

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 air@mfe.govt.nz.

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

1 Applicant details

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2 Details of exceedance event

Contaminant	SO ₂
Date of exceedance (application must be received within 3 months from date of the exceedance)	13 th December 2020
Relevant airshed	Awatoto

Monitoring station and technical specifications of monitor

Winstone S, State Highway 51, Awatoto (Figure 1 – note that State Highway 2 has been renumbered to 51). The monitoring station is owned by Ravensdown Fertiliser Napier and monitoring is subcontracted to Watercare Services. The Winstone S site is separated from Ravensdown's property by State Highway 51, which lies to the west of the monitoring site. The site has the beach to the east, public recreation space to the south and land to the north that has been vacated by Winstone Aggregates and is not currently in use. The Thermo 43i SO₂ analyser is maintained in an air conditioned shed.



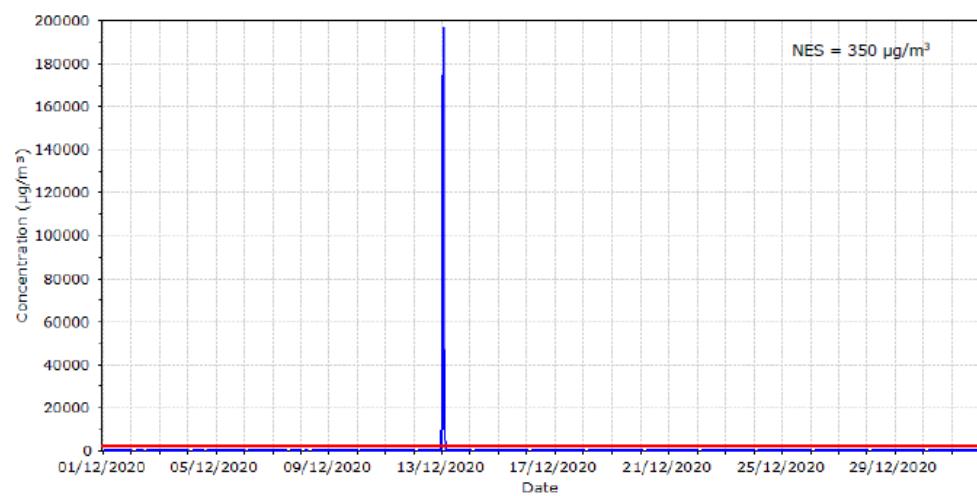
Figure 1: Ravensdown Fertiliser, Site Photo of Plant and Ambient Air Quality Monitoring Locations

Summary of monitoring reading showing exceedance event

Four exceedances of the SO₂ standard (570 µg/m³ – no exceedances allowed) occurred in the early hours of the 13th December 2020. These are listed in red below (data provided by Ravensdown and Watercare Services). The times listed are New Zealand Standard Time.

Date	Time	SO2 µg/m ³
		µg/m ³
13/12/2020	01:00	10243.2
13/12/2020	02:00	196535.2
13/12/2020	03:00	25926.8
13/12/2020	04:00	1380.8
13/12/2020	05:00	172.3
13/12/2020	06:00	71.9
13/12/2020	07:00	55.3
13/12/2020	08:00	39.1
13/12/2020	09:00	28.5

**Ravensdown Napier, Winstone S
Ambient Sulfur Dioxide (1-hour Averages)
December 2020**



Analysis of baseline data

Ravensdown provides results to the Hawke's Bay Regional Council via monthly reports. Figure 2 is a graph of monthly maximum 1-hour SO₂ concentrations extending five years prior to the incident in December 2020. The site was out of action for an extended period during 2019/2020 when power cables to the site were cut and access had to be renegotiated with Winstones Aggregates.

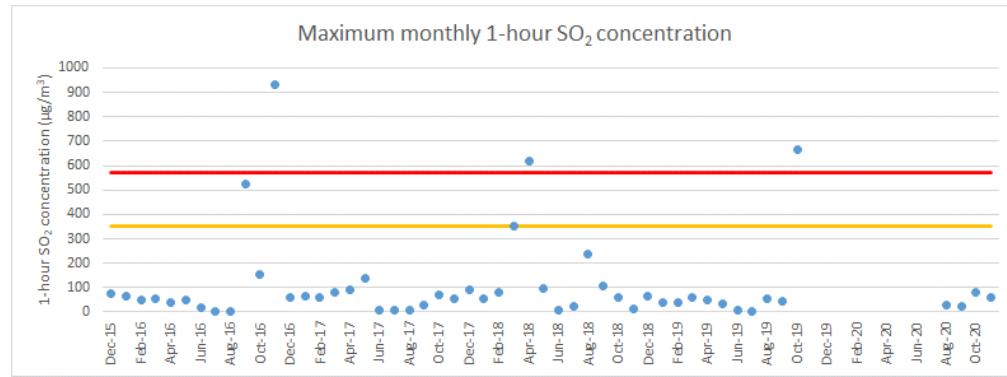


Figure 2: Maximum monthly 1-hour SO₂ concentrations ($\mu\text{g}/\text{m}^3$) sourced from reports supplied by Ravensdown to the Hawke's Bay Regional Council.

Concentrations are typically within standards but there are occasions when exceedances have occurred. These are usually associated with fugitive SO₂ emissions from fires caused by system malfunctions. The exceedances are noted in a section below.

Source speciation or other analysis

Wind direction, measured at the Hawke's Bay Regional Council particulate monitoring station in Waitangi Road Awatoto, during the early hours of the 13th December and during the time of the exceedance was from a westerly direction, i.e. from the Ravensdown sulphur storage sheds towards the SO₂ monitor (Figure 3). Wind speed varied between approximately 5 km/h to 16 km/h during the period of the exceedances.

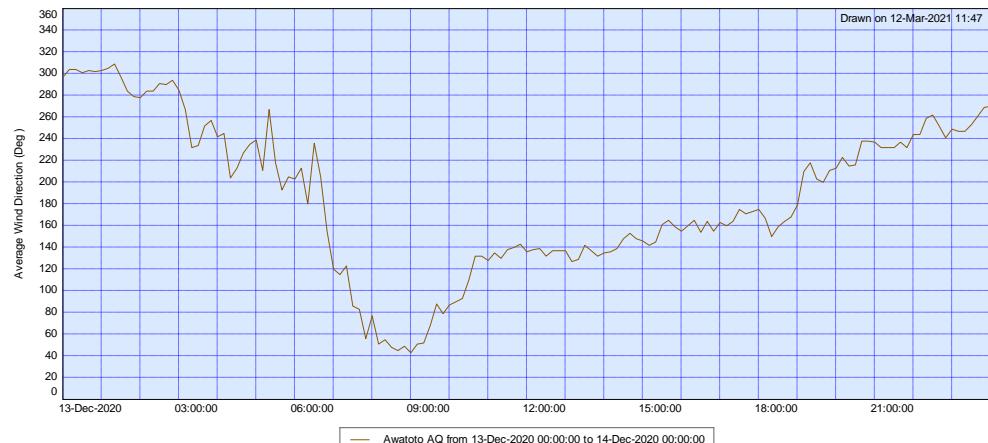


Figure 3: Average wind direction (degrees) on 13th December 2020 recorded at the Awatoto Air Quality Monitoring Station in Waitangi Road, Awatoto.

Explanation of any previous exceedance event/s from this monitoring station in the past 5 years	<p>Breaches of the NES SO₂ 570 µg/m³ 1-hour limit have occurred in the past five years and more recently:</p> <p>November 2016 – 929.8 µg/m³</p> <p>April 2018 – 620.6 µg/m³</p> <p>October 2019 – 667.5 µg/m³</p> <p>March 3rd and 4th 2021 – 698.7 µg/m³, 1317.5 µg/m³, 811.3 µg/m³</p> <p>Most of the exceedances from the plant are caused by fires arising from a malfunction of the sulphur melter, which result in the emission of high levels of SO₂.</p>
Monitoring readings covering exceedance event	<input type="checkbox"/> Attached <input checked="" type="checkbox"/> Not attached

3 Details of exceptional circumstances

Exceptional circumstances leading to exceedance	<input type="checkbox"/> Localised impact on a monitor	<input type="checkbox"/> Anthropogenic extreme event	<input type="checkbox"/> Natural disaster or natural extreme event	<input checked="" type="checkbox"/> Other
Explanation of circumstances leading to exceedance event	<p>A car careened off State Highway 51, crashed through a fence along Ravensdown's property, into a shed where sulphur was stored and initiated a fire. The incident was widely reported in the local media and investigated by the police (links below).</p> <p>https://www.newshub.co.nz/home/new-zealand/2020/12/sulphur-fire-at-ravensdown-plant-in-napier-hawke-s-bay-thought-to-be-caused-by-flaming-car-crash.html</p> <p>https://www.nzherald.co.nz/hawkes-bay-today/news/driver-vanishes-after-crash-and-sulphur-fire-at-ravensdown-napier-works/GYUQQITL6HKGMWEQUIZVP5EBRQ/</p> <p>https://www.police.govt.nz/news/release/police-appeal-witnesses-napier-fire</p>			
Reasons why these circumstances were beyond the reasonable control of the regional council	<p>The sulphur fire and high SO₂ emissions were the result of a single vehicle crash. While traffic accidents, typically involving more than one vehicle, occasionally occur at the nearby intersection of State Highway 51 and Waitangi Road, they have not previously resulted in vehicles entering and damaging Ravensdown's property.</p>			
Supporting evidence (eg, meteorological report)	<input type="checkbox"/> Attached	<input checked="" type="checkbox"/> Not attached		

12/03/2021

Date

Signed

Additional Information Requested 30/04/2021

- *A Map showing:*
 - *Where the monitoring station is*
 - *Where the crash happened*
 - *Wind direction during this time.*

Figure 4 shows the vehicle's point of entry onto the property (Accident site) and the storage shed where it came to a halt. The SO₂ monitor lies to the west of the site and a wind rose for the hours from midnight to 4 am NZST is included on the map, as well as being shown in Figure 5 separately for clarity.



Figure 4: A map of the site of where the incident and SO₂ discharge occurred on 13th December 2021. The arrow at the top right corner of the map indicates the north direction.

Average Wind Direction at Awatoto AQ
 Average Wind Speed at Awatoto AQ
 From 13-Dec-2020 00:00:00 to 13-Dec-2020 04:00:00

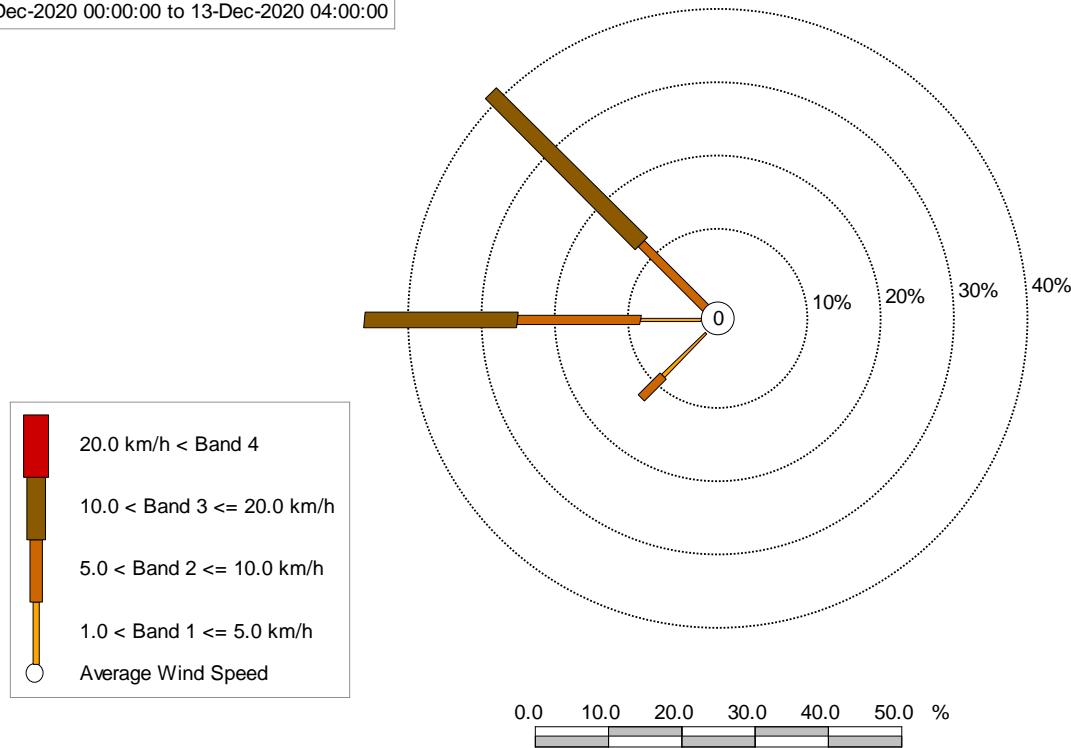


Figure 5: Wind speed and direction during the hours from midnight to 4 am NZST on the 13th December 2020.

- *The NES states that an exceptional circumstance is beyond the reasonable control of the regional council. Can you please provide an assessment under the five criteria below regarding this particular event?*
 - *Causation – whether the exceedance was caused by the event being assessed.*
 The fire arising from the accident, as described in this application, is believed to have caused the event because -
 - the timing coincided with the high concentrations measured at the monitoring site to the west of the incident,
 - the westerly wind direction during the period of high concentrations is consistent with the emissions coming from that source,
 - no other major SO₂ sources were known to be operating at that time, especially as both the manufacturing and acid plants on the property were shut down earlier in the month and were not restarted until January 2021.
 - *Control – the circumstances must be beyond the reasonable control of the regional council*
 The circumstances were caused by a traffic accident and were beyond the control of the Hawke's Bay Regional Council. Consent conditions are in place to control process and fugitive discharges to air but in this case the discharge occurred from an accidental fire resulting from unintentional and unauthorised entry onto the site. Entry occurred with some force and wasn't achieved without damaging infrastructure that was in place to contain the sulphur.

- *Foreseeability – an assessment of whether the circumstances were able to be reasonably predicted and/or planned for*
The circumstances leading to the event were difficult to foresee as they involved a rare incident, the origins of which commenced outside the boundaries of the site by an individual not involved in the plant's operations. Environmental impact assessments accompanying air discharge applications do not typically include scenario modelling of traffic accidents on adjacent roads.
- *Frequency and likelihood of reoccurrence – an assessment of how unusual the events were*
This is the first known incident of this nature to occur in this area. While collisions have occurred at the nearby intersection, none are known to have resulted in entry onto the property. The storage shed is fenced and separated from the road by road reserve and railway lines.
- *Purpose of the RMA – whether a determination that circumstances were exceptional is consistent with the purpose of the RMA.*
A determination that circumstances were exceptional is consistent with the purpose of the RMA because the exceedance did not arise from mismanaging the use, development and protection of natural and physical resources. Instead the discharge arose because of an unusual accident that was not related to the nature of the land-use at the site of the discharge or in any way related to operations at the site.

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