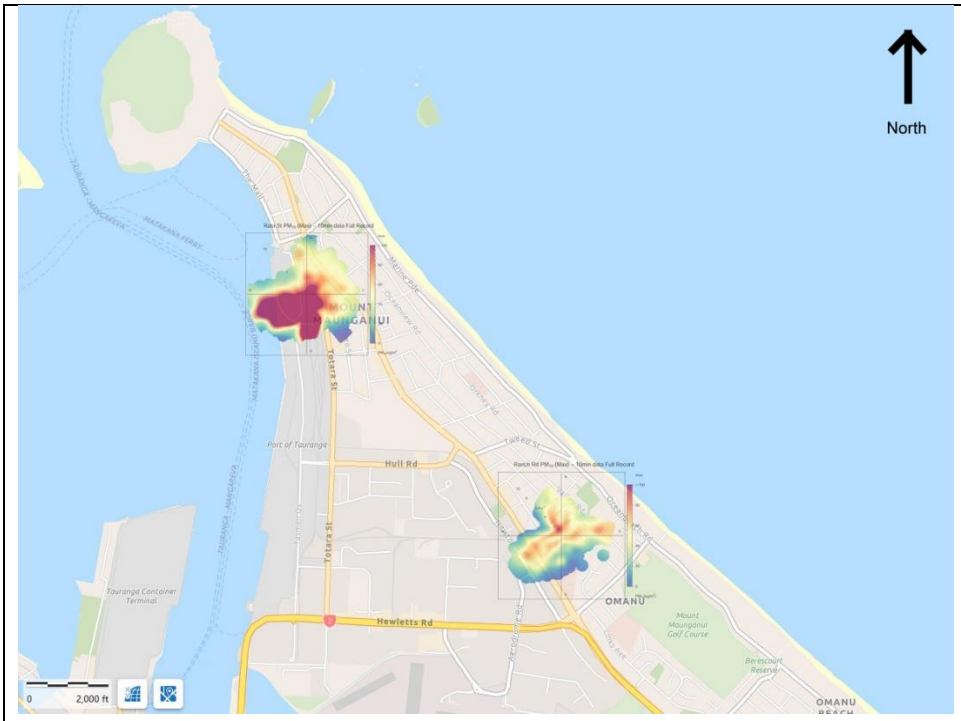


Figure 4. Full record polar plots for both the mean and maximum statistics for Ranch Road.

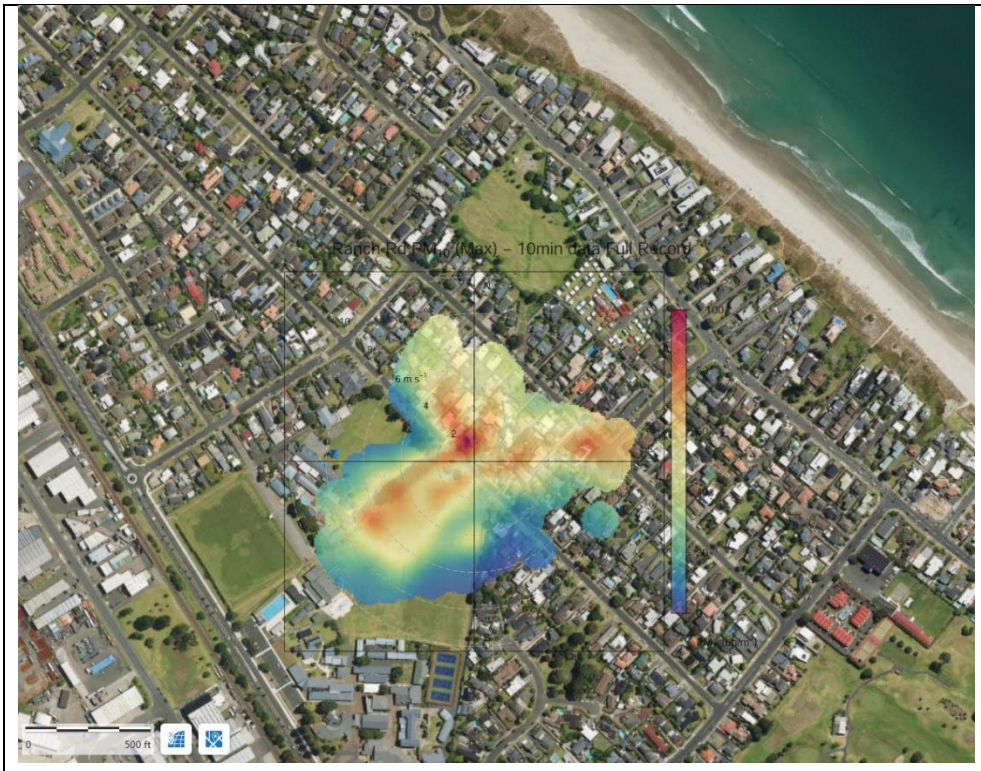
The spatial aspect can be seen in Figure 5 when the polar plots from Figure 4 is overlaid on a recent aerial image which also shows the boundary of the Mount Maunganui Airshed. Major anthropogenic particle sources are to the south/southwest and coastal sources are in an arc from the north through to the east.



Rata Street and Ranch Road



Rata Street



Ranch Road

Figure 5. The Rata Street and Ranch Road full record polar plots overlaid on aerial imagery to show source locations.

17 and 19 April 2025 PM_{10} exceedance events

The following information builds on the background information in the previous section and is more specific to the PM_{10} exceedance events recorded at the Rata Street and Ranch Road monitoring stations on 17 and 19 April 2025.

Wind direction for both days was investigated and shown to be within the north-east/easterly quadrant (Figure 6). This is a band that is away from the industrial sources of PM_{10}, and potential upwind sources are traffic roadways, residential areas, and the Bay of Plenty coastal environment.

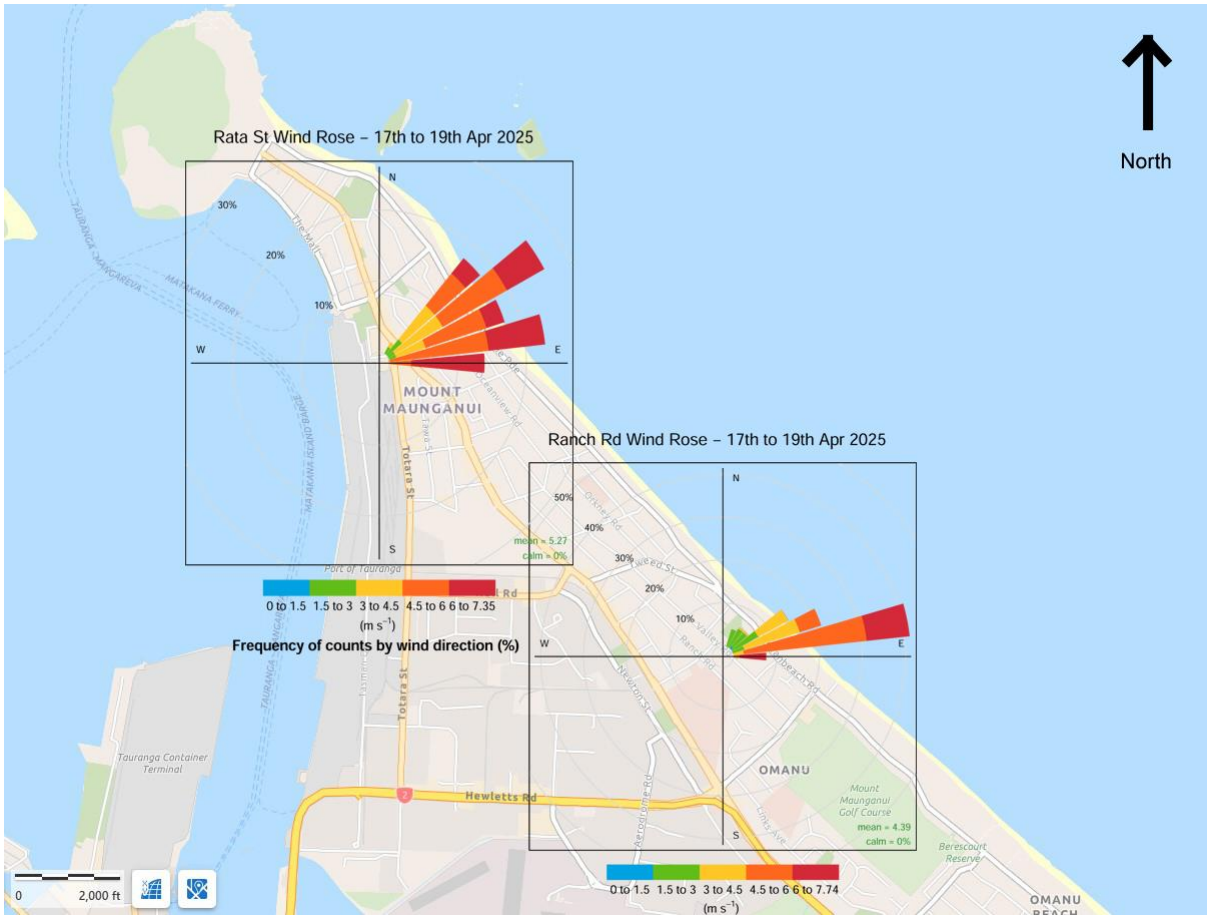


Figure 6. Windroses for the period 17th to 19th April 2025.

The wind flow over the Bay of Plenty is shown in the following maps (Figure 7). They show several important features and drivers related to the exceedance event. Firstly, the presence for several days of one depression located to the north of the Bay of Plenty and another in the Tasman Sea, and a substantial anticyclone to the east of the North Island. The resulting wind flow over the Bay of Plenty is a northeasterly one with a substantial fetch which creates a sea state which will be discussed further in this section. The depression weakened after several days but the anticyclone's continued presence to the south saw a persistent northeast/easterly wind flow.

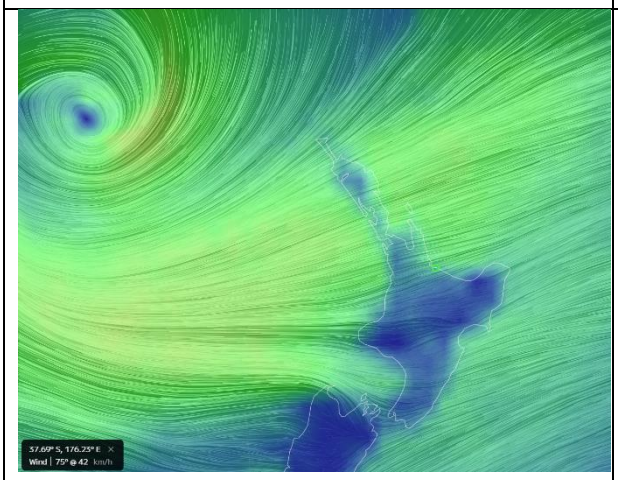
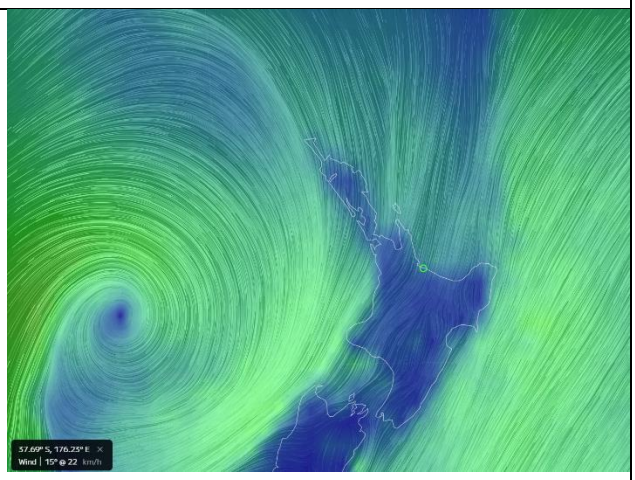
17/4/2025 (courtesy of nullWeather)	19/4/2025 (courtesy of nullWeather)
	

Figure 7. Modelled wind maps for the period of interest.

PM_{10} 24-hour datasets from the Mount Maunganui Airshed sites and Ranch Road (Figure 8) show an increase in PM_{10} concentration over a period leading up to and including the date of the exceedance. It should be noted that individual site locations are not equidistant from the coastline (as shown in Figure 1), therefore the same general patterns of increasing concentrations may apply to all datasets, but site-specific concentrations will vary, which is commonly seen in widespread particulate event such as those associated with sea spray events.

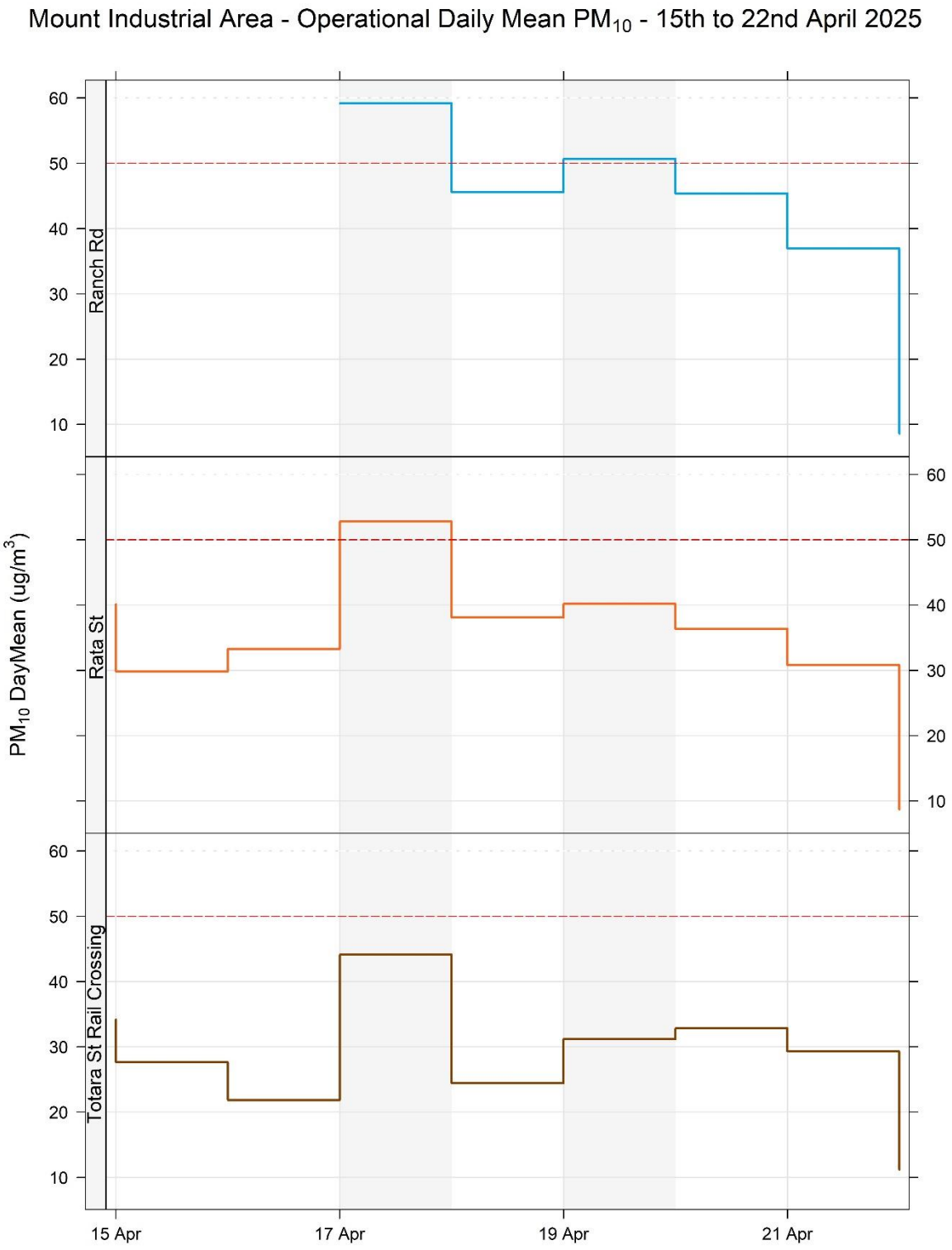


Figure 8. Daily PM_{10} plots for the sites of interest and Totara Street Rail Crossing.

The Ranch Road timeseries for the event is shown in Figure 9. The plot shows a developing level of particle concentrations which peak during the day of the exceedance and then decline during a period of subsequent southwesterly winds. The north/northeasterly wind direction relates well with the location of the coastal environment. This pattern is also evident at the Rata Street site (Figure 10). This northeasterly/increasing concentration relationship is further demonstrated with the polar plots in Figure 11, with high values recorded when the northeasterly wind flow is present.

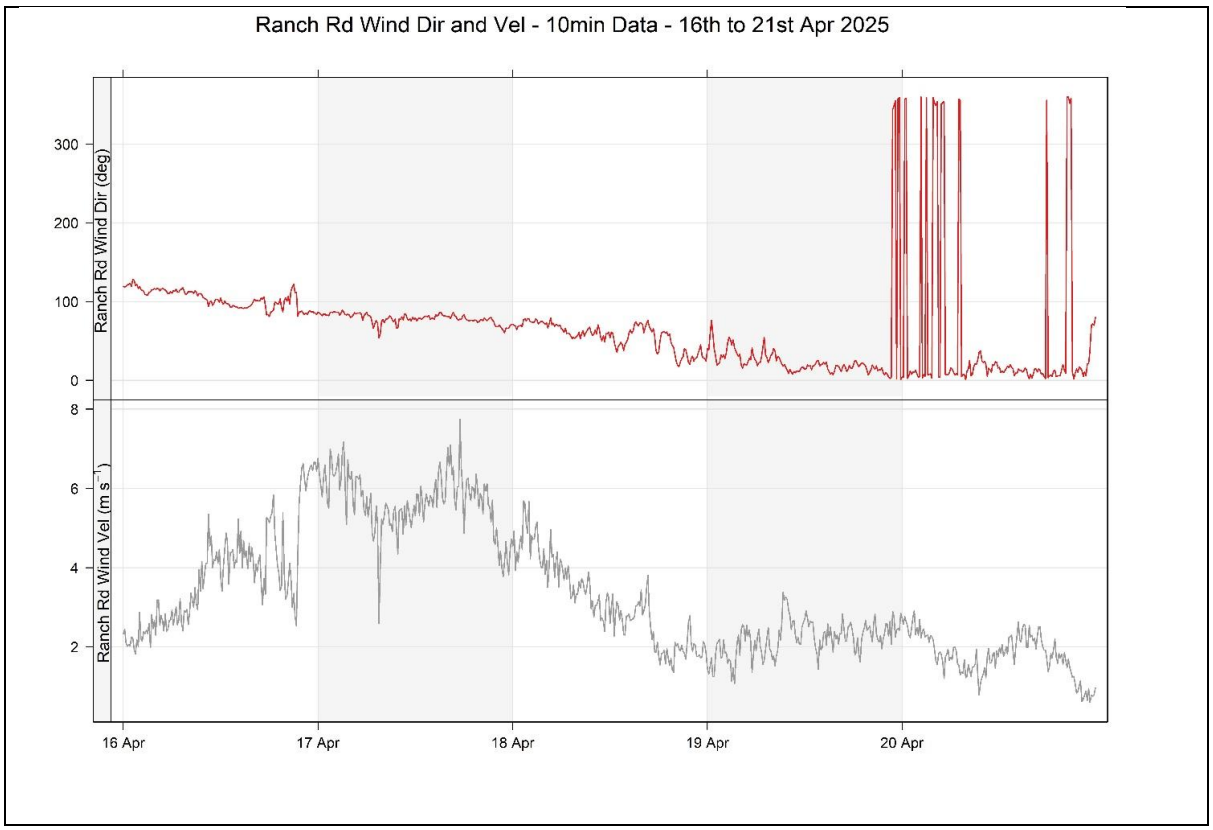


Figure 9. Wind speed and wind direction for 16 to 20 April 2025 at Ranch Road.

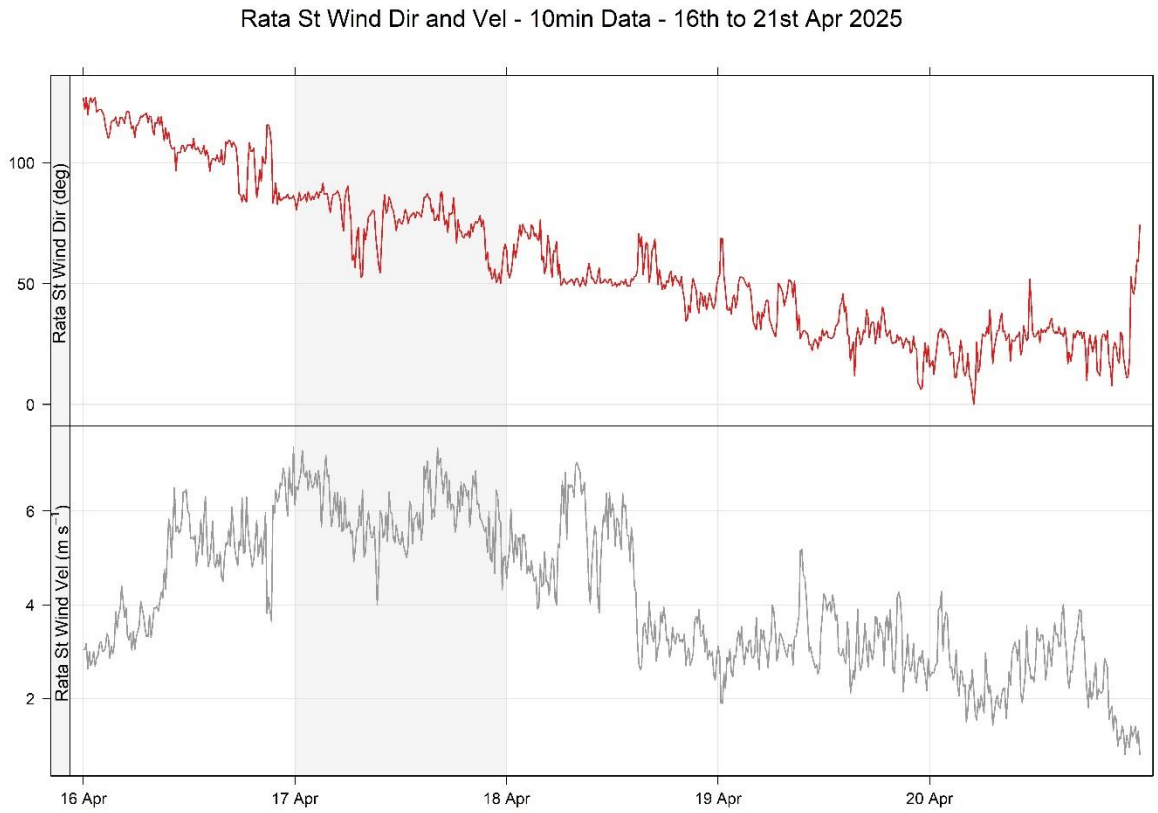


Figure 10. Wind speed and wind direction for 16 to 20 April 2025 at Rata Street.

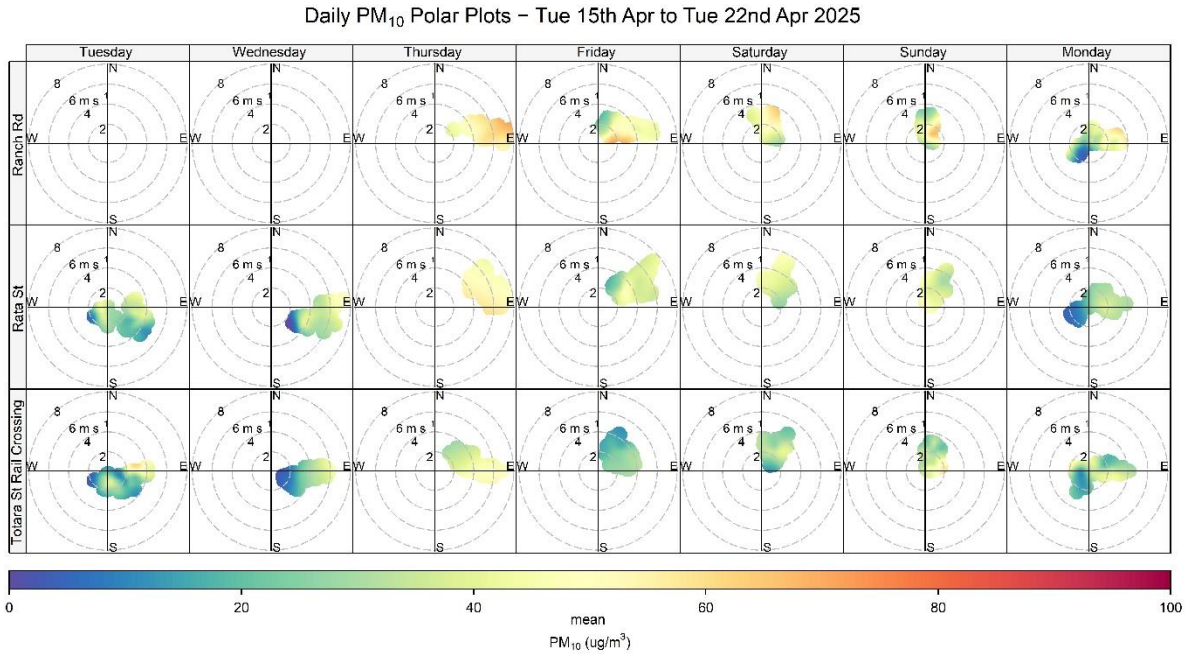


Figure 11. Polar plots for Ranch Road, Rata Street and Totara Street for the April 2025 event and preceding days.

In addition to traditional air quality datasets, several other parameters have been checked as part of this investigation. Wave parameters from a wave buoy located within the Bay of Plenty, approximately 12km off the coastline were also examined. As can be seen in Figure 12, during the time of the PM_{10} exceedance, an elevated sea state event was present within the Bay of Plenty. This was sufficiently elevated to result in areas of significant coastal shoreline erosion within the western Bay of Plenty. Wave heights were in a range of 2.5 to 6 metres for a period of several days. It is this elevated sea state that generated a source of natural sea spray particles that persisted and accumulated over several days leading up to and during the day of the exceedance.

Council officers didn't note any anthropogenic activities as possible causes for these exceedances within the nearby Mount Maunganui area, and furthermore the Council's Pollution Hotline received no calls that could be related to such activities either.

In the instance of these April 2025 exceedances, we believe that the meteorological conditions recorded prior and up to the period 17-19 April, strongly resemble those that accompanied the five earlier events at Rata Street and Ranch Road for which the Regional Council applied to the Minister (and received confirmation) as exceptional circumstances.

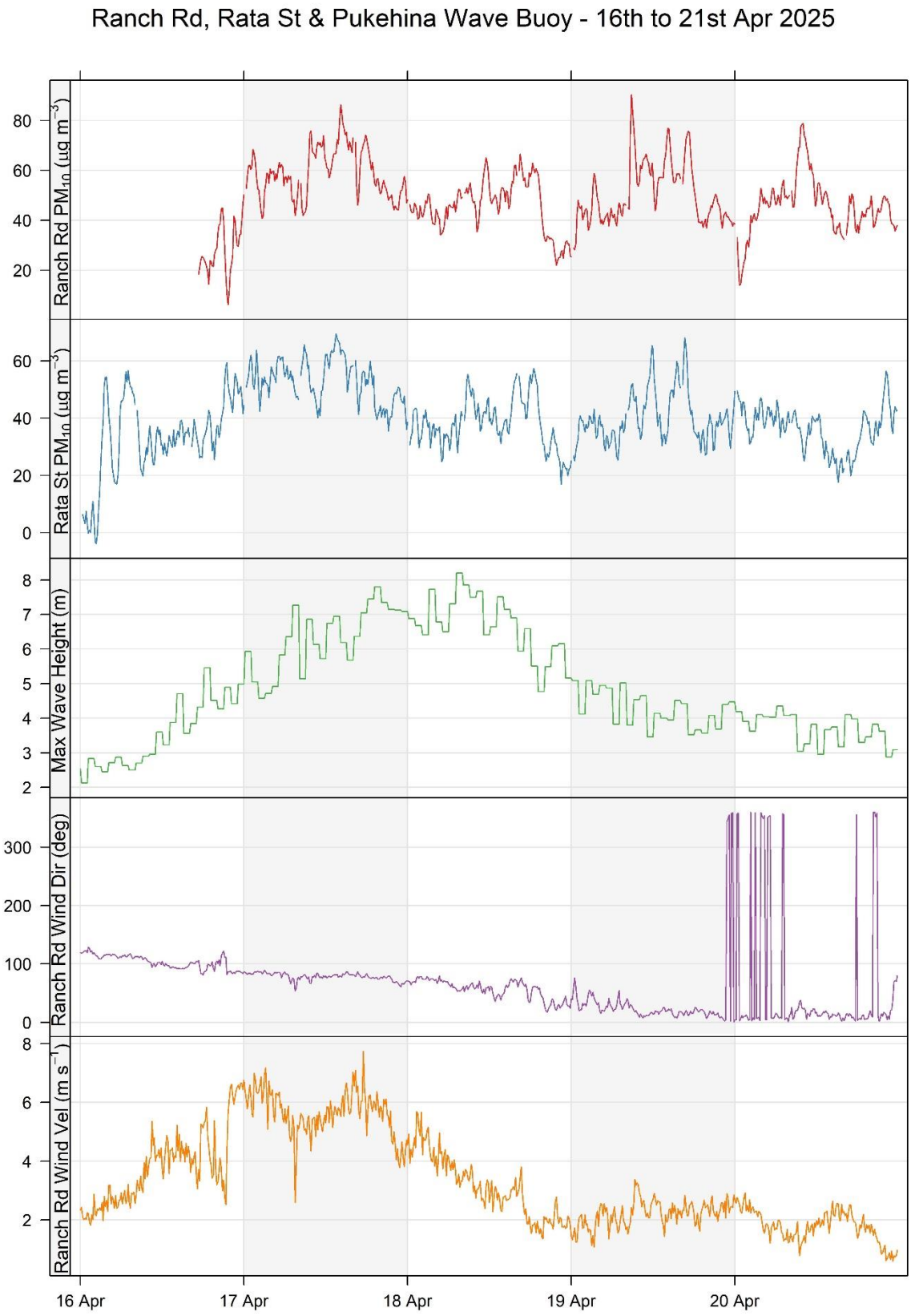


Figure 12. Ranch Road and Rata Street air quality and wave data for the event.

SEM analysis

As stated earlier in “3 - Details of Exceptional Circumstances”, the Bay of Plenty Regional Council did not commission SEM analysis for the BAM tape for the April 17 and 19 exceedance events. Due to the noted similarities identified between these exceedance events (in particular, wave height and wind direction) and those of earlier events deemed as exceptional circumstances events by the Minister, Council staff considered SEM analysis was an unnecessary expense.

However, Council staff believe that it is useful for this application to refer to SEM analysis carried out for earlier events to demonstrate the typical returns of exceedance events stemming from sea salt transported by weather events.

The following data relates to the 3 October exceedance event at the Ranch Road monitor in the Bay of Plenty Regional Airshed that received an exceptional circumstances decision from the Minister on 17 February 2025.

From Bay of Plenty Regional Council's 3 October 2024 Exceptional Circumstances application to Minister:

> *The section of tape from the BAM instrument was retrieved for the 3 October 2024 and analysed at the University of Waikato Engineering laboratory, where a SEM was used to further investigate the material collected on the tape.*
>
> *The images below and associated spectra show salt particles where the overwhelmingly common species of particles that were present, particularly on the 8:00 to 16:00 and 16:00 to 24:00 circles of exposed tape.*

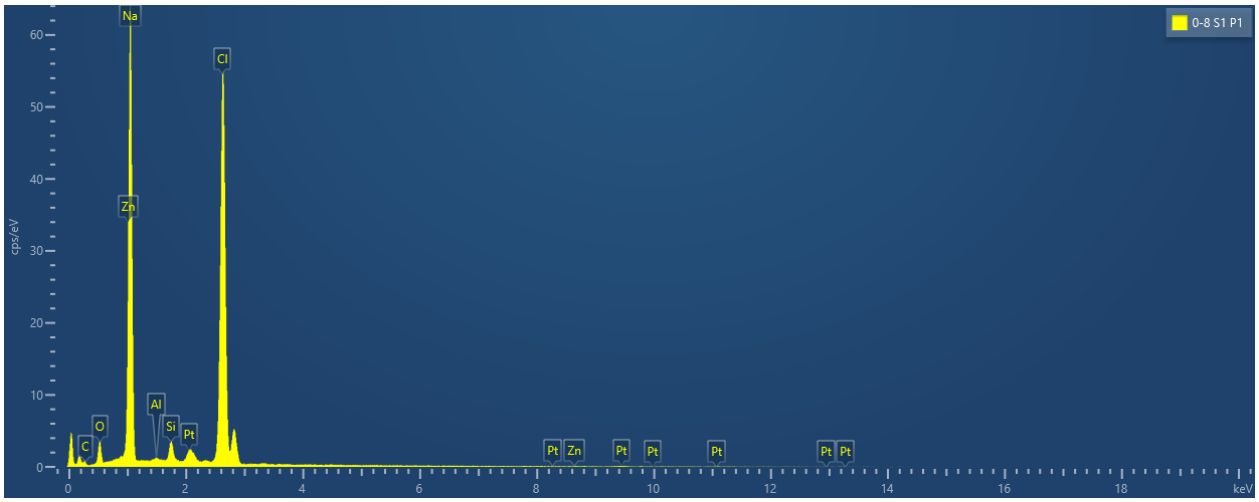
Sample 3/10/24 0-8

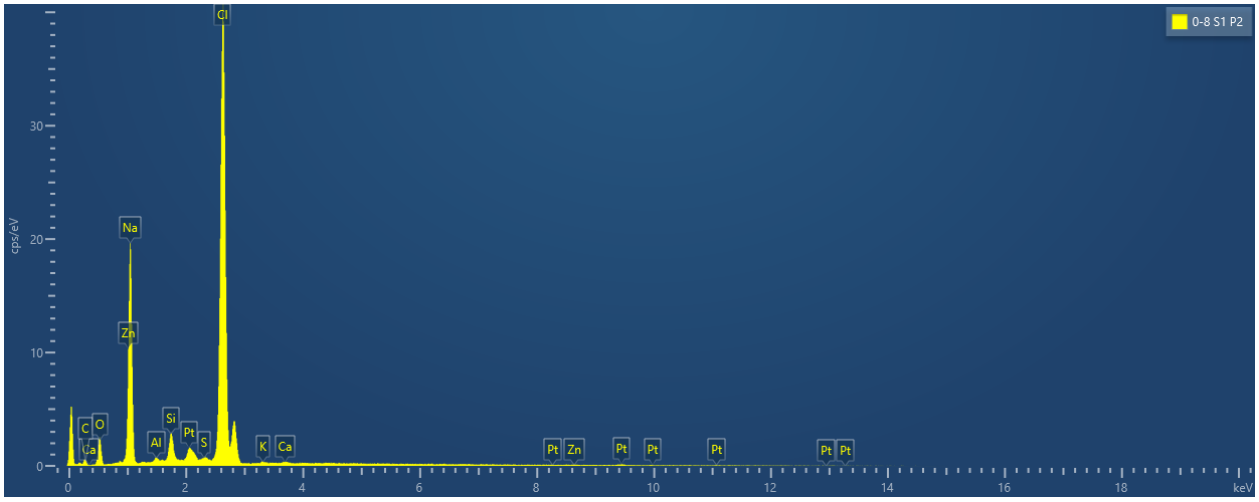


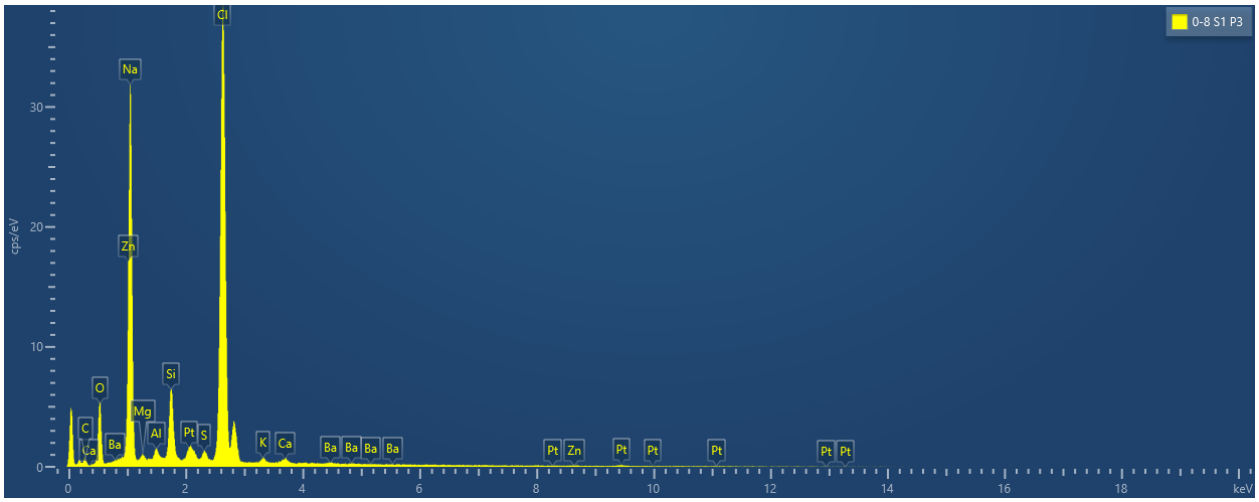
Back-scattered electron SEM image showing chosen particles for EDS analysis.

	0-8 S1 P1		0-8 S1 P2		0-8 S1 P3	
Element	**Wt %**	**Wt % Sigma**	**Wt %**	**Wt % Sigma**	**Wt %**	**Wt % Sigma**
C	7.61	0.95	11.73	1.32	10.33	1.16
O	7.43	0.24	10.72	0.29	15.62	0.35
Na	35.17	0.43	18.99	0.33	23.73	0.36
Mg	-	-	-	-	0.39	0.05
Al	0.20	0.05	0.35	0.04	0.67	0.05
Si	1.68	0.06	2.23	0.07	4.39	0.09
S	-	-	0.33	0.05	0.74	0.05
Cl	45.44	0.54	53.24	0.84	40.02	0.57
K	-	-	0.24	0.05	0.61	0.06

Ca	-	-	0.33	0.06	0.63	0.06
Zn	2.46	0.39	1.86	0.30	2.24	0.33
Ba	-	-	-	-	0.63	0.18
Total	100.00		100.00		100.00	





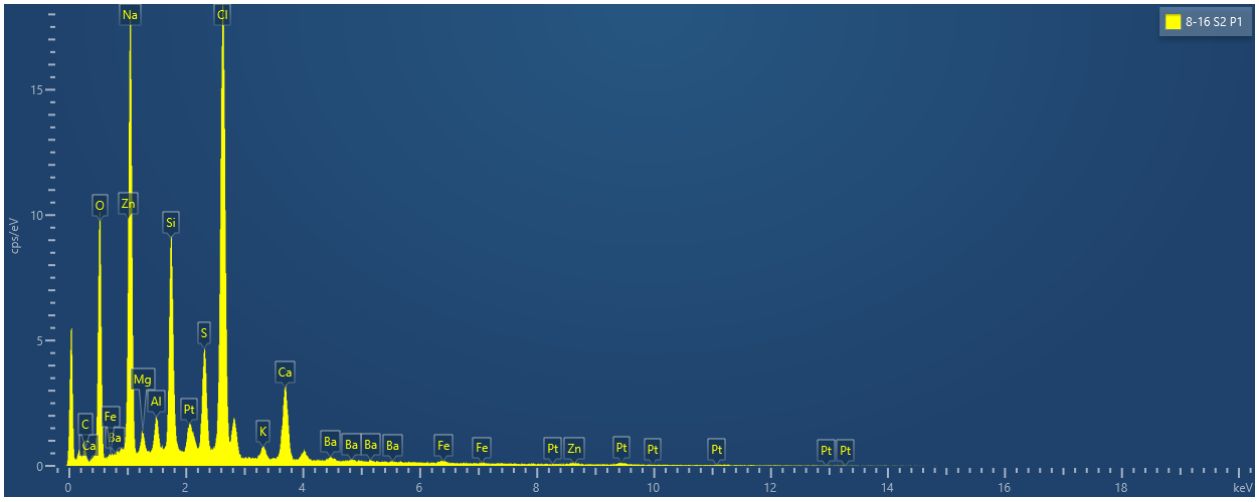


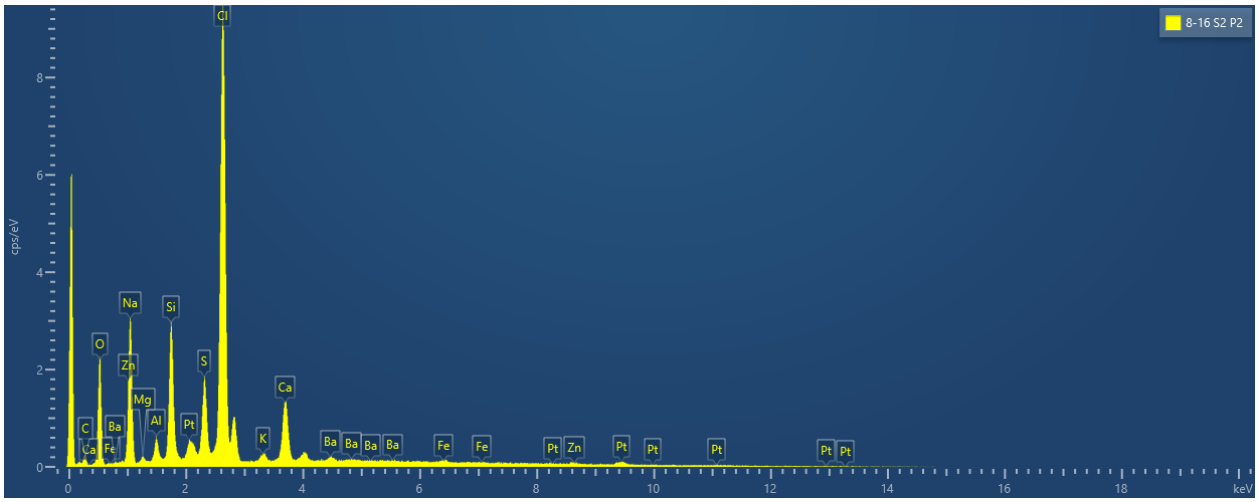
Sample 3/10/24 8-16



Back-scattered electron SEM image showing chosen particles for EDS analysis.

	8-16 S2 P1		8-16 S2 P2	
Element	**Wt %**	**Wt % Sigma**	**Wt %**	**Wt % Sigma**
C	7.25	0.93	9.79	1.06
O	29.27	0.42	23.66	0.43
Na	16.99	0.24	8.66	0.16
Mg	0.82	0.05	0.30	0.04
Al	1.21	0.05	1.10	0.05
Si	7.24	0.11	6.42	0.11
S	4.45	0.09	4.76	0.10
Cl	22.29	0.28	33.15	0.45
K	0.88	0.05	0.82	0.06
Ca	5.73	0.11	7.39	0.15
Fe	0.58	0.11	0.88	0.17
Zn	2.13	0.30	1.32	0.24
Ba	1.18	0.16	1.75	0.24
Total	100.00		100.00	


8-16 S2 P1
cps/eV
keV
Na
Cl
O
Zn
Si
S
Mg
Al
Pt
Ca
K
C
Fe
Ba

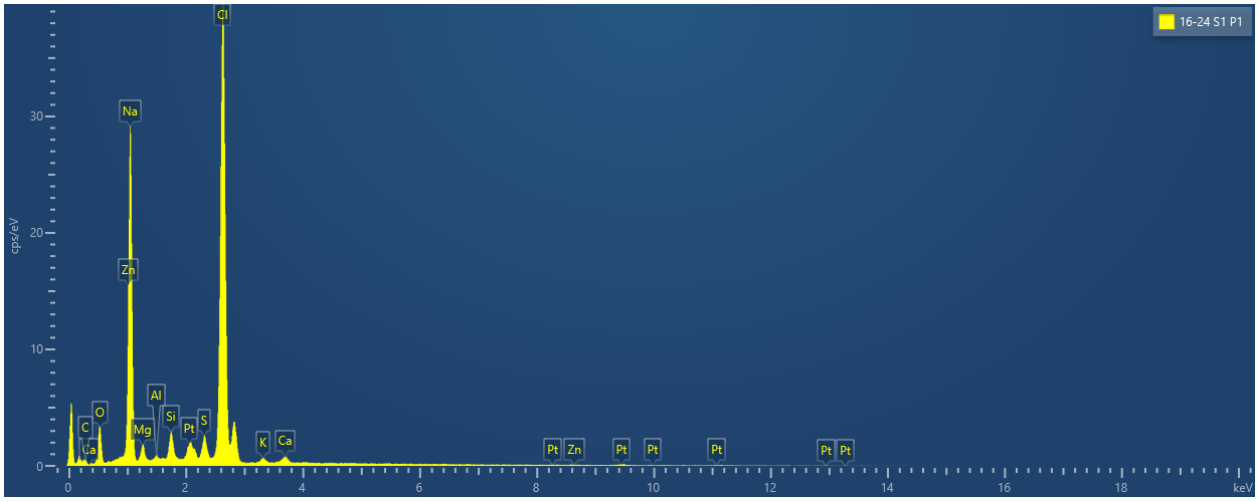

8-16 S2 P2
cps/eV
keV
Cl
Na
Si
O
Zn
S
Mg
Al
Pt
Ca
K
C
Ba
Fe

Sample 3/10/24 16-24



Back-scattered electron SEM image showing chosen particles for EDS analysis.

	16-24 S1 P1	
Element	**Wt %**	**Wt % Sigma**
C	5.89	1.46
O	12.27	0.33
Na	25.18	0.44
Mg	1.39	0.07
Al	0.34	0.04
Si	2.00	0.07
S	2.07	0.07
Cl	47.64	0.79
K	0.76	0.06
Ca	1.03	0.07
Zn	1.43	0.36
Ba	-	-
Total	100.00	



Conclusion

The information presented within this supporting document demonstrates a pattern of recorded ambient air quality and meteorological data for 17 and 19 April (and preceding days) that is in line with the influencing factor of a natural coastal environment source (sea spray-derived particles). This presence of natural particles resulted in concentrations of PM_{10} recorded at the Ranch Road and Rata Street monitoring sites that exceeded the 24-hour standard of 50µg/m^3 on 17 April (and again on 19 April at Ranch Road) and an increase in PM_{10} concentrations in the preceding days, with the entire PM_{10} "event" being the result of an elevated sea state. This phenomenon appears to be not uncommon as our datasets (and analysis) continue to grow and develop as the Council commits significant resources to managing the air quality within the Mount Maunganui area, especially within the Mount Maunganui Airshed.

