

# Operations Environmental Report 2017 - 2018



From Greg Campbell, Chief Executive Officer

# Operations Environmental Report 2018



## Thanks for taking time to read Ravensdown's Operations Report for 2018.

Readers may not be aware that Ravensdown is a farmer-owned co-operative. We believe in the power of smarter farming to improve environmental outcomes, strengthen communities, deliver prosperity and ultimately lead to a better New Zealand.

The way we enable smarter farming is by helping farmers reduce their environmental impact and optimise value from the land. This strategic commitment is taking us on a journey, for staff and our shareholders. It has resulted in Ravensdown being accepted into the Sustainable Business Council in February 2018. And in July I signed on as one of the 60 founding CEOs for the Climate Leaders Coalition. This commits us to reporting our greenhouse gas emissions and reducing our footprint. Our greenhouse gas footprint can be found in our 2018 Stakeholder Review. If you have not looked at this document, I encourage you to do so ([www.ravensdown.co.nz/integratedreporting](http://www.ravensdown.co.nz/integratedreporting)).

This environmental journey is ongoing, and it is why we've been producing an Operations Environmental Report like this since 2001. These reports are about stating the facts, measuring performance, identifying progress and setbacks.

We do report a few setbacks this year, when our performance has not met our expectations. Resource consent breaches are reported on page six. With such a large number of sites manufacturing or handling hundreds of thousands of tonnes of bulk material (which is defined by the Resource Management Act as a contaminant) risks are always present. We strive to do better each year in controlling those risks.

This report deals with our manufacturing operations, fertiliser stores and lime quarries. Ravensdown uses consistent measures to track our environmental performance since 2000 at our three superphosphate manufacturing sites in order to identify trends and rectify any shortfalls. Our asbestos removal programme is a major investment across the business.

But much of our activity is in how we bring science and innovation to our farming customers and shareholders. Embedded in that work is a focus on health, safety and wellbeing, and on the effects of farming on the environment. In the Stakeholder Review you can learn more about our introduction this year of the ClearTech® system for dairy farm effluent, innovative fertiliser products and the growth of our farm environmental consultancy business.

Thank you for taking an interest in our operations and our environmental credentials. We appreciate you taking the time to read this report and learn about what our team is doing to make progress on the environmental front.

**Greg Campbell**  
Chief Executive Officer  
17 August 2018



Photo: Central North Island

Cover: Dunedin works at Ravensbourne on Otago harbour

# Manufacturing sites

Emissions across all three superphosphate manufacturing sites are closely tracked. Fluoride and sulphur dioxide emissions per tonne of fertiliser output continue to be at reduced levels. Updates from each site are provided below.

## Napier Works



Improved recycling options



Settling Pond



Chemical shed in neutralising pit

- Open Day held on 5 April 2018 for neighbours and community with 80 visitors
- Chemical shed and neutralising pit installed at acid plant to store automated caustic addition system. Better effectiveness in cold weather
- Replacement of settling pond suction pipe from the outlet to the sump, with larger pipe to allow discharge water from the site at a faster rate but still within our resource consent limits. This has eliminated this risk of flooding to that area. Also upgraded the screen and installed a platform that enabled easier access to the area and ability to clean the screens through the use of a winch system.
- Set up an additional recycling areas for our waste closer to the main office area. This area includes paper, cardboard, aluminium/tin cans, plastic bottles and general waste.

## Christchurch Works



Open Day held for Hornby community



Storm water management



Fine mist sprays have been installed.

- Open Day held for community on Thursday evening, 7 December 2017 with 45 visitors.
- Further work completed on managing the storm water from the site focusing on urea despatch and surrounding hardstand. This project separated the clean roof water and sent this to the City's stormwater system, whilst capturing and reusing stormwater within the urea despatch catchment.
- Fine mist sprays have been successfully installed in the rock storage area (doorways) to reduce dust leaving the storage areas.

## Dunedin Works



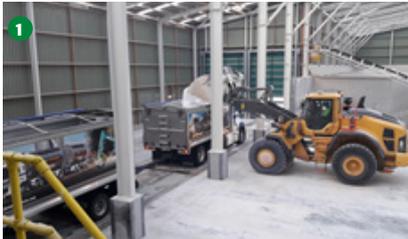
The Moller Park Memorial Arch based at the exit of the Dunedin Works was demolished



Opening for the new memorial, 15 December 2017, with Dunedin Works Manager Tony Gray and Community Liaison Group member, John Neilson

- Open Day held on 15 February 2018 with 55 visitors from local businesses to residential neighbours.
- The Moller Park Memorial Arch based at the exit of the Dunedin Works was demolished in December 2017 after locals became concerned it had become a safety hazard for people exiting Moller Park on to busy State Highway 88. Built in 1937 to recognise the achievements of West Harbour mayor, councillor and Otago Harbour Board member, Hagbarth Ernest Moller, Dunedin Works and a community working party worked with the Moller family on a design and location for the replacement memorial. This was funded by Ravensdown.

# Stores network and lime quarries



## The Stores Network

- New Plymouth Store – new store opened with site water and dust mitigation two key design features
- New consented irrigation system at Marlborough Store
- Hinds Store reforms stormwater swale and commission groundwater studies

- In addressing a noncompliance letter from last year, the Timaru store and Environment Canterbury have been working closely on understanding stormwater and seepage related issues, including isotopic testing currently underway.
- New pumping system has been installed at Balfour Store, and the catchment area reformed

## Lime Quarries

- Lagging of the drying drum at Dipton which has reduced coal consumption per tonne by approx. 20% and increased production rate in winter when raw material wetter by approx. 10%
- Project started in consultation with local iwi to protect Maori rock drawings in limestone areas at Geraldine Quarry
- Substantial decrease (up to 40% per tonne handled) of diesel consumption over the last two years through purchase of fit for purpose, efficient Volvo Construction equipment at Geraldine and other quarries
- Recycle/re-process project for processing waste previously discarded into usable materials using specialised re-screening and washing technologies. Have produced high grade material for lime flour production, Aglime production and a range of decorative landscaping limestone chip.

1: New Plymouth store in action

2: Inside New Plymouth store

3: Efficient Volvo Construction equipment at Geraldine

4: Drying drum at Dipton

5: Recycle process project

6: High grade material for lime flour production

# Environmental performance and compliance

All environmental comments/complaints are logged as part of our Environmental Management System. This applies to all aspects of our operations. All complaints are treated seriously and handled through our corrective action system. This ensures complaints are documented, investigated and where improvement opportunities are identified, appropriate actions are taken and communicated back to the complainant. A summary of current and historic complaints relating to the three superphosphate plants is provided below.

<b>2017-2018 Environmental Complaints</b>	<b>Napier</b>	<b>Christchurch</b>	<b>Dunedin</b>	<b>Total by Type</b>
Odour	0	6	3	9
Noise	0	0	7	7
Dust	0	2	1	3
Other	1	2	0	3
<b>Total</b>	<b>1</b>	<b>10</b>	<b>11</b>	<b>22</b>

<b>Environmental Complaints</b>	<b>Napier</b>	<b>Christchurch</b>	<b>Dunedin</b>	<b>Total</b>
<b>1998-1999</b>	2	9	33	44
<b>1999-2000</b>	6	31	7	44
<b>2000-2001</b>	6	35	8	49
<b>2001-2002</b>	3	17	13	33
<b>2002-2003</b>	3	13	33	49
<b>2003-2004</b>	6	15	16	35
<b>2004-2005</b>	12	16	19	47
<b>2005-2006</b>	17	126	7	150
<b>2006-2007</b>	5	35	4	44
<b>2007-2008</b>	4	68	7	79
<b>2008-2009</b>	0	23	19	42
<b>2009-2010</b>	0	12	25	37
<b>2010-2011</b>	2	8	30	40
<b>2011-2012</b>	4	12	34	50
<b>2012-2013</b>	2	14	29	45
<b>2013-2014</b>	0	17	22	39
<b>2014-2015</b>	4	21	14	39
<b>2015-2016</b>	1	13	30	44
<b>2016-2017</b>	0	9	8	17
<b>2017-2018</b>	1	10	11	22

# Environmental performance and compliance

## There were four breaches of resource consents or general environmental rules in 2017-18.

1. Hinds store had a non-compliance letter after Environment Canterbury review of consent compliance in February 2018. Related to aspects of a 2008 consent that had not been fully implemented. By April, the site was compliant with its resource consent.
2. Christchurch Works is in the Hayton Stream catchment. The City Council hold a stormwater consent with Environment Canterbury. An infringement notice and fines totally \$1,500 were incurred for a stormwater escape incident that the company reported.
3. Napier Works – on 30 May 2018 a hole developed in a fibreglass pipe carrying acidic scrubber liquor from the manufacturing process. The pipe was close to the main road. Clean up of the 4 minute emission entailed shutting the road for 3.5 hours. Drains were protected and clean up liquid was returned to the plant.
4. Napier Works – In the April 2018 acid plant start up, the company notified the Hawkes Bay Regional council that it had breached National Environment Standards for sulphur dioxide emissions to air. The short-lived breach has been addressed by venting to a higher point. In relation to the incident, an infringement notice with a \$1,000 fine, and an abatement notice were issued in July 2018.

# Environmental performance indicators

2016-2017	Air*		Water*		
	kg SO <sub>2</sub> /t ssp	kg F/t ssp	kg F/t ssp	kg P/t ssp	kg SS/t ssp
<b>Napier</b>	0.33	0.001	0.003	0.004	0.003
<b>Christchurch</b>	2.57	0.008	na	0.003	0.003
<b>Dunedin</b>	1.97	0.004	0.048	0.001	0.051
<b>Average</b>	1.20	0.004	-	0.003	0.013

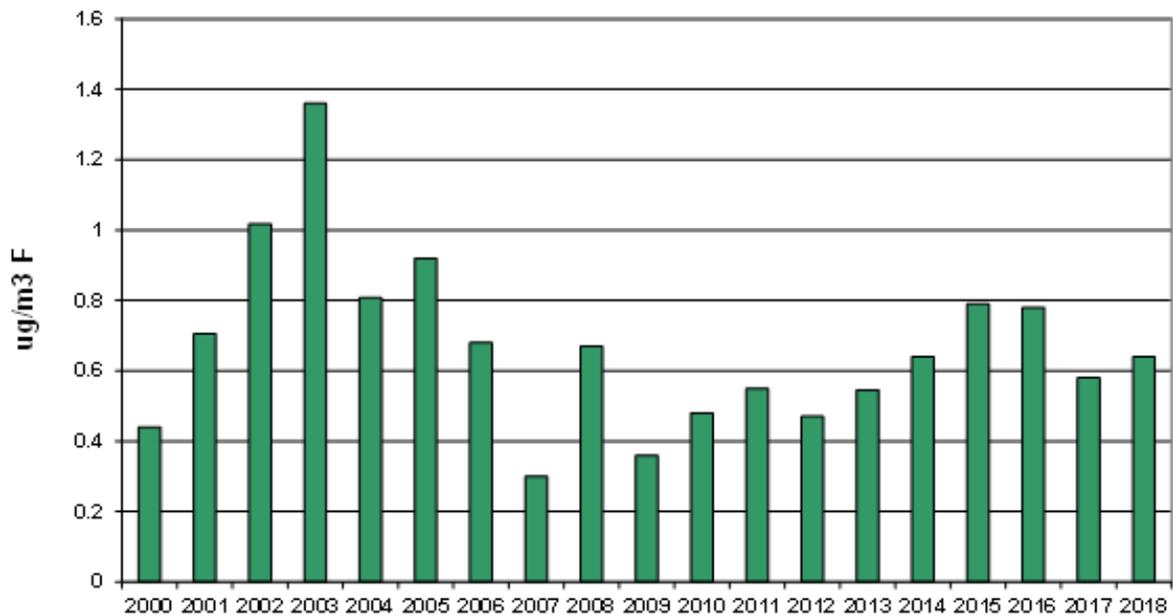
Christchurch has only recently started to measure water discharge from site, as the majority is returned to the green water system and re-used. Fluoride has not been measured.

\*Based on the quantity of superphosphate (ssp) despatched from each site: Christchurch and Dunedin operate single absorption acid plants, the Napier plant with double absorption provides superior conversion levels which in turn give very low discharge levels of SO<sub>2</sub> to air.

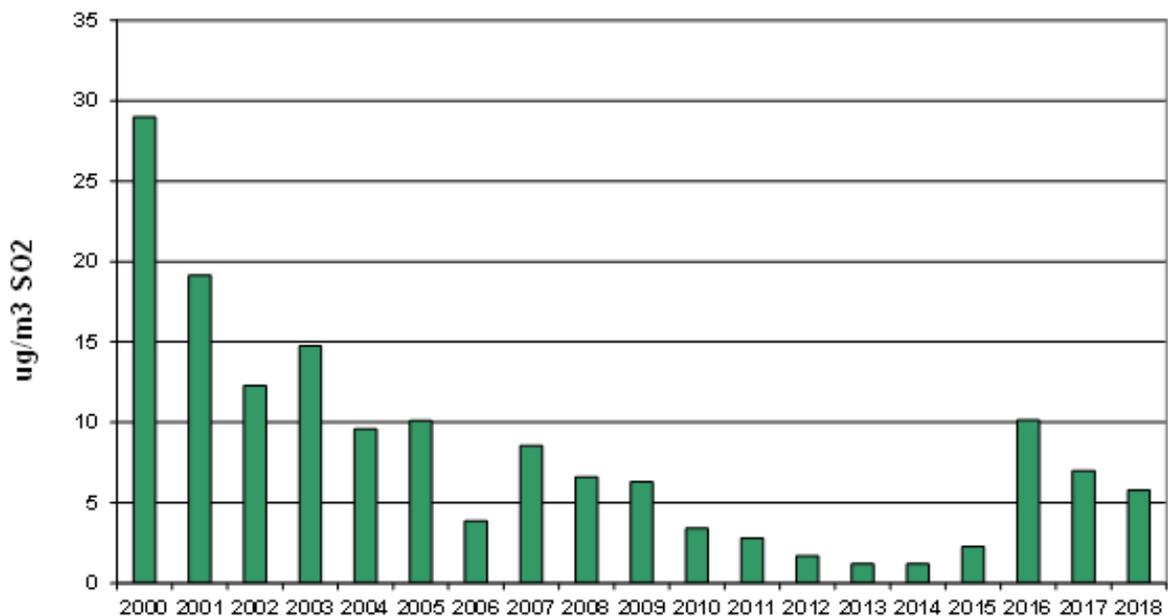
# Average ambient air levels

It is important to note that because ambient monitors are at varying distances from source, comparisons between the three works are not relative.

### Dunedin Average Ambient Fluoride

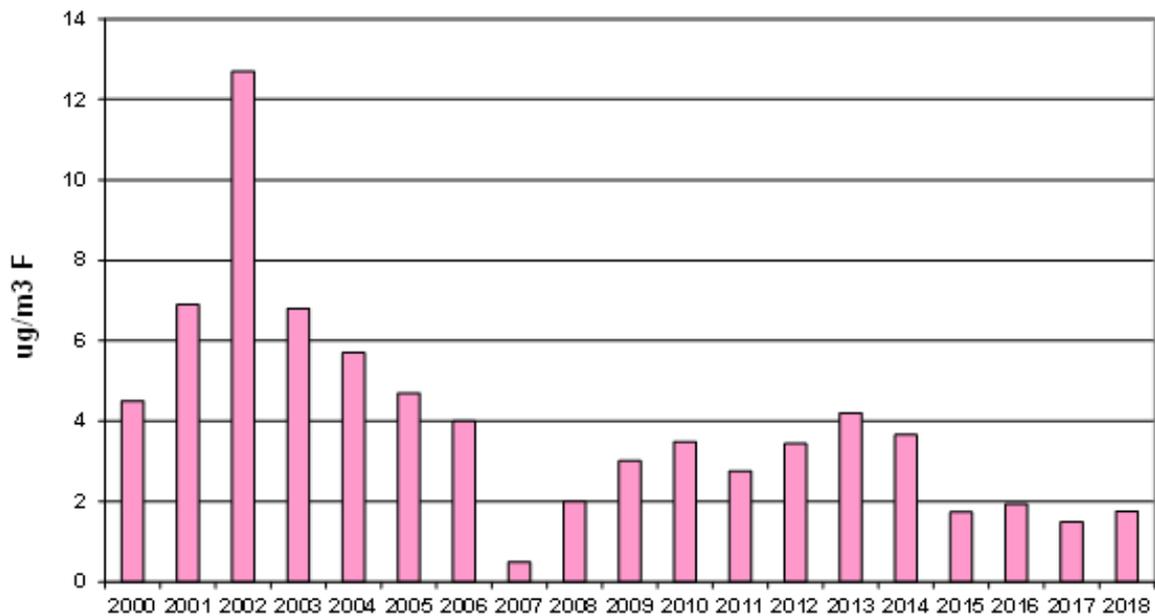


### Dunedin Average Ambient Sulphur Dioxide

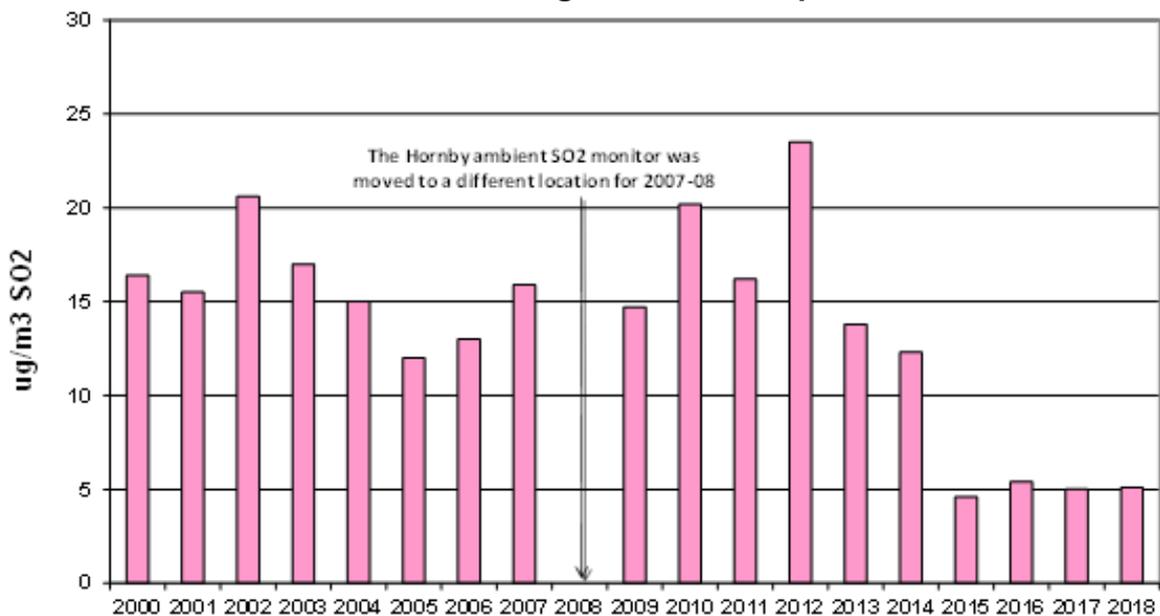


In 2015-2016, some recalibration of the data being received at the SO<sub>2</sub> monitoring site occurred, resulting in an apparent increase in levels.

### Christchurch Average Ambient Fluoride



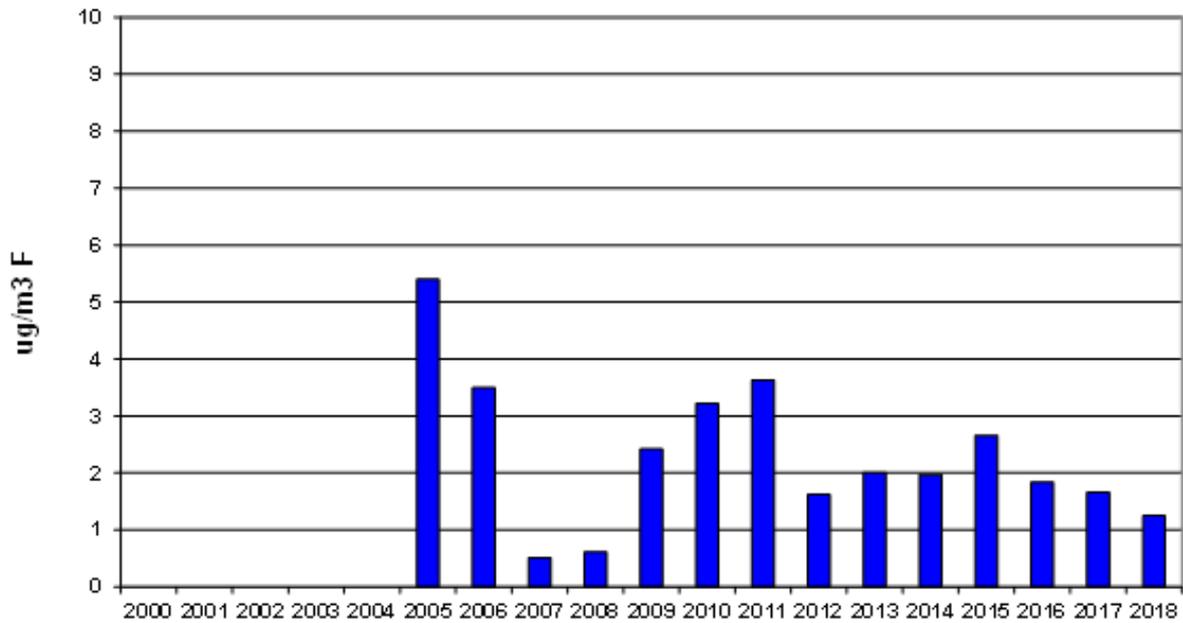
### Christchurch Average Ambient Sulphur Dioxide



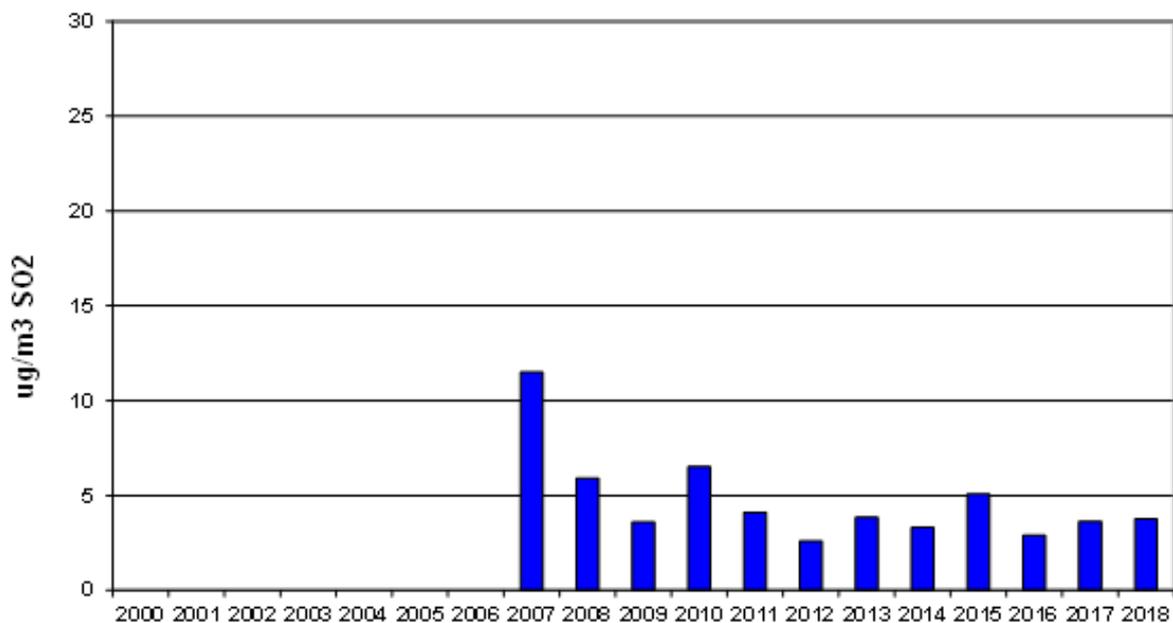
In mid 2014 the sulphuric acid stack height was increased to 67 metres, which has lowered the ambient SO<sub>2</sub> from the Christchurch plant.

# Average ambient air levels

Napier Average Ambient Fluoride



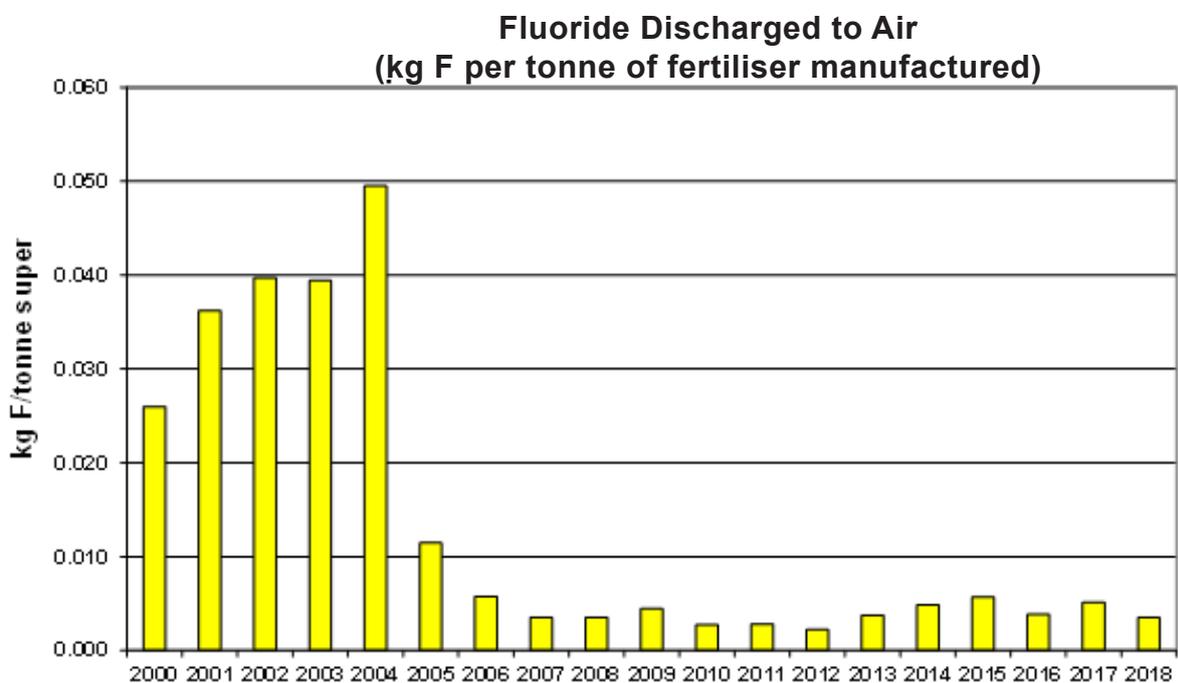
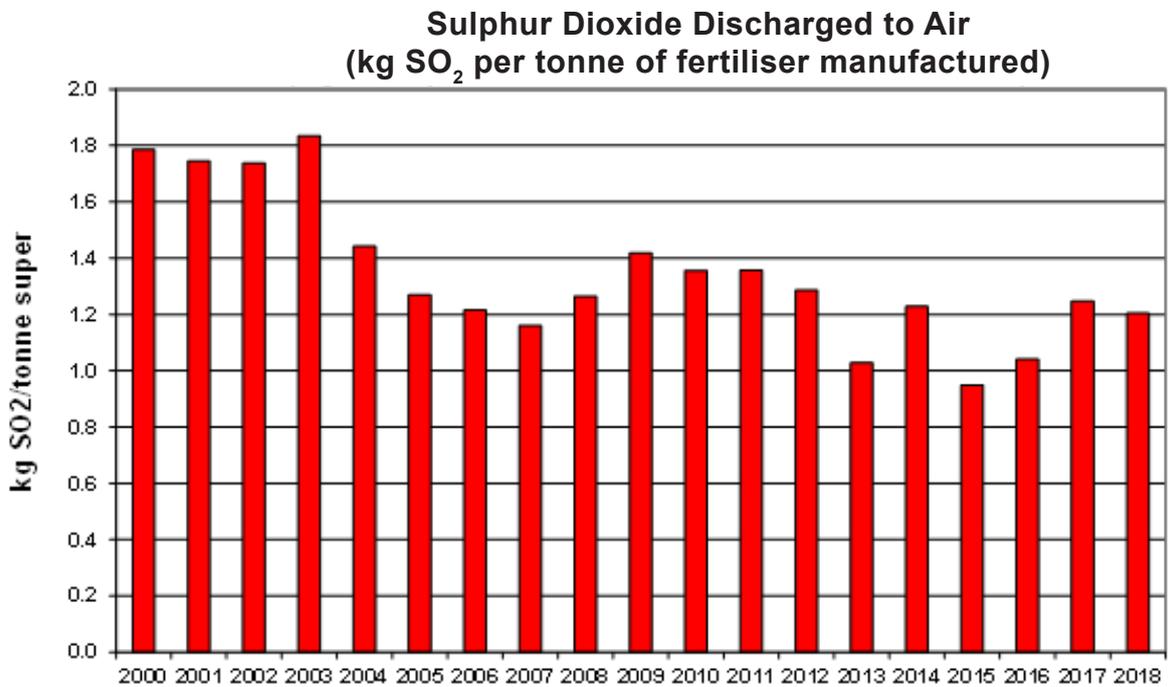
Napier Average Ambient Sulphur Dioxide



The ambient fluoride monitoring sites at Napier were modified due to the Resource Consent renewal processes; therefore it does not have the continuity of recording from any one monitoring site compared. Ambient monitoring of sulphur dioxide was introduced at the Napier site in the 2006-07 year.

$\mu\text{g}/\text{m}^3$  = micrograms per cubic metre of air

# Combined manufacturing discharges

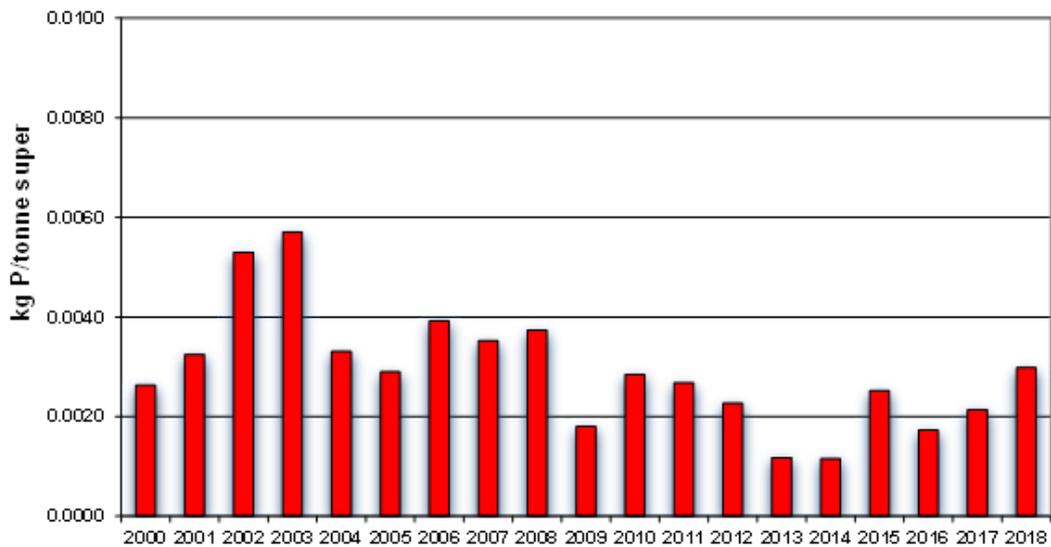


SO<sub>2</sub> discharges are influenced by the relative tonnages produced at each of the three Works.

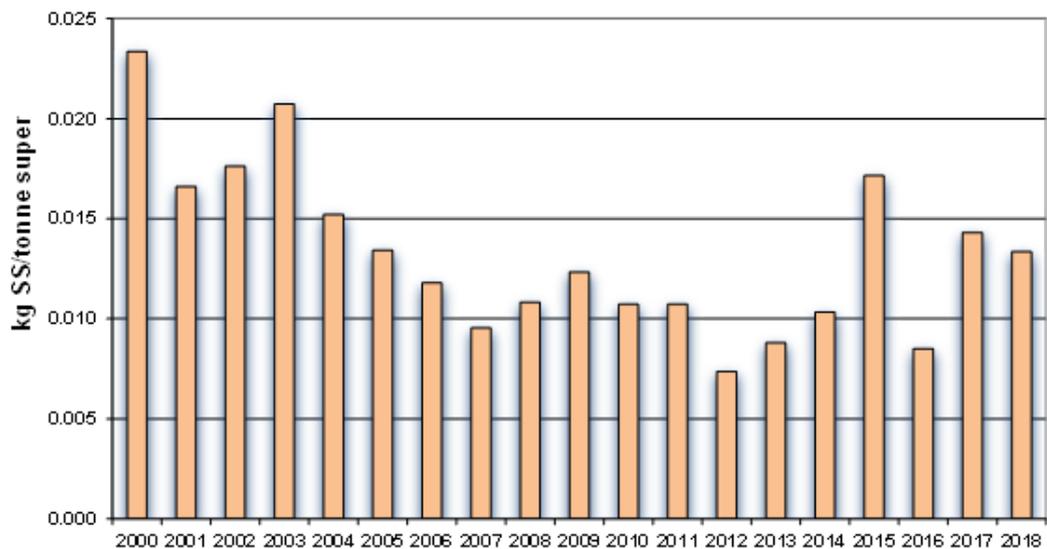
The mass emission of fluoride per tonne of superphosphate is at a low level, reflecting the good performance of the scrubbers at all three sites. Phosphate rock blend changes can influence the discharge.

# Combined manufacturing discharges

### Phosphorus Liquid Discharge

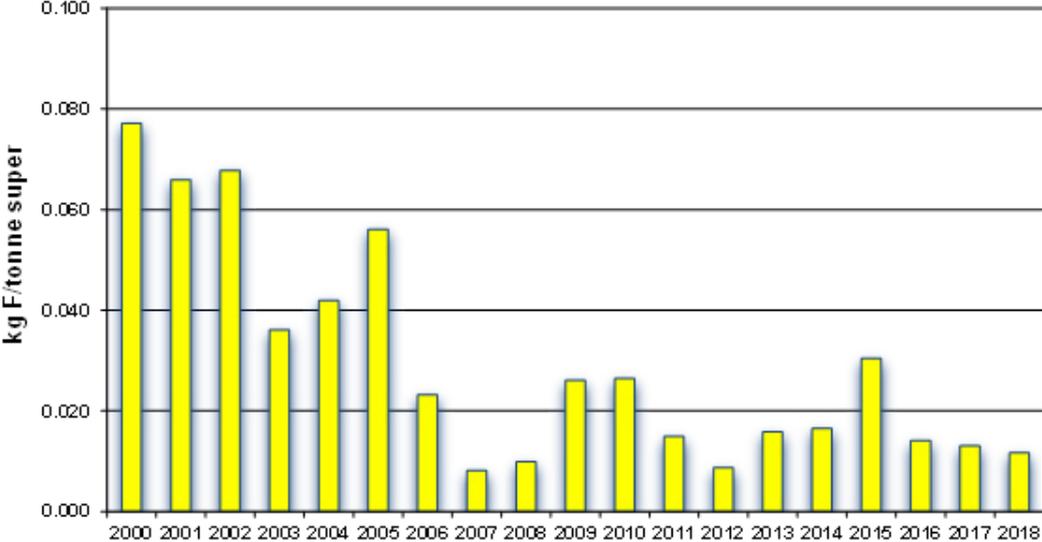


### Suspended Solids Liquid Discharges



Suspended solids discharges to water remain well within consented levels.

### Fluoride Liquid Discharges



F discharge to water remain at very low levels.



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