AIMS

Report

# Annual Air Quality - 2019

## Richards Bay Clean Air Association (RBCAA)

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Project 20200001 Report 004

July 2020

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# 1. INTRODUCTION

This 21st annual air quality report summarises the meteorology, and fine particulate ($PM_{10}$), sulphur dioxide ($SO_2$), and total reduced sulphur (TRS) monitoring conducted by the Richards Bay Clean Air Association (RBCAA) during 2019. The monitoring network consists of 9 stations (Figure 1 and Table 1). Also, measured $SO_2$ concentrations over various time scales are, compared to concentrations predicted by the CALPUFF air pollution dispersion model. Simulated $SO_2$ concentrations are, based on ambient meteorological conditions and the regional emission inventory. The objective of this report is to highlight specific incidents and exceedances of the applicable $PM_{10}$, $SO_2$ and TRS ambient air quality standards.

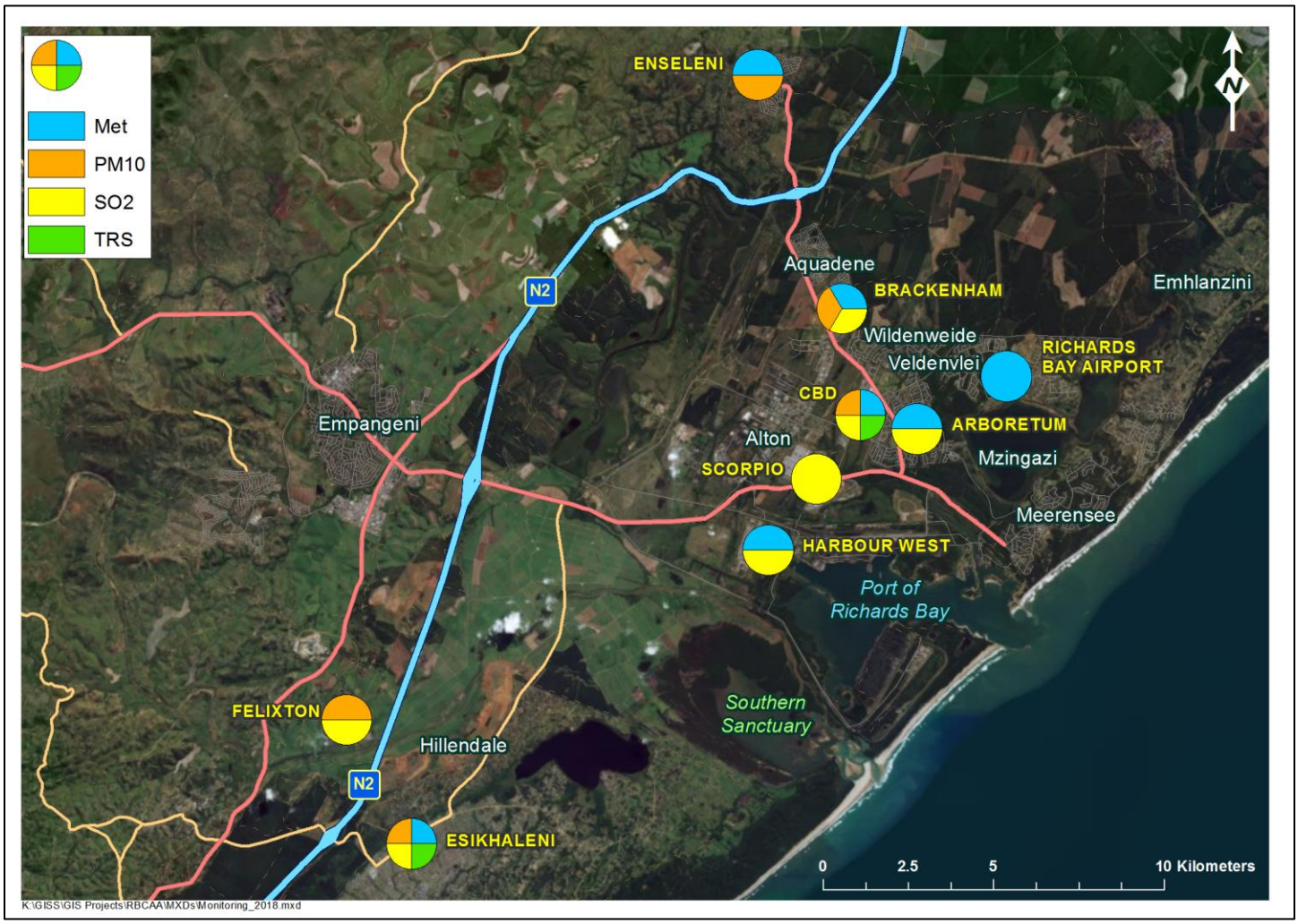



*Figure 1: Map - local.*

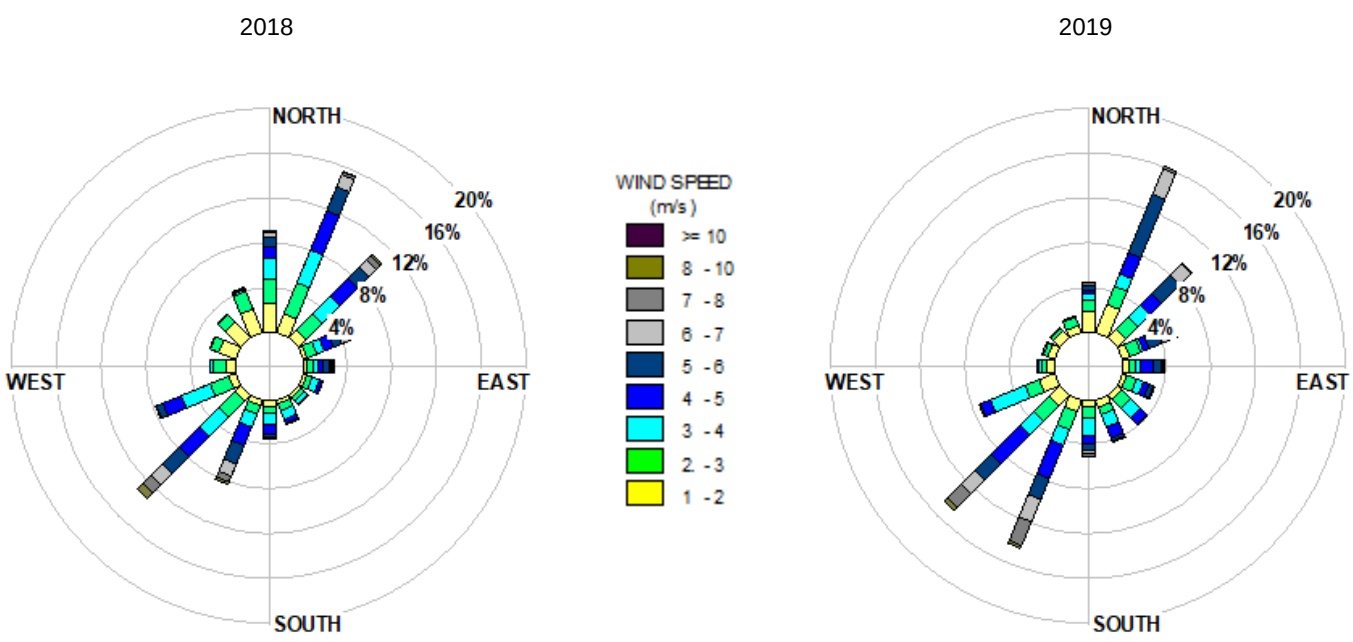
*Table 1: Station co-ordinates.*

| Station | Latitude (°) | Longitude (°) |
|---|---|---|
| Airport | -28.738138 | 32.093333 |
| Arboretum | -28.752380 | 32.062786 |
| Brackenham | -28.731359 | 32.039108 |
| CBD | -28.744803 | 32.054844 |
| eNseleni | -28.662944 | 32.017770 |
| eSikhaleni | -28.865283 | 31.911679 |
| Felixton | -28.829261 | 31.893636 |
| Harbour West | -28.787300 | 32.027160 |
| Scorpio | -28.769696 | 32.034291 |

# 2. METEOROLOGY

## 2.1. Wind Roses

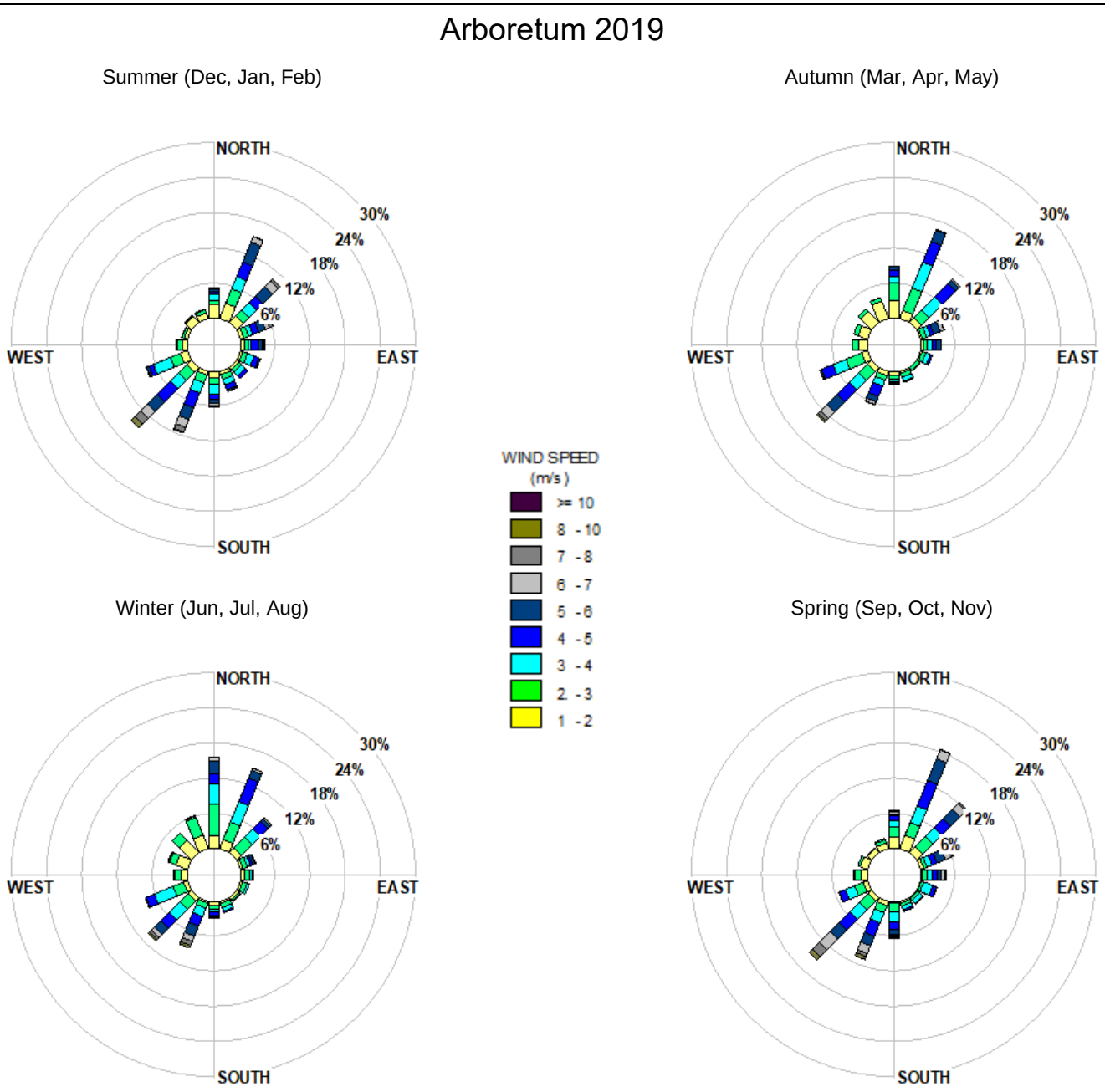
Measured annual wind roses for Arboretum are, presented in Figure 2. They indicate that wind blew predominantly along the NE and SW axis. NE wind is generally associated with fair weather, while SW wind is usually associated with the passage of coastal lows, cold fronts, and inclement weather.




| Period | Wind Speed | Dominant Sector 1 | | Dominant Sector 2 | | Calms | Valid Data |
|---|---|---|---|---|---|---|---|
| 2018 | 3.6 m/s | N-NE | 38% | SSW-WSW | 31% | 2.1% | 94.5% |
| 2019 | 3.5 m/s | N-NE | 37% | SSW-WSW | 31% | 2.7% | 97.3% |

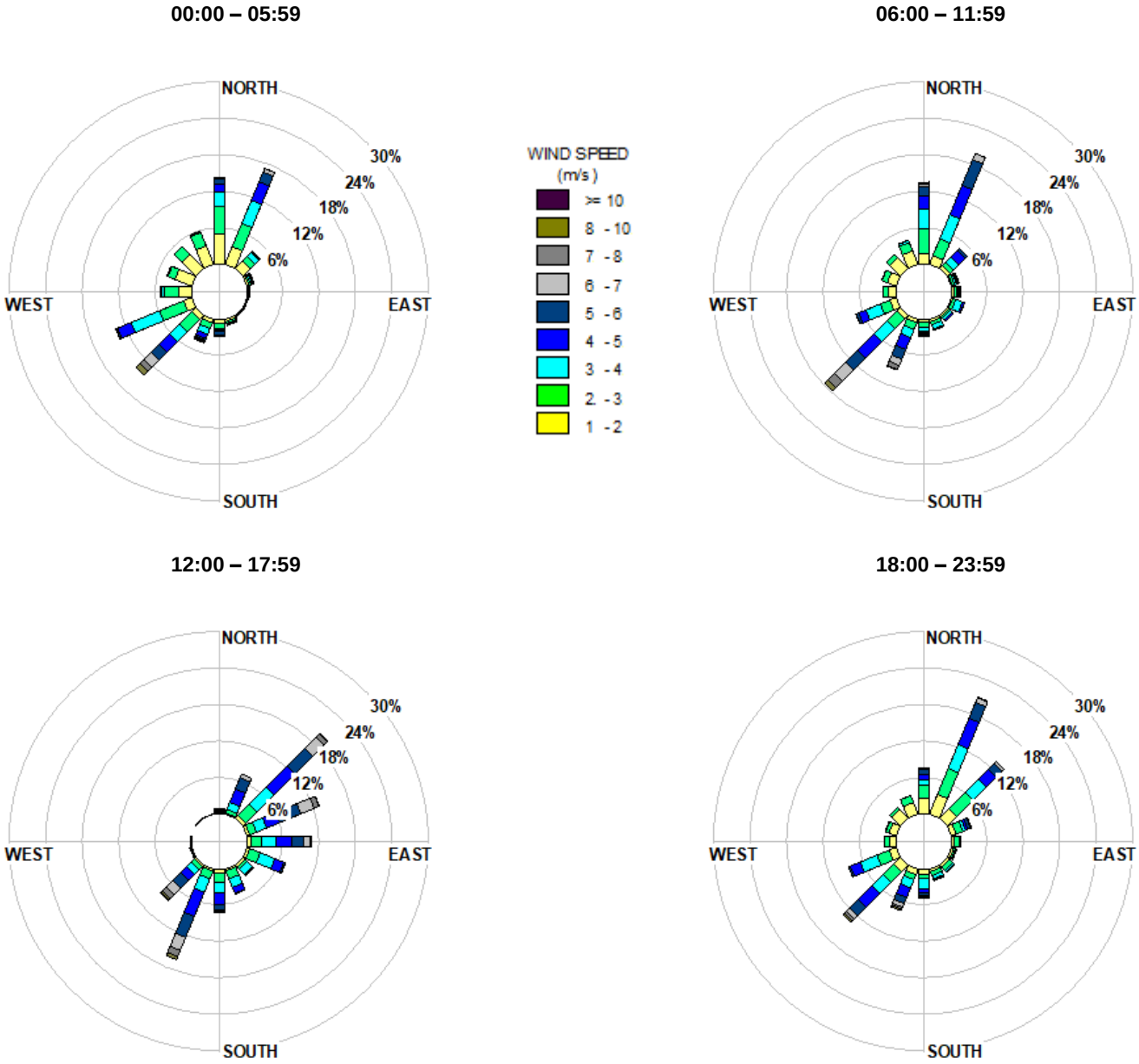
*Figure 2: Wind roses - annual.*

Seasonal and diurnal wind roses for 2019 can be, seen in Figure 3 and Figure 4. Note the increase in light (1 to 3 m/s) to moderate (3 to 6 m/s) wind from the NNW during winter (and the seasonal increase in fresh (6 to 8 m/s) to strong (> 8 m/s) N to NE wind during periods that include spring and early summer. Strong southerly to SSW wind occurs throughout the year, typically associated with the arrival of coastal lows and cold fronts.




| Period | Wind Speed | Dominant Sector 1 | | Dominant Sector 2 | | Calms | Valid Data |
|---|---|---|---|---|---|---|---|
| Summer (Dec-Jan) | 3.7 m/s | NNE-NE | 27% | SSW-WSW | 35% | 3.2% | 99.4% |
| Autumn (Feb-Mar) | 3.3 m/s | N-NE | 39% | SSW-WSW | 31% | 2.3% | 93.2% |
| Winter (Jun-Aug) | 3.2 m/s | NNW-NE | 48% | SSW-WSW | 28% | 2.8% | 96.8% |
| Spring (Sept-Nov) | 3.9 m/s | N-NE | 38% | S-SW | 33% | 2.6% | 100.0% |

*Figure 3: Wind roses - seasonal.*




| Period | Wind Speed | Dominant Sector 1 | | Dominant Sector 2 | | Calms | Valid Data |
|---|---|---|---|---|---|---|---|
| 00:00-05:59 | 2.9 m/s | NNW-NNE | 40% | SW-WSW | 29% | 4.3% | 97.3% |
| 06:00-11:59 | 3.6 m/s | N-NNE | 35% | SSW-WSW | 36% | 2.3% | 97.1% |
| 12:00-17:59 | 4.4 m/s | NNE-ESE | 59% | S-SW | 32% | 0.8% | 97.2% |
| 18:00-23:59 | 3.2 m/s | N-NE | 44% | SSW-WSW | 31% | 3.5% | 97.7% |

*Figure 4: Wind roses - diurnal.*

## 2.2. Rainfall

Rainfall measured at various locations is, summarised in Figure 5, Figure 6 and Figure 7 (See APPENDIX H for tables).

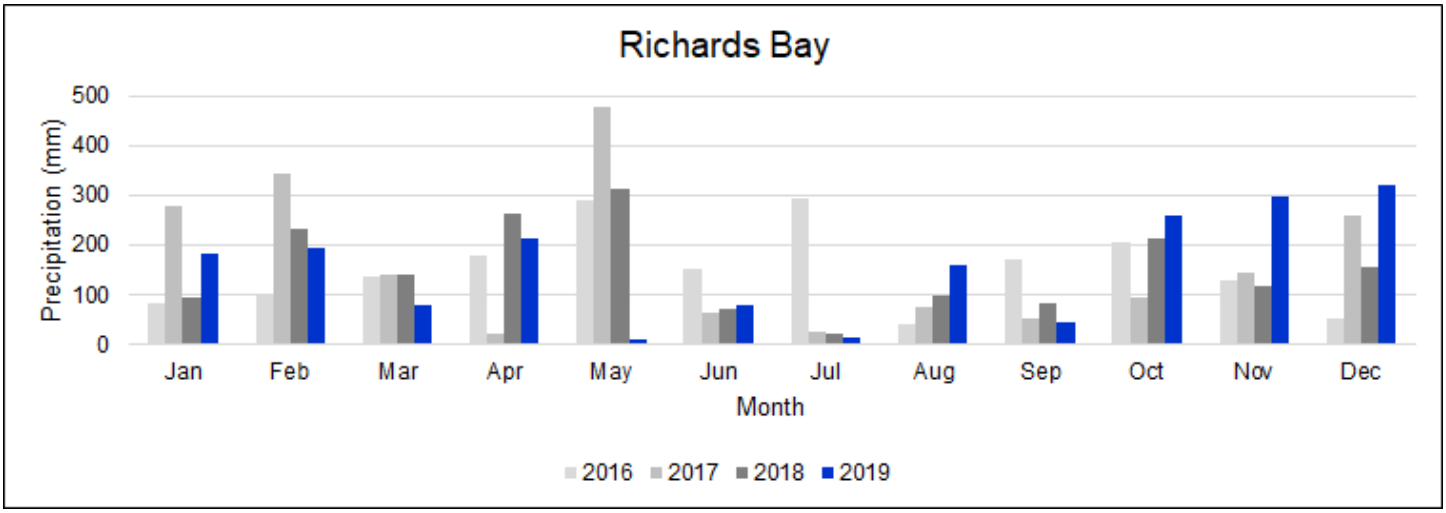



*Figure 5: Rainfall – historical data for Richards Bay.*

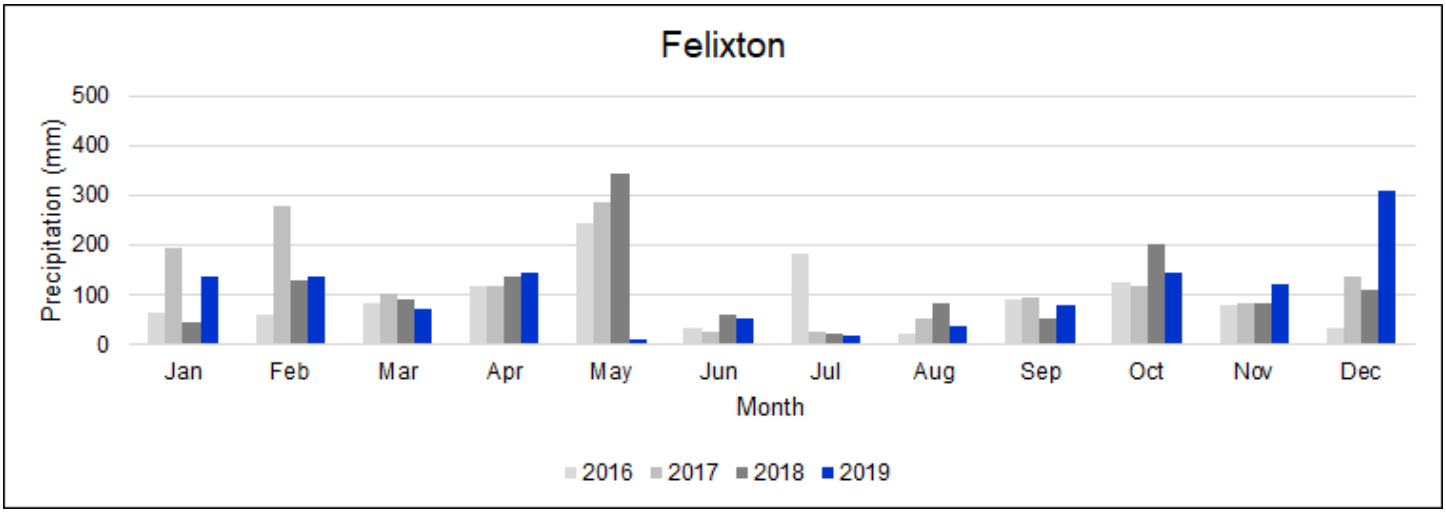



*Figure 6: Rainfall – historical data for Felixton.*

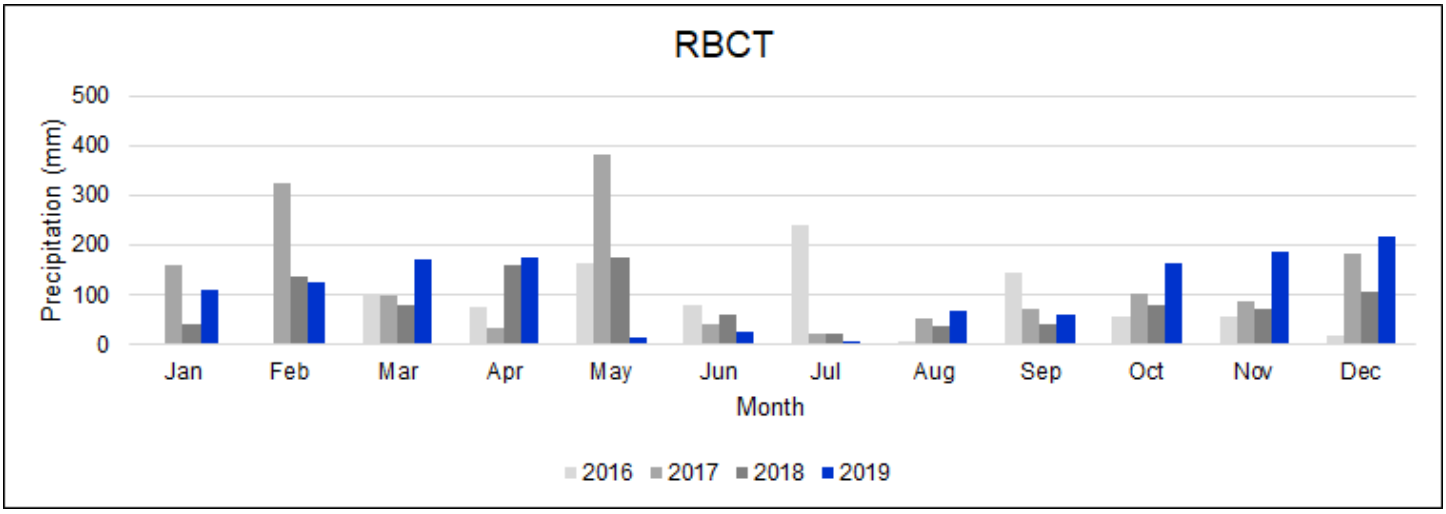



*Figure 7: Rainfall – historical data for RBCT.*

# 3. AIR QUALITY COMPLAINTS

Detailed complaint records are maintained, updated, and distributed to the RBCAA's complaints mailing list weekly. This section summarises and analyses these, please see APPENDIX D for the Complaints Log.

## 3.1. Complaints - Annual

The historical count of complaints per month since 2000 is, reflected in Figure 8, the. From 2005 to 2017, there has been a downward trend; this has, however, reversed. The maximum number of complaints received in a single year was 418 in 2018 Note 318 of these complaints were associated with a single incident in September, a process fault at Mondi that resulted in the production of $H_2S$ which that could not be managed (converted) by flaring.

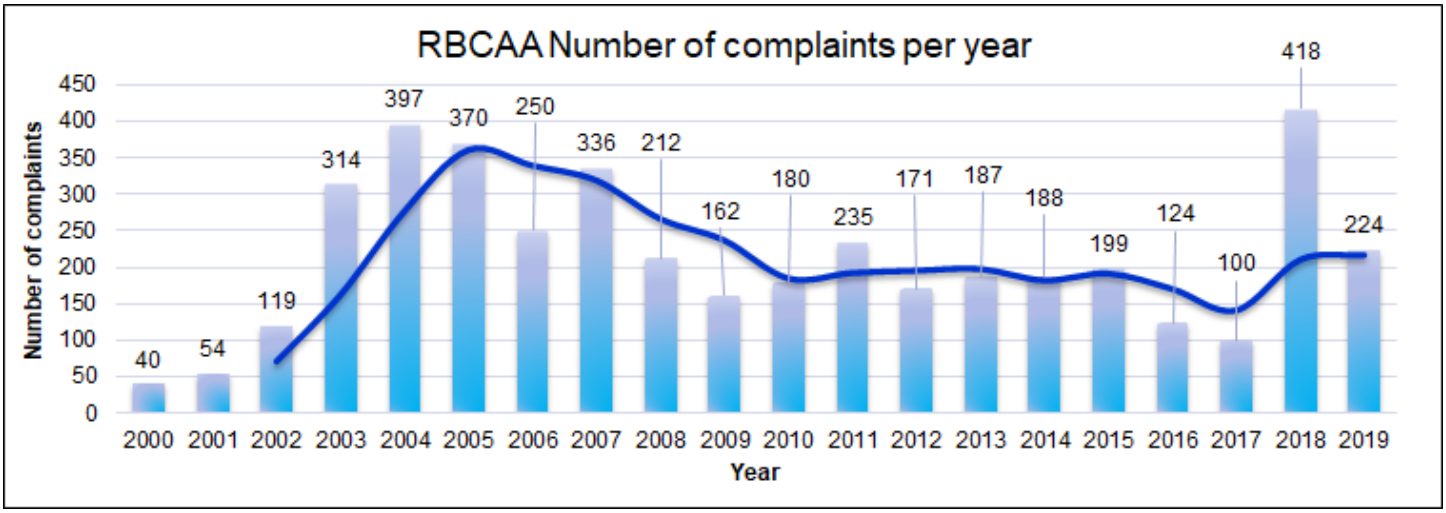



*Figure 8: Complaints – annual comparison.*

## 3.2. Complaints – Monthly

During 2019 there were four months in which there were significant incidents (more than 20 complaints recorded) (Figure 9):

- March - a pressure safety valve on a container containing Mercaptan used to odorise LPG to detect leaks at Bidvest Tank terminals malfunctioned (26 complaints)
- April - two incidents related with a shutdown at Mondi and the production of non-condensable gasses that could not be destroyed by flaring (24 complaints)
- June – issues on Mondi's evaporation plant (48 complaints)
- September – three separate incidents related to emissions from Mondi's flare, effluent plant, recovery boiler start-up (18 complaints)

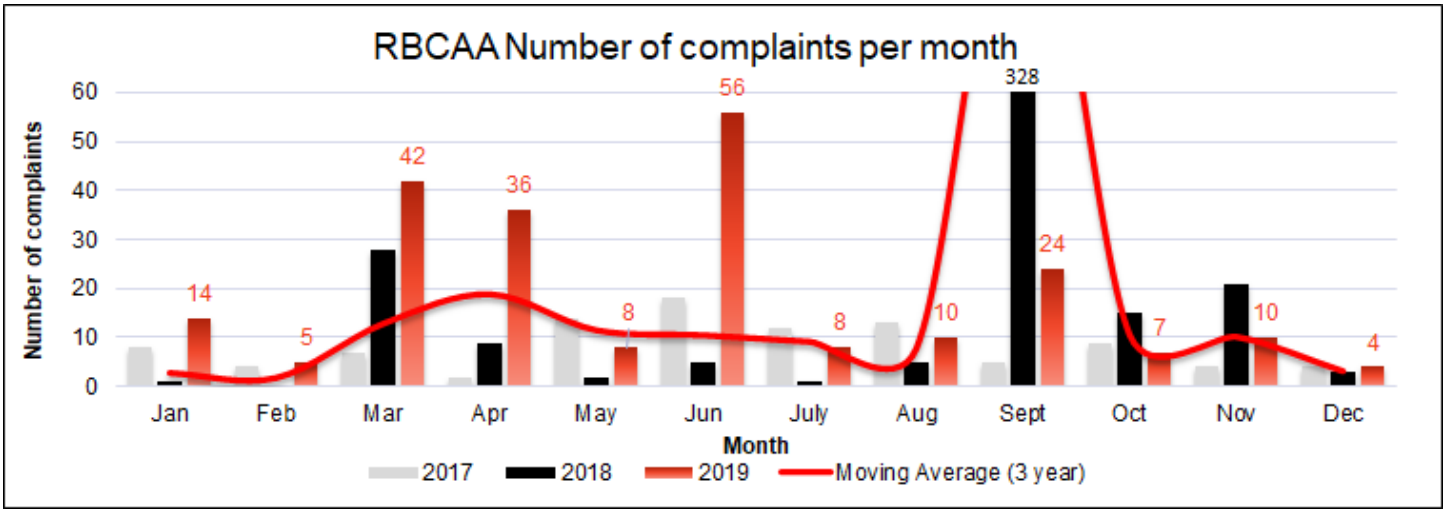



*Figure 9: Complaints – monthly comparison.*

## 3.3. Complaints – Distribution

The distribution of complaints by region, type and source are presented in Figure 10, Figure 11, and Figure 12. Distributions for 2018 are, included for comparison. During 2018 most complaints (78%) recorded arouse from the residential areas of Arboretum, Arboretum Extension, Birdswood, Veldenvlei and Wildenweide and were associated with the September process fault at Mondi, in 2019 the most of the complaints from Meerensee were, related to the April Bidvest Tank terminal incident, and those from the Mondi area, Veldenvlei, Alton and CBD with the April June and September Mondi incidents. There was a similar complaint type distribution between the two years.

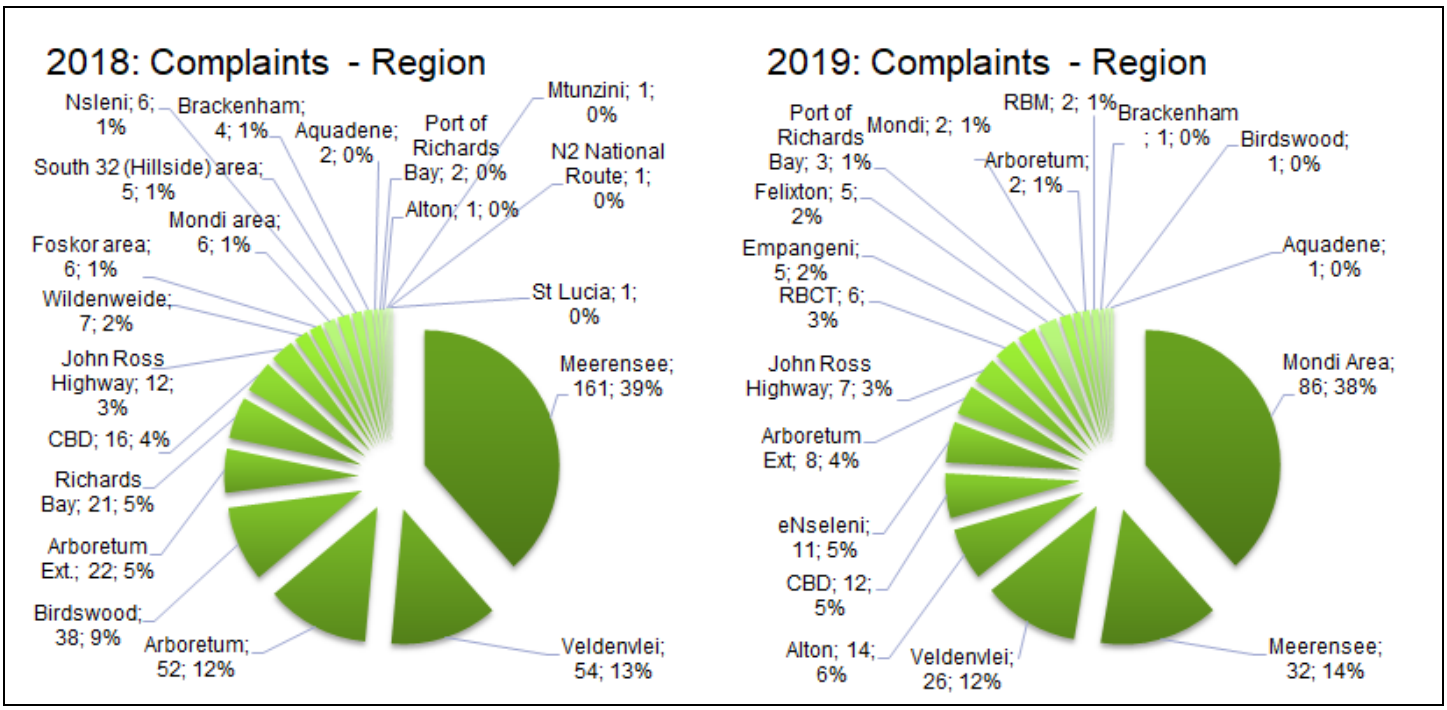



*Figure 10: Complaints – region.*

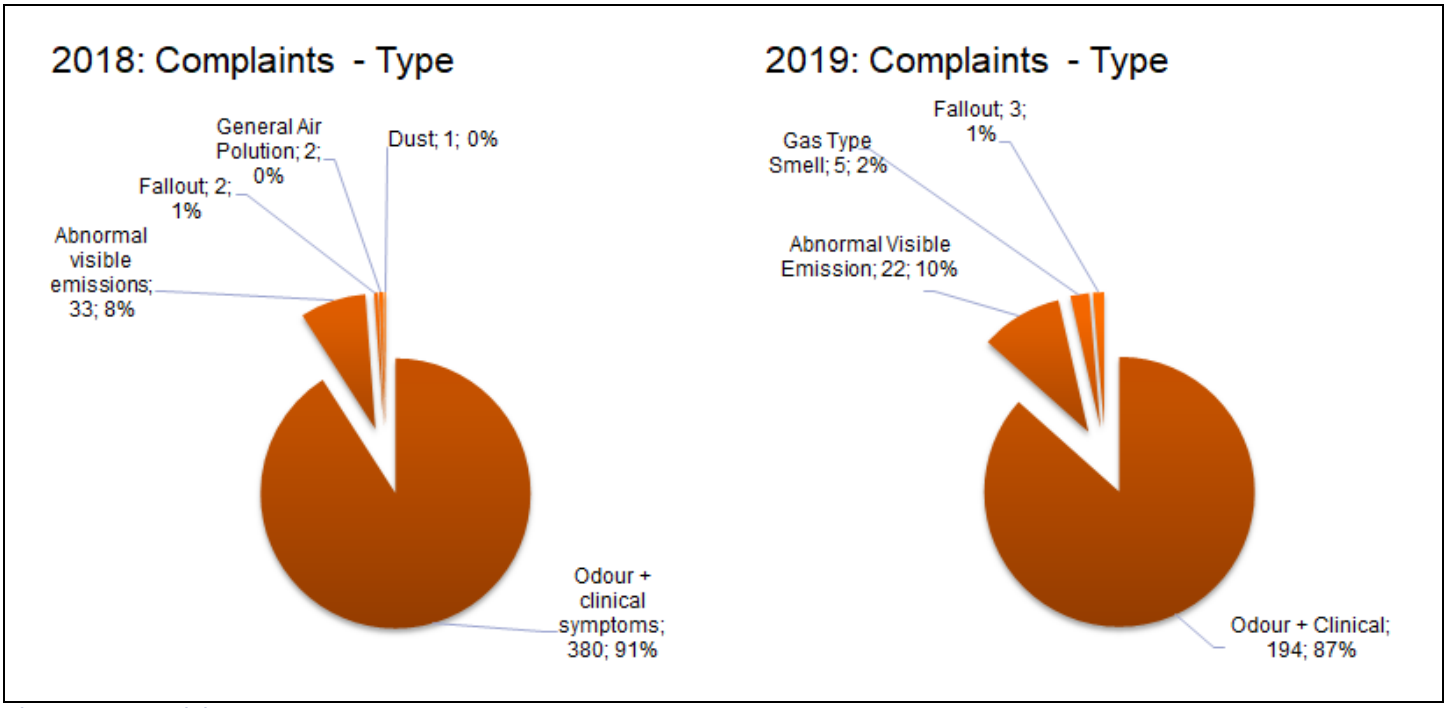



*Figure 11: Complaints –type.*

In 2018 most complaints (380, 91%) were allocated to Mondi, most of them (318, 76%) as a result of process fault at Mondi in September, in 2019 the complaints received were allocated as follows: Mondi Richards Bay (149, 67%); Bidvest Tank Terminals (28, 13%); Foskor (12 5%) and other (35, 16%) (Figure 12)

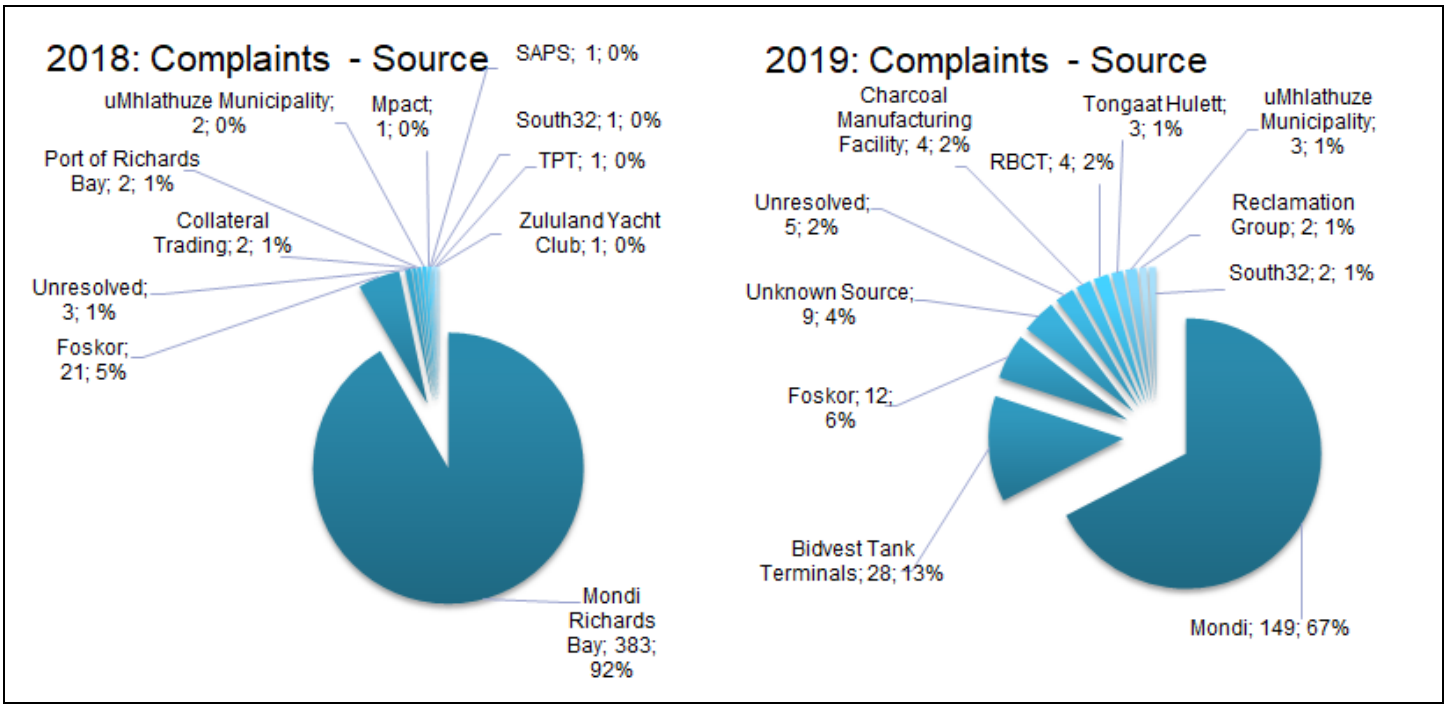



*Figure 12: Complaints - source.*

# 4. FINE PARTICULATE MONITORING

The term "particulate matter" (PM) refers to both solid particles and liquid droplets found in the atmosphere. Many anthropogenic and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. These solid and liquid particles can vary in size. Particles less than 10 micrometres (µm) in diameter are, classified as $PM_{10}$.

$PM_{10}$ can be inhaled and accumulate in deep within the respiratory system. Exposure to sustained high concentrations may result in:

- Reduced lung development in children
- Allergy related inflammatory reactions of the airway
- Asthma, nasal congestion, and sinus problems
- Increase in symptoms associated with the lower respiratory tract
- In severe cases, reduction in life expectancy

TEOM's (particulate analysers) at Brackenham, CBD, Mtunzini and eSikhaleni stations measure $PM_{10}$ data continuously. $PM_{10}$ monitoring undertaken at Felixton is done so with the use of an E-Sampler; an alternative sampling methodology to that used at the other stations.

## 4.1. $PM_{10}$ Ambient Air Quality Standards

Ambient air quality standards for $PM_{10}$ are listed below (Table 2).

*Table 2: $PM_{10}$ ambient air quality standards.*

| Variable | Organisation | Daily average | Annual average |
|---|---|---|---|
| $PM_{10}$ | NEMA [a] | 75 µg/m³ [b] | 40 µg/m³ [c] |
| | WHO [d] | 50 µg/m³ [b] | 20 µg/m³ [c] |

*Notes:*
*a) A Government Gazette 32816 (24th December 2009) in terms of the National Environmental Management: Air Quality Act No. 39 of 2004, effective from 2015* (RSA-NEMAQA, 2009)
*b) Not to be exceeded more than 4 times in one year*
*c) Not to be exceeded*
*d) World Health Organisation / International Finance Corporation* (WHO, 2015) (IFC, 2007)

## 4.2. $PM_{10}$ Daily Concentrations

Daily average $PM_{10}$ concentrations are, shown below (Figure 13). There were:

- Three measured exceedances of the NEMA $PM_{10}$ Daily Limit (75 µg/m$^3$)
- 37 measured exceedances of the or WHO / IFC Daily Guideline (50 µg/m$^3$)

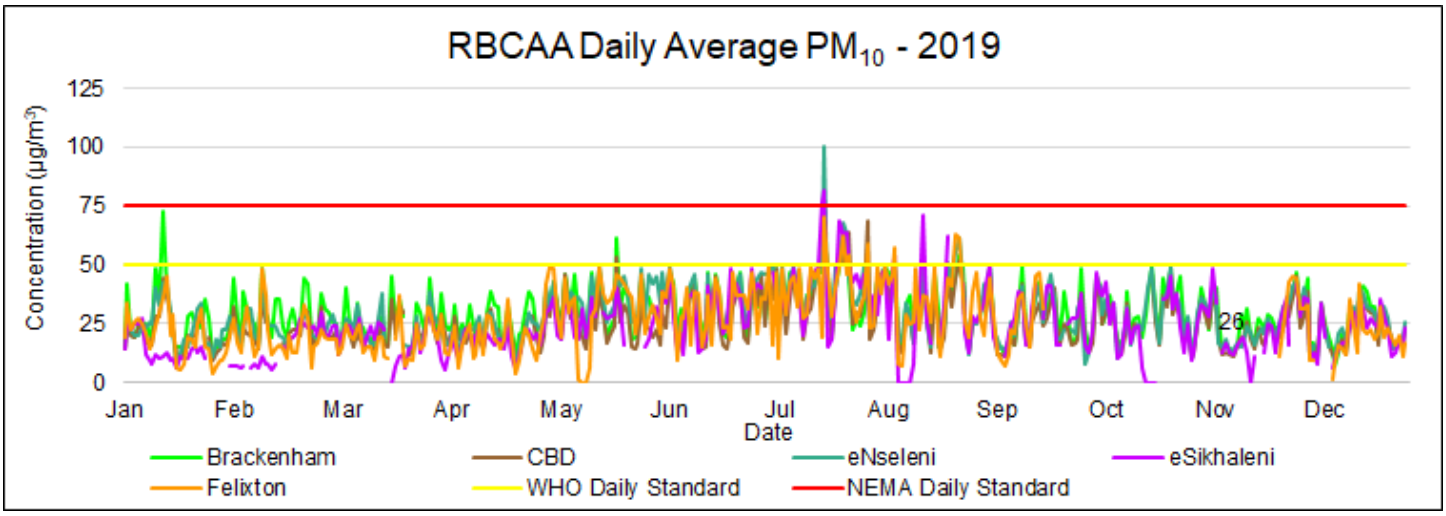



*Figure 13: $PM_{10}$ daily average concentrations.*

## 4.3. $PM_{10}$ Diurnal Concentrations

Diurnal $PM_{10}$ concentrations are, shown below (Figure 14).

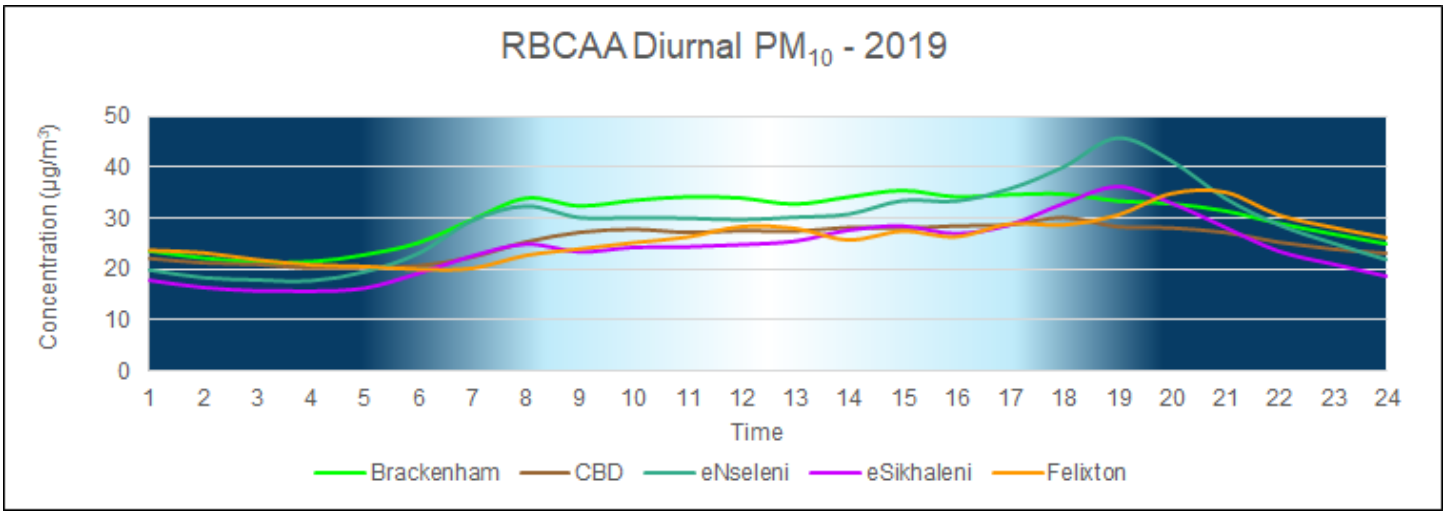



*Figure 14: $PM_{10}$ diurnal concentrations.*

## 4.4. $PM_{10}$ Monthly Concentrations

Seasonal $PM_{10}$ concentrations for 2019 are, provided in Figure 15. The NEMA annual standard is, used for comparative purposes.

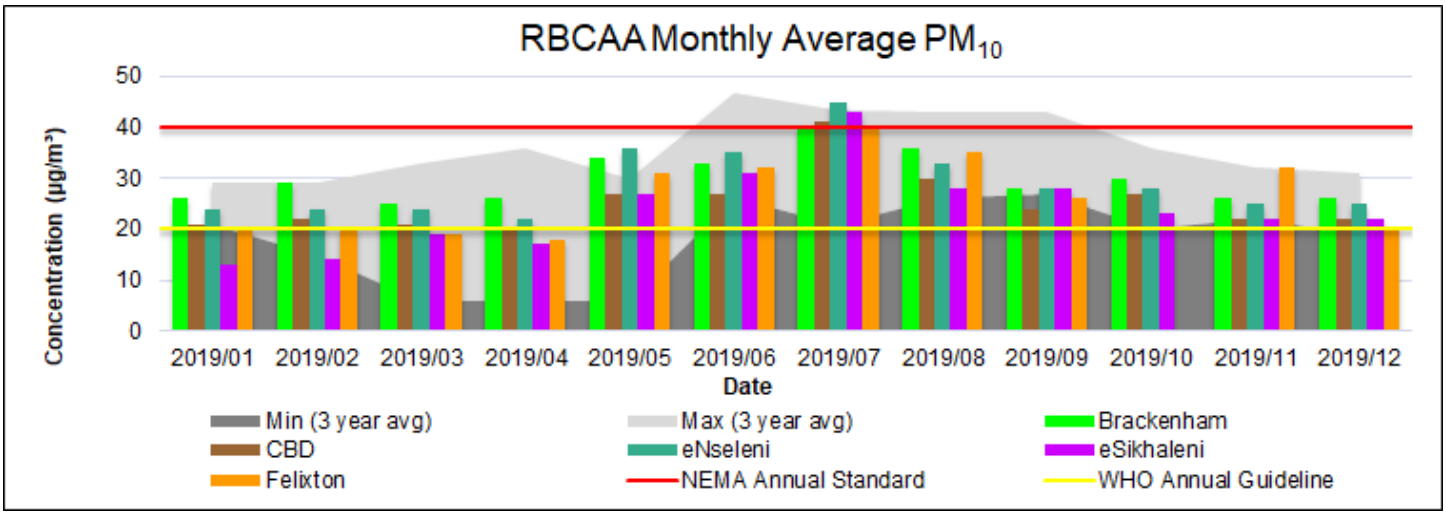



*Figure 15: $PM_{10}$ seasonal concentrations.*

## 4.5. $PM_{10}$ Annual Concentrations

Annual average concentrations and trends dating back to 2004 are, illustrated in Figure 16 and Figure 17. A decreasing trend is noticeable from 2009 to 2012; this has reversed and stabilised since then, it is particularly evident at Brackenham, CBD, Felixton, and eSikhaleni. The reversal could be, related to the proliferation of stockpiles in the area, reduction in the amount of rainfall.

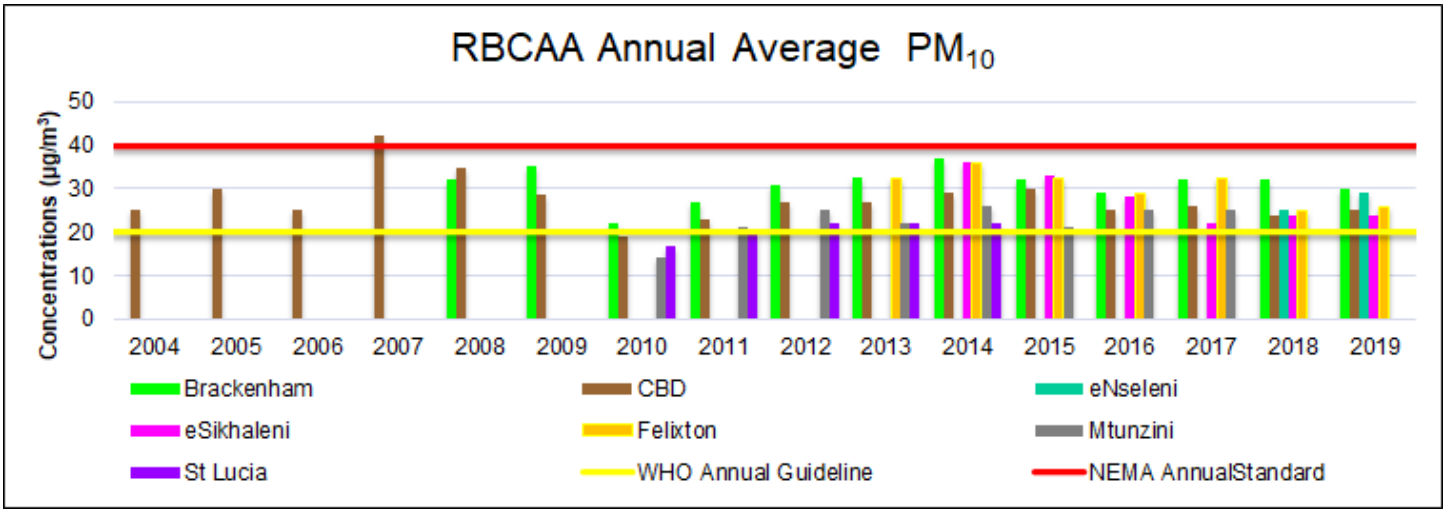



*Figure 16: $PM_{10}$ annual average concentrations.*

Compared to 2017 and 2018, 2019 annual average $PM_{10}$ concentrations most stations were similar (differed by less than less than 10% of the limit), values measured at Felixton in 2017 were higher and at eNseleni in 2018 were lower (Figure 17).

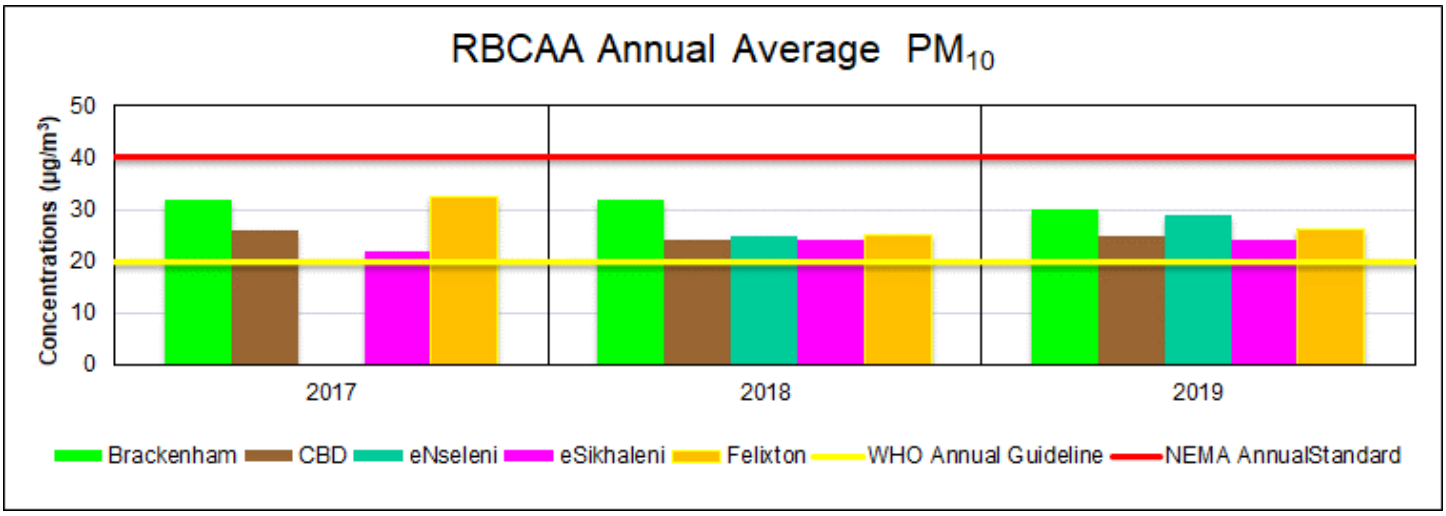



*Figure 17: $PM_{10}$ annual average concentration (2017 – 2019)*

## 4.6. $PM_{10}$ Exceedances

A summary of the $PM_{10}$ exceedances and breakdown per station is, presented in Table 3. Please see APPENDIX E for the $PM_{10}$ Exceedance Log.

*Table 3: $PM_{10}$ station exceedance summary.*

| Standard / Guideline / Target | Station | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| NEMA Daily Standard (75 µg/m³) | Brackenham | 3 | 0 | 0 |
| | CBD | 0 | 0 | 0 |
| | eNseleni | No monitoring | 6 | 1 |
| | eSikhaleni | 1 | 1 | 2 |
| | Felixton | 9 | None measured | None measured |
| | Mtunzini | None measured | No monitoring | No monitoring |
| WHO Daily Guideline (50 µg/m³) | Brackenham | 11 | 16 | 7 |
| | CBD | 4 | 1 | 8 |
| | eNseleni | No monitoring | 4 | 6 |
| | eSikhaleni | 4 | 3 | 9 |
| | Felixton | 57 | 5 | 7 |
| | Mtunzini | 3 | No monitoring | No monitoring |

| Standard / Guideline / Target | Station | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| NEMA Annual Standard (40 µg/m³) | All $PM_{10}$ stations | None measured | None measured | None measured |
| WHO Annual Guideline (20 µg/m³) | Brackenham | 1 | 1 | 1 |
| | CBD | 1 | 1 | 1 |
| | eNseleni | No monitoring | 1 | 1 |
| | eSikhaleni | 1 | 1 | 1 |
| | Felixton | 1 | 1 | 1 |
| | Mtunzini | 1 | No monitoring | No monitoring |

Except for Brackenham, there were more $PM_{10}$ exceedance days measured at the various stations during 2019.

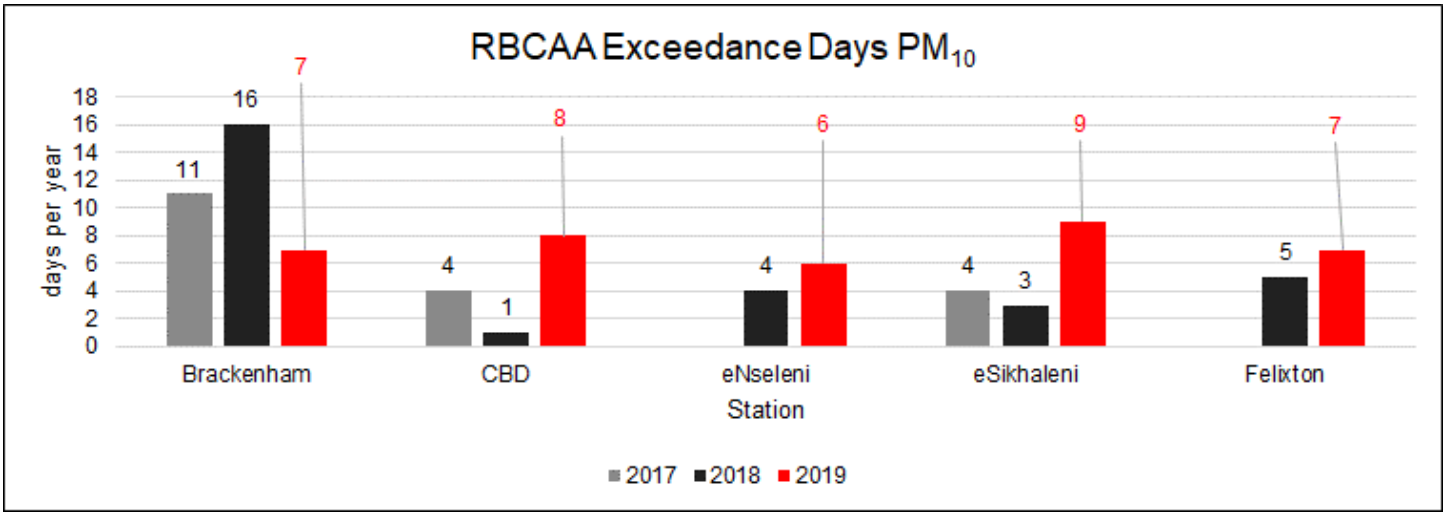



*Figure 18: Number of days on which $PM_{10}$ exceedances occurred 2017 – 2019.*

# 5. SULPHUR DIOXIDE MONITORING

Sulphur dioxide ($SO_2$) is one of a group of highly reactive gasses known as "oxides of sulphur." Anthropogenic sources include fossil fuel combustion (particularly coal-burning power plants), industrial processes such as wood pulping, paper manufacture, petroleum and metal refining, metal smelting (particularly from sulphide containing ores, e.g. lead, silver and zinc ores) and vehicle tailpipe emissions. Natural sources of $SO_2$ emissions include geothermal activity (including hot springs and volcanic activity), and the natural decay of vegetation on land, in wetlands and oceans.

$SO_2$ is linked with several adverse effects on the respiratory system as it is highly soluble and thus readily absorbed by the mucous membranes of the nose and upper respiratory tract. Exposure to high concentrations may result in:

- Reduction in lung function (especially in asthmatics and children)
- Wheezing and coughing
- In severe cases, a reduction in life expectancy

## 5.1. $SO_2$ Ambient Air Quality Standards

South African ambient air quality standards for $SO_2$ are listed below (Table 4).

*Table 4: $SO_2$ ambient air quality standards.*

| Variable | Organisation | 10-min average | Hourly average | Daily average | Annual average |
|---|---|---|---|---|---|
| $SO_2$ Standard | NEMA [a] | 500 µg/m³ [b] | 350 µg/m³ [c] | 125 µg/m³ [d] | 50 µg/m³ [e] |
| | | 191ppb [b] | 134 ppb [c] | 48 ppb [d] | 19 ppb [e] |
| $SO_2$ Interim Target 1 | WHO / IFC [f] | - | - | 125 µg/m³ | - |
| | | - | - | 48 ppb | - |
| $SO_2$ Interim Target 2 | WHO / IFC [f] | - | - | 50 µg/m³ | - |
| | | - | - | 19 ppb | - |
| $SO_2$ Guideline | WHO / IFC [f] | 500 µg/m³ | - | 20 µg/m³ | - |
| | | 191ppb | - | 8 ppb | - |

*Notes:*
*a) SA Government Gazette 32816 (published 24th December 2009) in terms of the National Environmental Management: Air Quality Act 39 of 2004* (RSA-NEMAQA, 2009)
*b) Not to be exceeded more than 526 times in one year*
*c) Not to be exceeded more than 88 times in one year*
*d) Not to be exceeded more than 4 times in one year*
*e) Not to be exceeded*
*f) World Health Organisation / International Finance Corporation* (WHO, 2015) (IFC, 2007)

## 5.2. $SO_2$ 10-minute Concentrations

10-minute average $SO_2$ concentrations are, shown below (Figure 19). There were 14 measured exceedances of the NEMA and WHO 10-minute Standards (191 ppb).

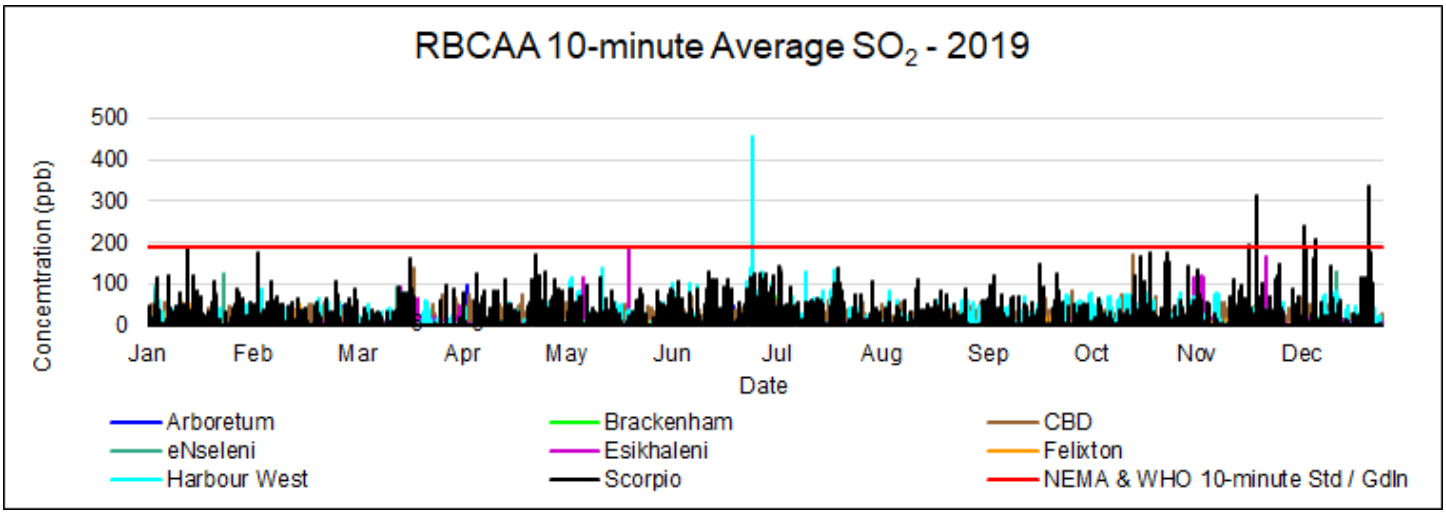



*Figure 19: $SO_2$ 10-minute average concentrations.*

## 5.3. $SO_2$ Hourly Concentrations

Hourly average $SO_2$ concentrations are, shown below (Figure 20). There were five measured exceedances of the NEMA Hourly Standard (134 ppb).

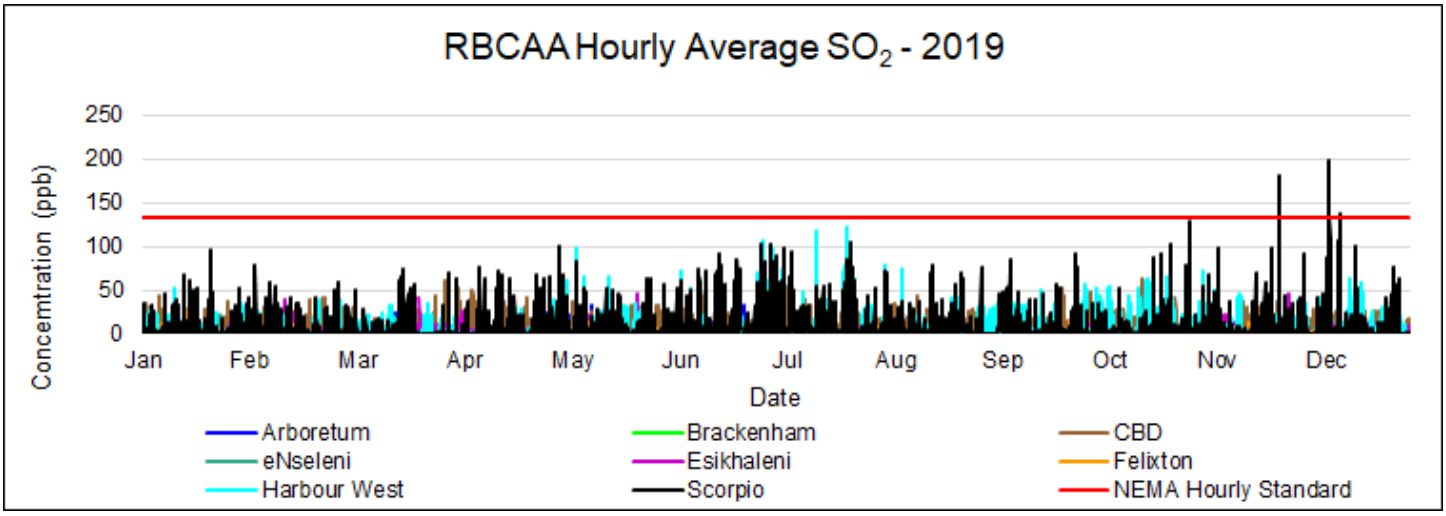



*Figure 20: $SO_2$ hourly minute average concentrations.*

## 5.4. $SO_2$ Daily Concentrations

Daily average $SO_2$ concentrations are, shown below (Figure 21). There were:

- One measured exceedance of the NEMA and WHO Daily Standard / Interim-Target 1 (48 ppb)
- Five measured exceedances of the WHO Daily Interim Target 2 (19 ppb)
- Two hundred and thirty-six measured exceedances of the WHO Daily Guideline (8 ppb)

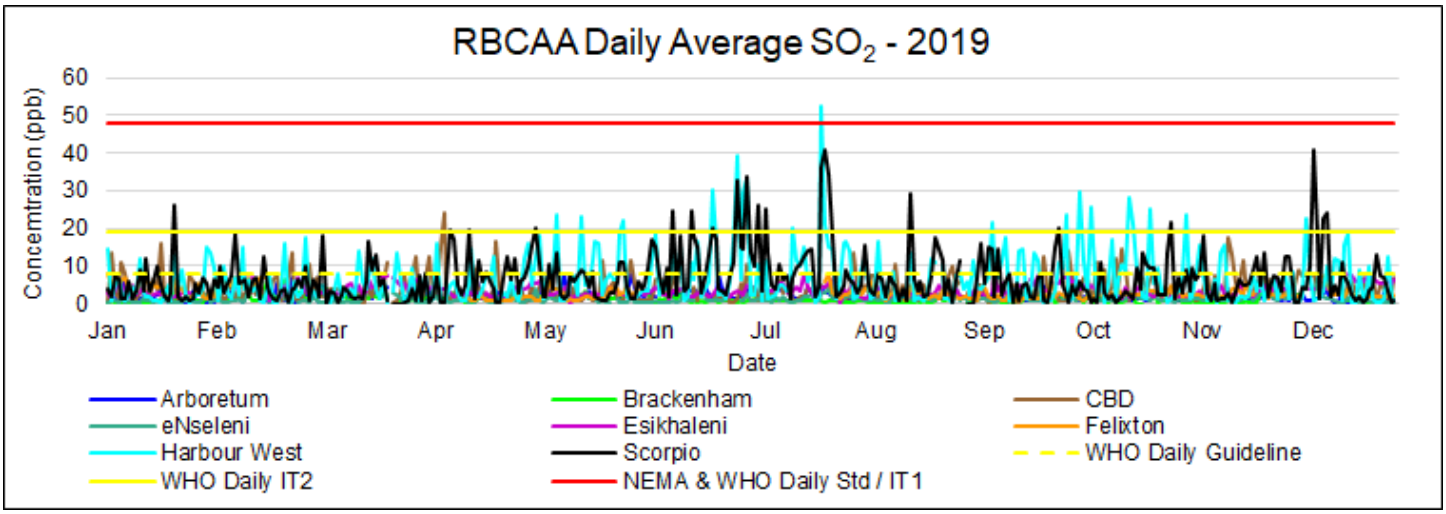



*Figure 21: $SO_2$ daily average concentrations.*

## 5.5. $SO_2$ Diurnal Concentrations

Diurnal SO2 concentrations are, shown below (Figure 22).

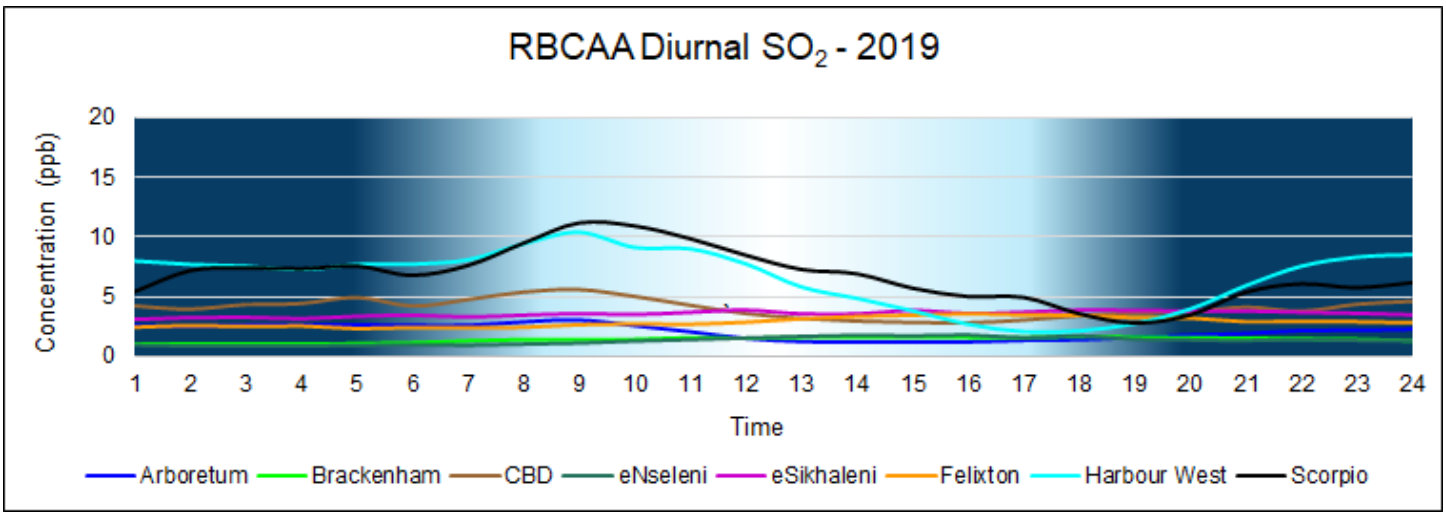



*Figure 22: SO2 diurnal concentrations.*

## 5.6. $SO_2$ Monthly Concentrations

The seasonal $SO_2$ concentrations for 2019 are, provided in Figure 23.

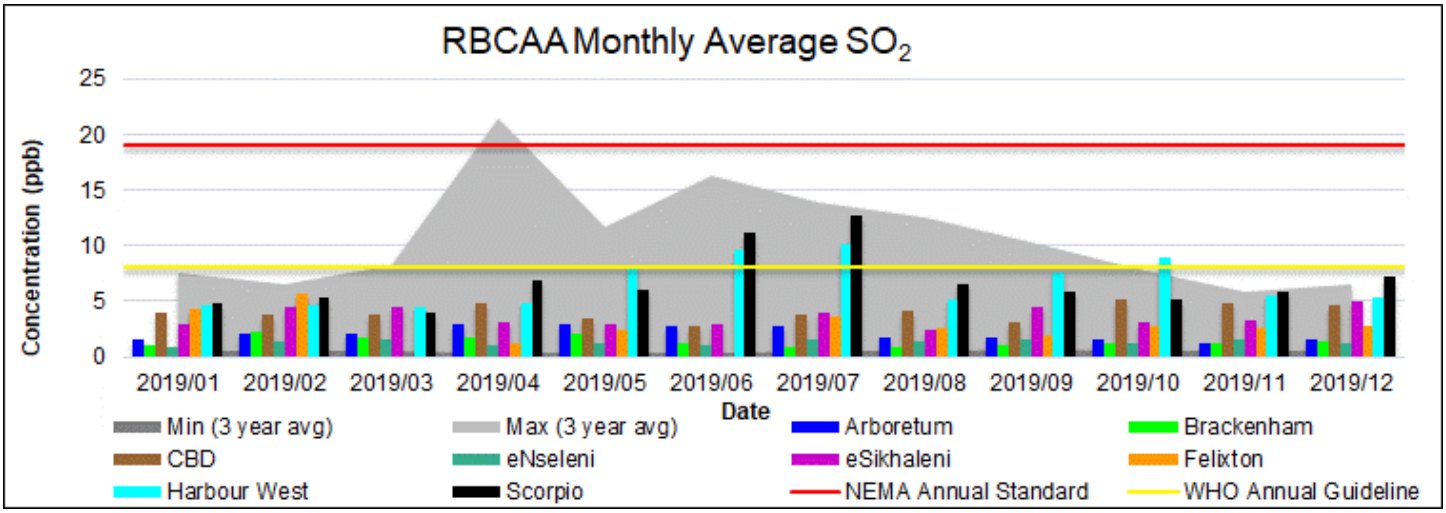



*Figure 23: $SO_2$ seasonal concentrations.*

## 5.7. $SO_2$ Annual Concentrations

Annual average $SO_2$ concentrations and trends are, illustrated in Figure 24. There was a decrease in concentration from 2006 to 2010. This trend reversed from 2010 to 2014 but seemed to have stabilised (from 2014 to 2019). The reduction of $SO_2$ concentrations from 2014 to 2016, could be linked to numerous shutdowns at Foskor, the Foskor A-plant had an extended shutdown in 2015, that overlapped with the 2016 annual shutdown. During 2017 NEMA $SO_2$ Annual limit (19 ppb) was not exceeded.

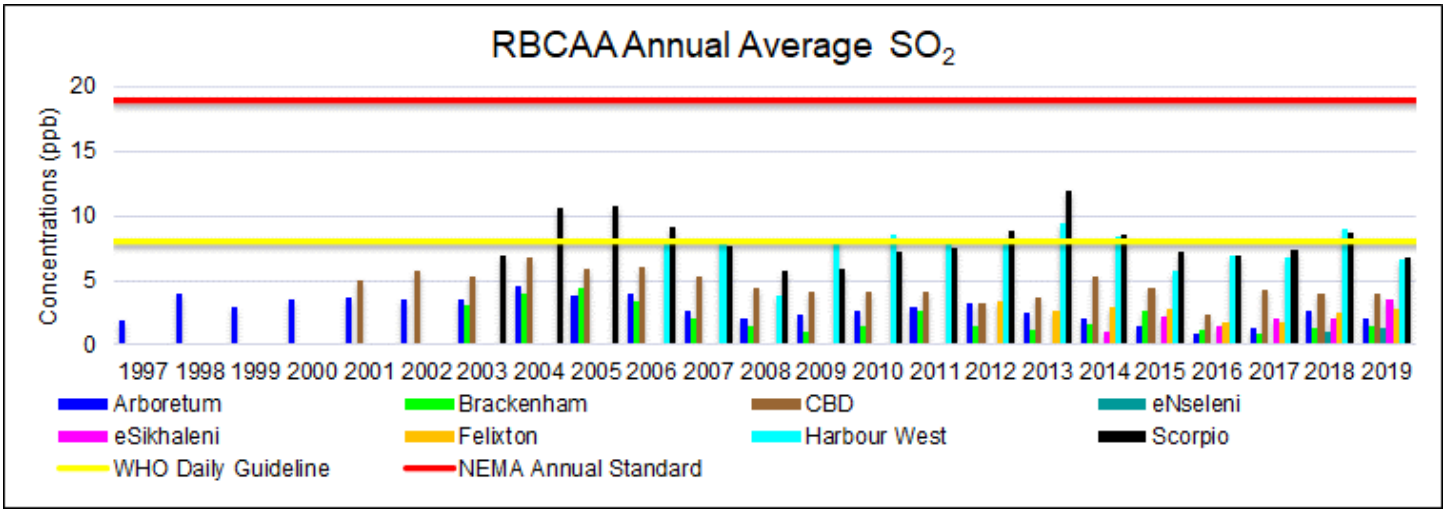



*Figure 24: $SO_2$ annual average concentrations.*

Compared to 2017 and 2018, 2019 annual average $SO_2$ concentrations most stations were similar (differed by less than less than 10% of the limit), values measured at Harbour West and Scorpio in 2018 were higher (Figure 25).

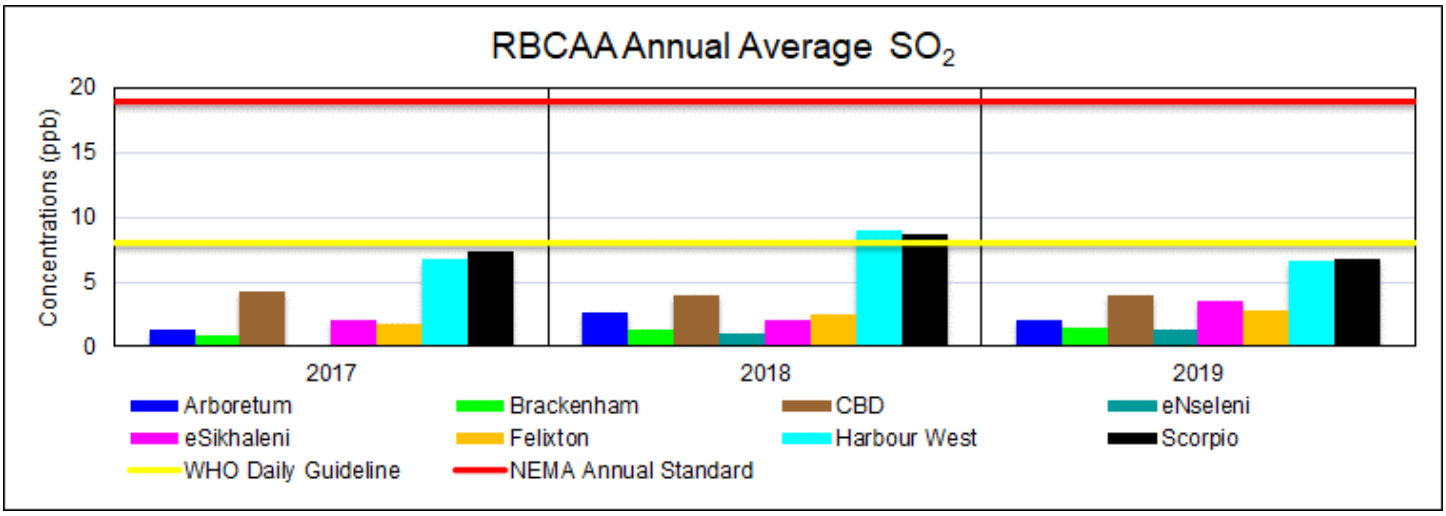



*Figure 25: $SO_2$ annual average concentration 2017 – 2018.*

## 5.8. $SO_2$ Exceedances

A summary of the $SO_2$ exceedances and breakdown per station is, presented in Table 5. $SO_2$ exceedances can be, associated with emissions because of process upsets (i.e. planned maintenance, plant shutdowns or start-up), leaks in equipment, pipelines, seals, valves (fugitive emissions) or an event (e.g. fires or emergency shutdowns). Please see APPENDIX F for the $SO_2$ Exceedance Log.

*Table 5: $SO_2$ station exceedance summary.*

| Standard / Guideline / Target | Station | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| NEMA & WHO 10-minute Standard / Target (191 ppb) | Arboretum | 0 | 0 | 0 |
| | Brackenham | 0 | 0 | 0 |
| | CBD | 0 | 0 | 0 |
| | eNseleni | No monitoring | 0 | 0 |
| | eSikhaleni | 0 | 0 | 0 |
| | Felixton | 0 | 0 | 0 |
| | Harbour West | 3 | 46 | 1 |
| | Scorpio | 7 | 45 | 13 |
| NEMA Hourly Standard (134 ppb) | Arboretum | 0 | 0 | 0 |
| | Brackenham | 0 | 0 | 0 |
| | CBD | 0 | 0 | 0 |
| | eNseleni | No monitoring | 0 | 0 |
| | eSikhaleni | 0 | 0 | 0 |

| Standard / Guideline / Target | Station | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| | Felixton | 0 | 0 | 0 |
| | Harbour West | 0 | 22 | 0 |
| | Scorpio | 0 | 12 | 5 |
| NEMAQA & WHO Daily Standard / Interim Target 1 (48 ppb) | Arboretum | 0 | 0 | 0 |
| | Brackenham | 0 | 0 | 0 |
| | CBD | 0 | 0 | 0 |
| | eNseleni | No monitoring | 0 | 0 |
| | eSikhaleni | 0 | 0 | 0 |
| | Felixton | 0 | 0 | 0 |
| | Harbour West | 0 | 4 | 0 |
| | Scorpio | 0 | 1 | 1 |
| WHO Daily Interim Target 2 (19 ppb) | Arboretum | 0 | 0 | 0 |
| | Brackenham | 0 | 0 | 0 |
| | CBD | 0 | 2 | 2 |
| | eNseleni | No monitoring | 0 | |
| | eSikhaleni | 0 | 0 | 0 |
| | Felixton | 0 | 0 | 0 |
| | Harbour West | 0 | 40 | 3 |
| | Scorpio | 0 | 38 | 1 |
| WHO Daily Standard (8 ppb) | Arboretum | 0 | 3 | 0 |
| | Brackenham | 0 | | 0 |
| | CBD | 42 | 55 | 31 |
| | eNseleni | No monitoring | 0 | 0 |
| | eSikhaleni | 0 | 0 | 0 |
| | Felixton | 0 | 0 | 0 |
| | Harbour West | 105 | 136 | 105 |
| | Scorpio | 127 | 139 | 100 |
| NEMA Annual Standard (19 ppb) | All $SO_2$ stations | None measured | None measured | None measured |

There were less $SO_2$ exceedance days measured at the various stations during 2019.

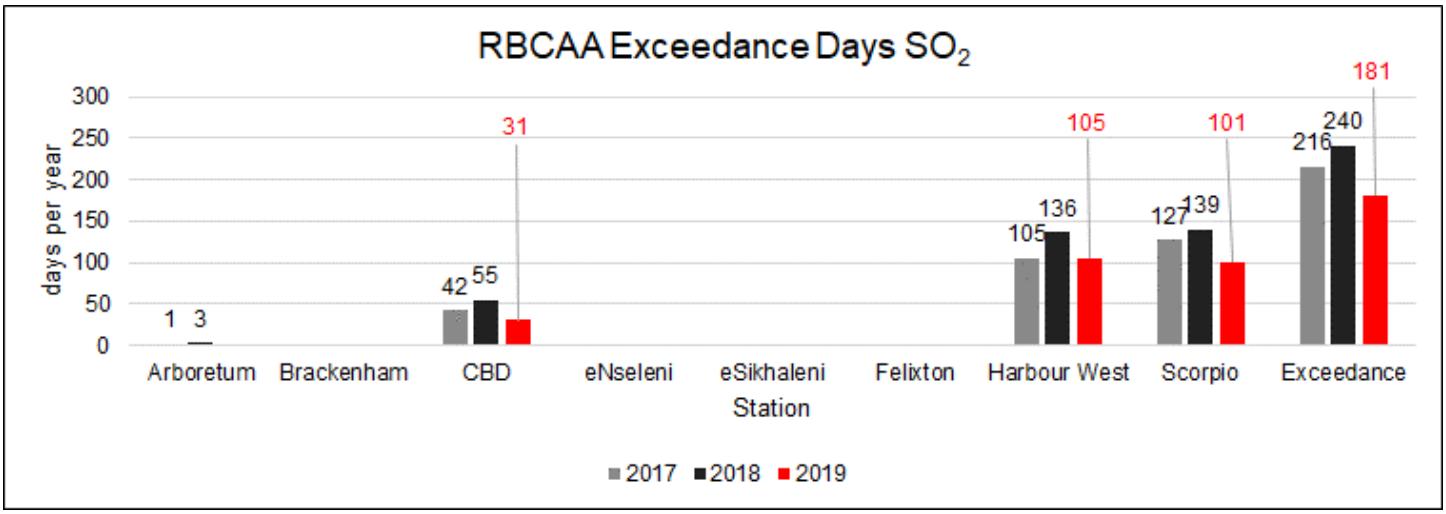



*Figure 26: Number of days on which $SO_2$ exceedances occurred 2017 – 2019.*

## 5.9. $SO_2$ Dispersion Simulations

A summary of the predicted $SO_2$ impacts at various locations, according to national standards and international guidelines is presented in Table 8, the table is colour code according to the Air Quality Index (AQI) shown in Table 6 and Table 7. The colour scale ranges from blue (indicating a low concentration relative to the standard/guideline), to red (indicating an exceedance of the standard/guideline).

*Table 6: Air quality index (percentage of NEMA $SO_2$ limit value).*

| Air Quality Rating | Percentage of $SO_2$ limit value | Impact |
|---|---|---|
| Good | 0% - 25% | No known harmful effects to soil, water, vegetation, animals, visibility, or human health. |
| Fair | 26% - 50% | Adequate protection against harmful effects to soil, water, vegetation, animals, visibility, or human health. |
| Poor | 51% - 100% | Not all aspects of the environment are, adequately protected from adverse effects. Some long-term control action may be, required depending on the frequency, duration, and circumstances of the readings. |
| **Very Poor** | >100% | In this range, further deterioration of air quality and continued high readings could pose a risk to public health. |

*Table 7: Air quality index (percentage of WHO $SO_2$ limit value)*

| Air Quality Rating | Percentage of WHO $SO_2$ limit value |
|---|---|
| Good | 0% - 25% |
| Fair | 26% - 50% |
| Poor | 51% - 100% |
| **Very Poor** | >100% |

**Table 8: $SO_2$ Prediction Summary.**

| Area | Percentage of NEMA Standard | | | | Percentage of WHO Guideline | | | Frequency of exceeding WHO Guideline | |
|---|---|---|---|---|---|---|---|---|---|
| **Standard** | **Annual** | **Daily** | **Hourly** | **10-minute** | **Annual** | **Daily** | **10-minute** | **Daily** | **10-minute** |
| **Limit Value** | **19** | **48** | **134** | **191** | **8** | **8** | **191** | **0** | **0** |
| Alton | 9% | 27% | 29% | 21% | 22% | **160%** | 21% | 16 | 0 |
| Aquadene | 9% | 21% | 20% | 15% | 21% | **127%** | 15% | 11 | 0 |
| Arboretum | 9% | 20% | 21% | 16% | 22% | **118%** | 16% | 15 | 0 |
| Arboretum Extension | 8% | 21% | 22% | 15% | 20% | **126%** | 15% | 16 | 1 |
| Bayside Aluminium | 14% | 23% | 26% | 18% | 34% | **137%** | 18% | 25 | 1 |
| Birdswood | 12% | 32% | 27% | 20% | 28% | **190%** | 20% | 25 | 3 |
| Brackenham | 12% | 34% | 25% | 18% | 29% | **202%** | 18% | 27 | 0 |
| CBD | 11% | 21% | 24% | 17% | 25% | **123%** | 17% | 11 | 0 |
| Empangeni | 3% | 10% | 11% | 8% | 8% | 58% | 8% | 0 | 0 |
| Esikhawini | 8% | 19% | 20% | 15% | 20% | **112%** | 15% | 6 | 0 |
| Tronox | 2% | 9% | 8% | 6% | 5% | 56% | 6% | 1 | 0 |
| Felixton | 9% | 21% | 25% | 18% | 22% | **127%** | 18% | 11 | 0 |
| Foskor | 10% | 27% | 21% | 14% | 23% | **162%** | 14% | 10 | 5 |
| Greenhill | 4% | 16% | 10% | 8% | 10% | 94% | 8% | 3 | 0 |
| Hillside Aluminium | 42% | 43% | 31% | 22% | **101%** | **261%** | 22% | 190 | 0 |
| Mandlazini Agri-Village | 14% | 61% | 43% | 32% | 33% | **367%** | 32% | 35 | 22 |
| Meerensee | 4% | 12% | 10% | 7% | 9% | 74% | 7% | 1 | 0 |
| Mondi Richards Bay | 6% | 17% | 20% | 15% | 15% | **101%** | 15% | 6 | 0 |
| Mzingazi Agri-Village | 8% | 37% | 22% | 15% | 19% | **223%** | 15% | 17 | 30 |

| Area | Percentage of NEMA Standard | | | | Percentage of WHO Guideline | | | Frequency of exceeding WHO Guideline | |
|---|---|---|---|---|---|---|---|---|---|
| Standard | Annual | Daily | Hourly | 10-minute | Annual | Daily | 10-minute | Daily | 10-minute |
| Limit Value | 19 | 48 | 134 | 191 | 8 | 8 | 191 | 0 | 0 |
| Nseleni | 7% | 15% | 13% | 10% | 16% | 88% | 10% | 3 | 1 |
| Port of Richards Bay | 8% | 22% | 23% | 16% | 19% | **134%** | 16% | 11 | 0 |
| Richards Bay Coal Terminal | 5% | 12% | 13% | 10% | 12% | 74% | 10% | 3 | 1 |
| Richards Bay Minerals | 11% | 30% | 20% | 15% | 27% | **178%** | 15% | 14 | 1 |
| Southern Sanctuary | 12% | 21% | 19% | 14% | 29% | **125%** | 14% | 18 | 0 |
| Richards Bay Alloys | 10% | 27% | 28% | 20% | 23% | **164%** | 20% | 20 | 0 |
| Veldenvlei | 11% | 23% | 21% | 15% | 25% | **137%** | 15% | 9 | 6 |
| Vulindlela | 7% | 22% | 19% | 14% | 18% | **132%** | 14% | 8 | 0 |
| Wildenweide | 13% | 27% | 24% | 17% | 31% | **163%** | 17% | 35 | 0 |
| Alton | 9% | 27% | 29% | 21% | 22% | **160%** | 21% | 16 | 0 |

The following plots of $SO_2$ concentrations are, provided:

- $SO_2$ 10-minute Predicted Maxima (NEMA & WHO):
  - Regional (Figure 27)
  - Richards Bay (Figure 28)
- $SO_2$ Hourly Predicted Maxima (NEMA):
  - Regional (Figure 29)
  - Richards Bay (Figure 30)
- $SO_2$ Daily Predicted Maxima (NEMA):
  - Regional (Figure 31)
  - Richards Bay (Figure 32)
- $SO_2$ Daily Predicted Maxima (WHO):
  - Regional (Figure 33)
- SO2 Annual Average Prediction (NEMA):
  - Regional (Figure 34)
  - Richards Bay (Figure 35)
- $SO_2$ Annual Average Prediction (WHO):
  - Regional (Figure 36)

The plots are colour coded according to the Air Quality Index (AQI) in Table 6 and Table 7.

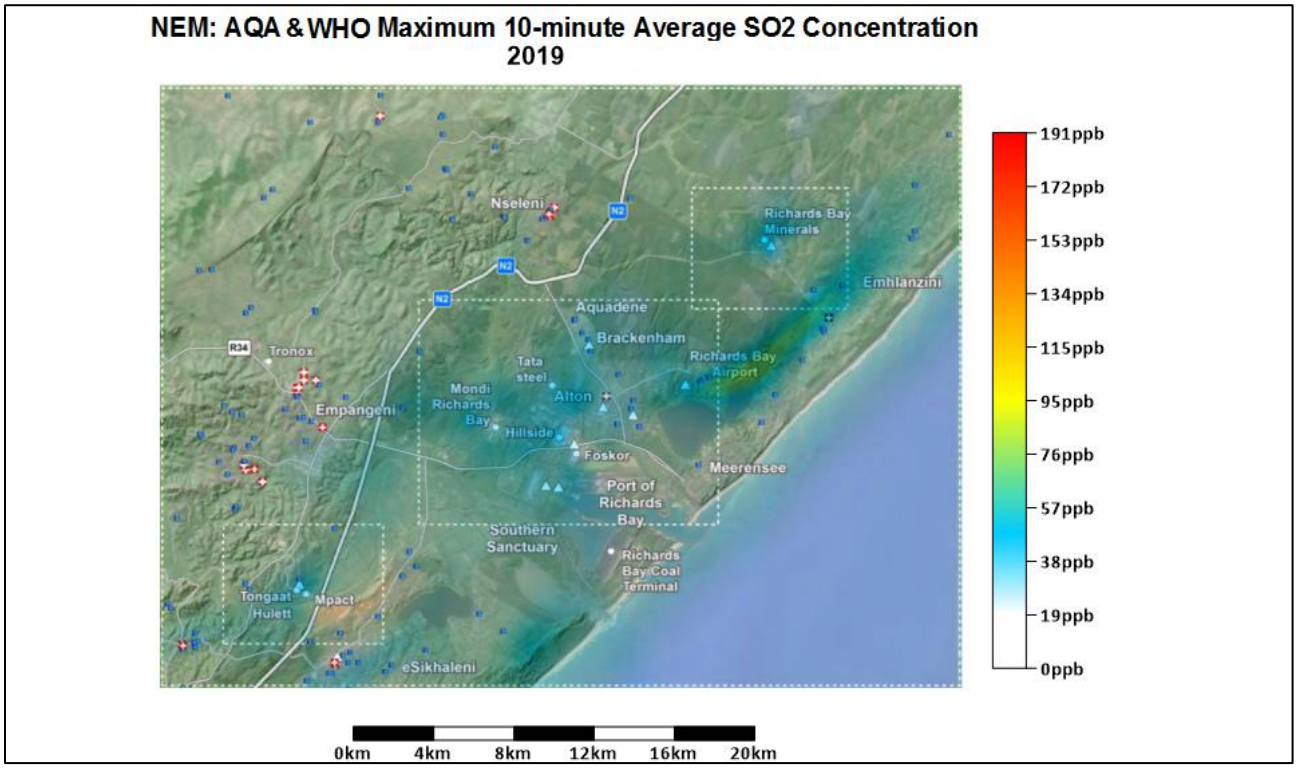



*Figure 27: $SO_2$ maximum 10-minute average prediction (regional map).*

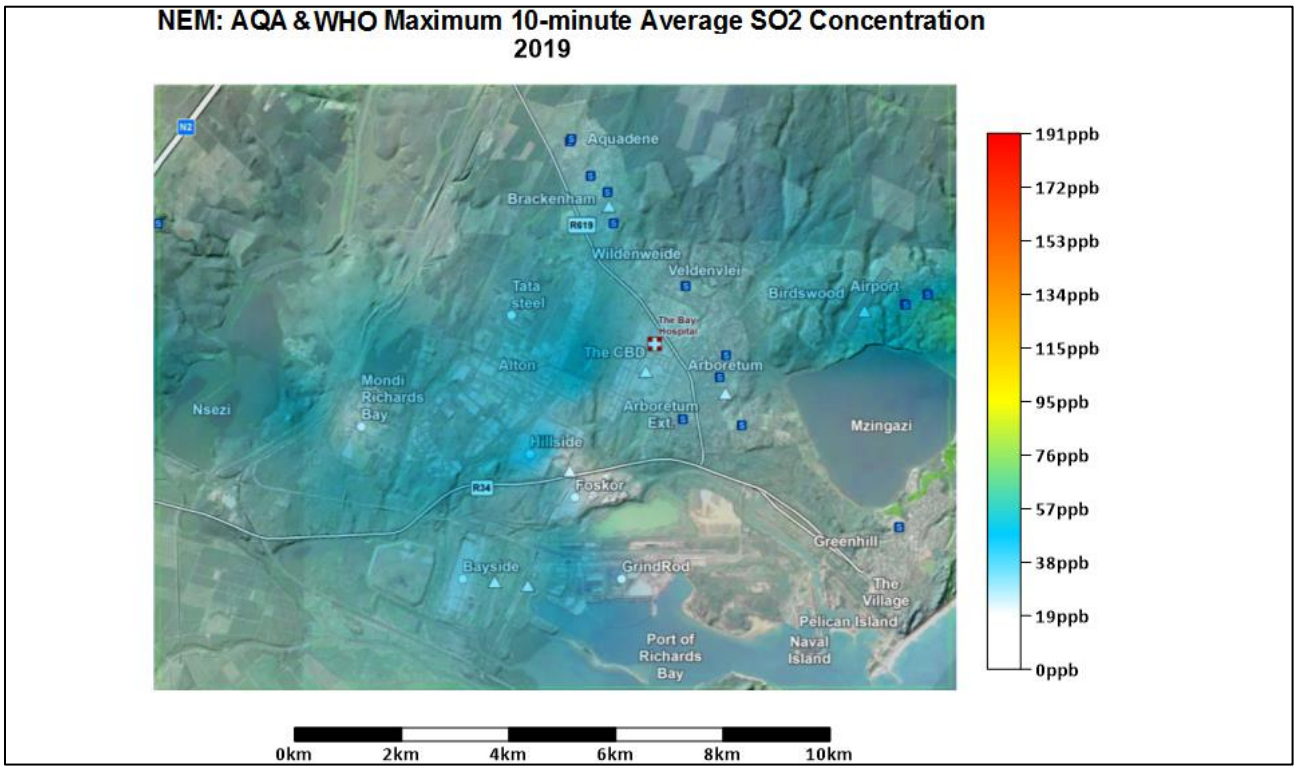



*Figure 28: $SO_2$ maximum 10-minute average prediction (Richards Bay map).*

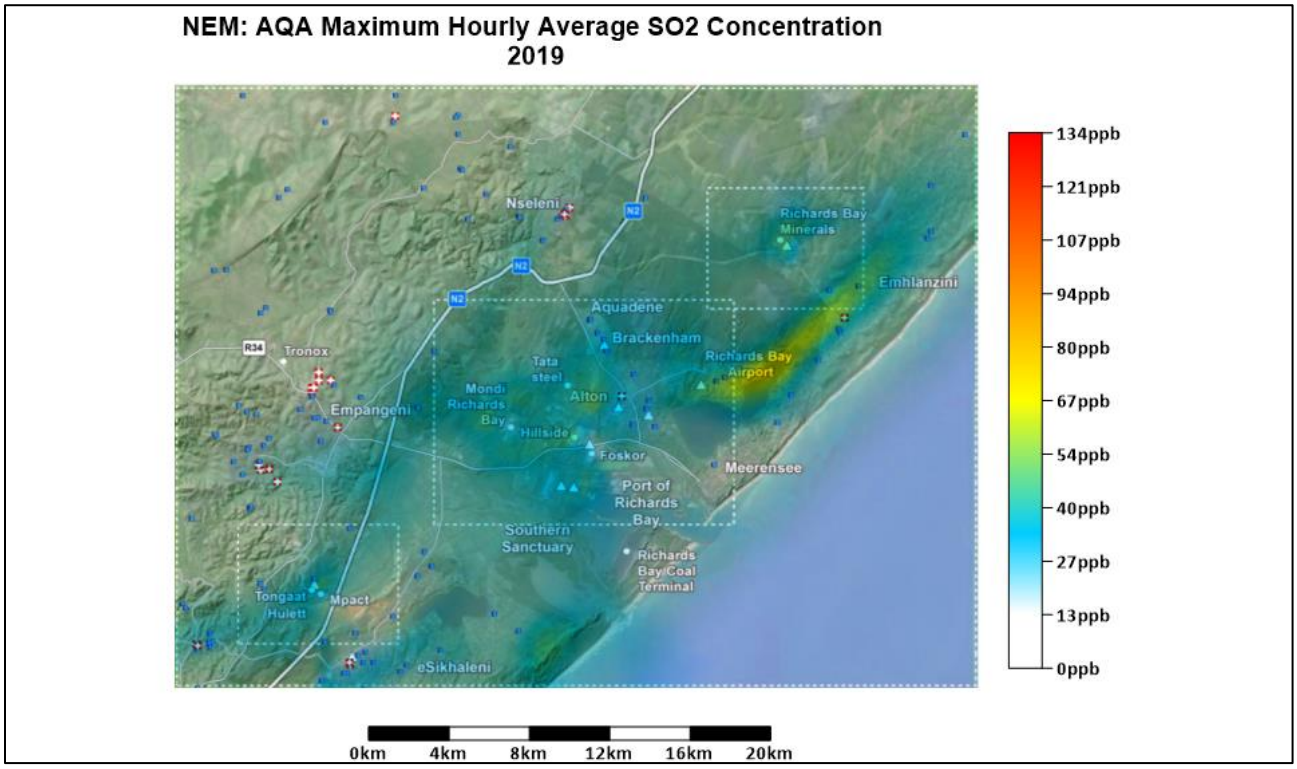



*Figure 29: $SO_2$ maximum hourly average prediction (regional map).*

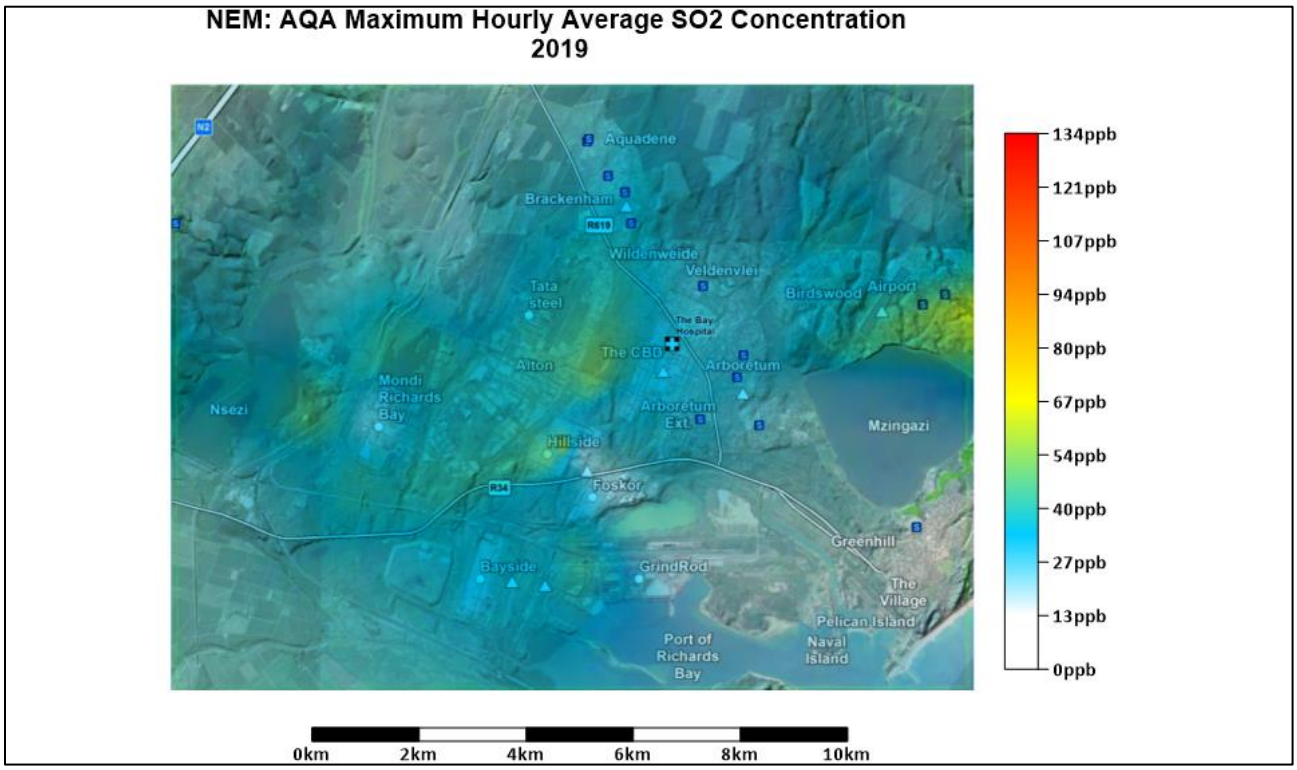



*Figure 30: $SO_2$ maximum hourly average prediction (Richards Bay map).*

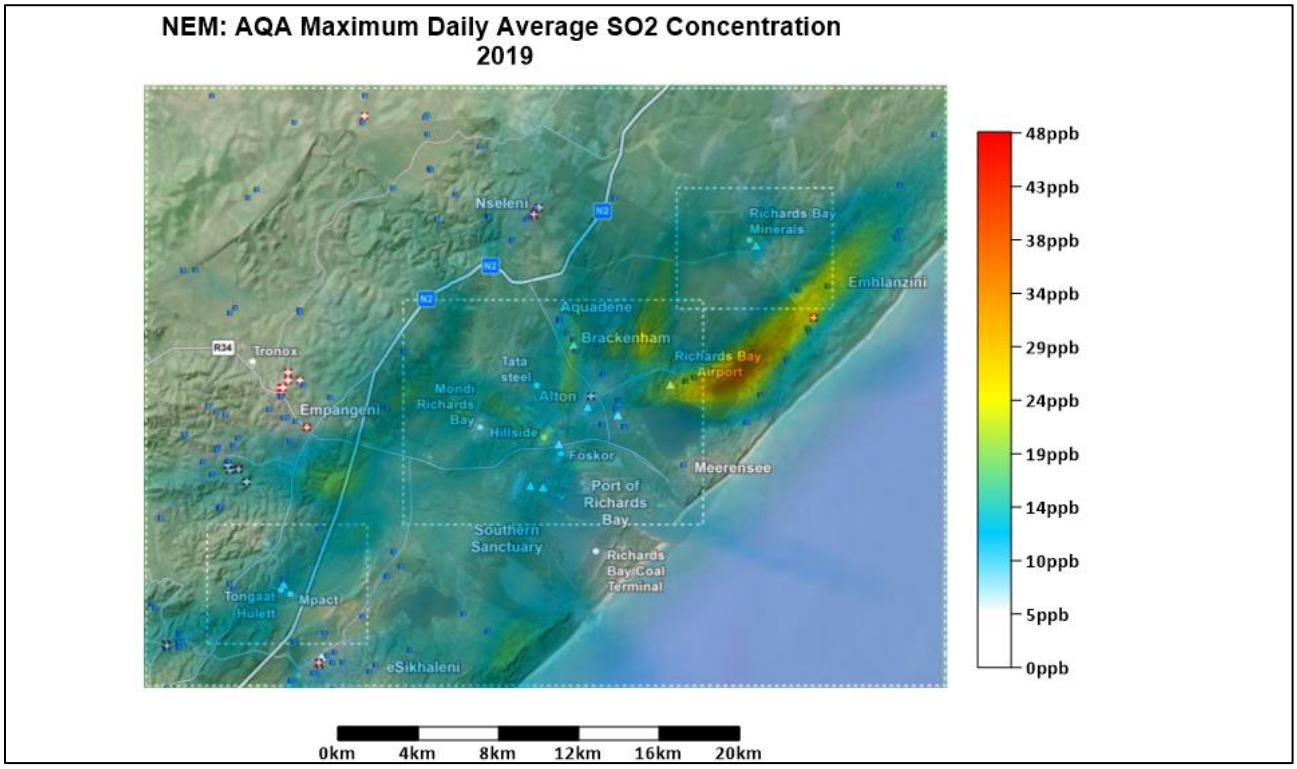



*Figure 31: $SO_2$ maximum daily average prediction (regional map).*

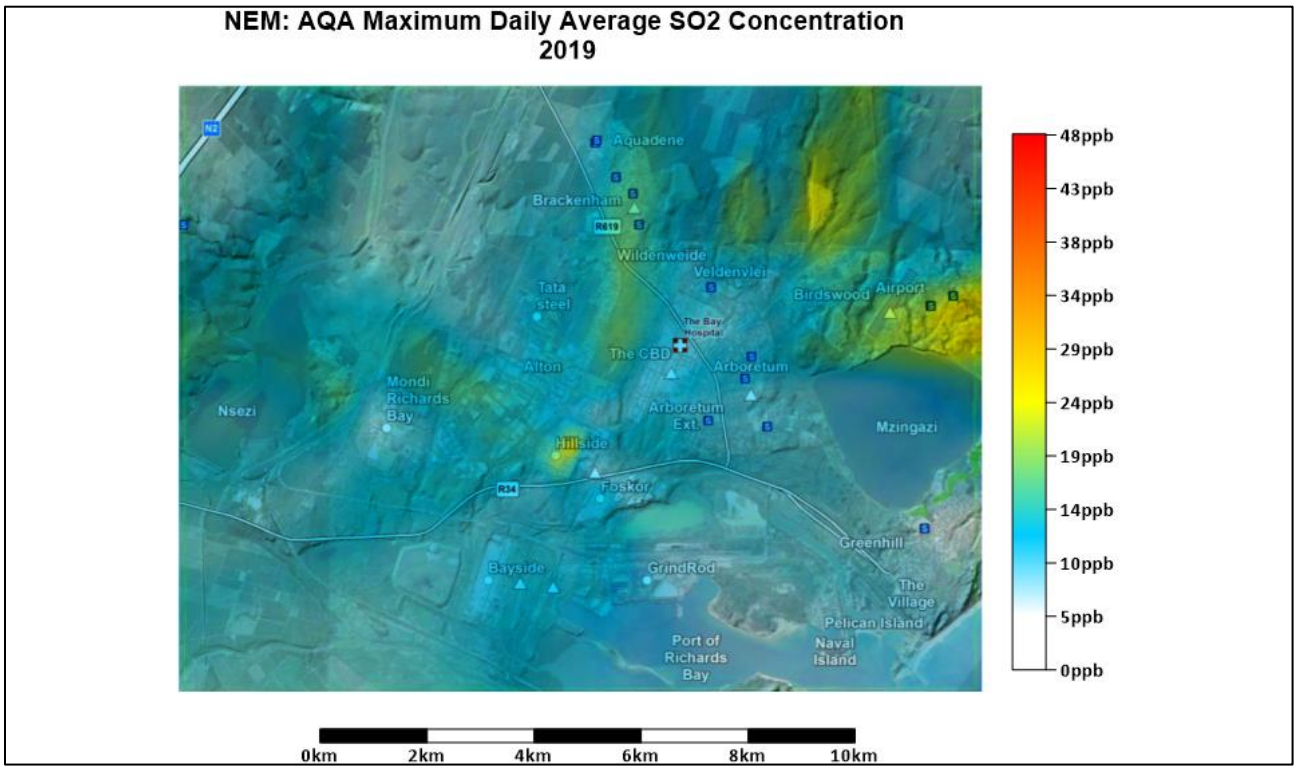



*Figure 32: $SO_2$ maximum daily average prediction (Richards Bay map).*

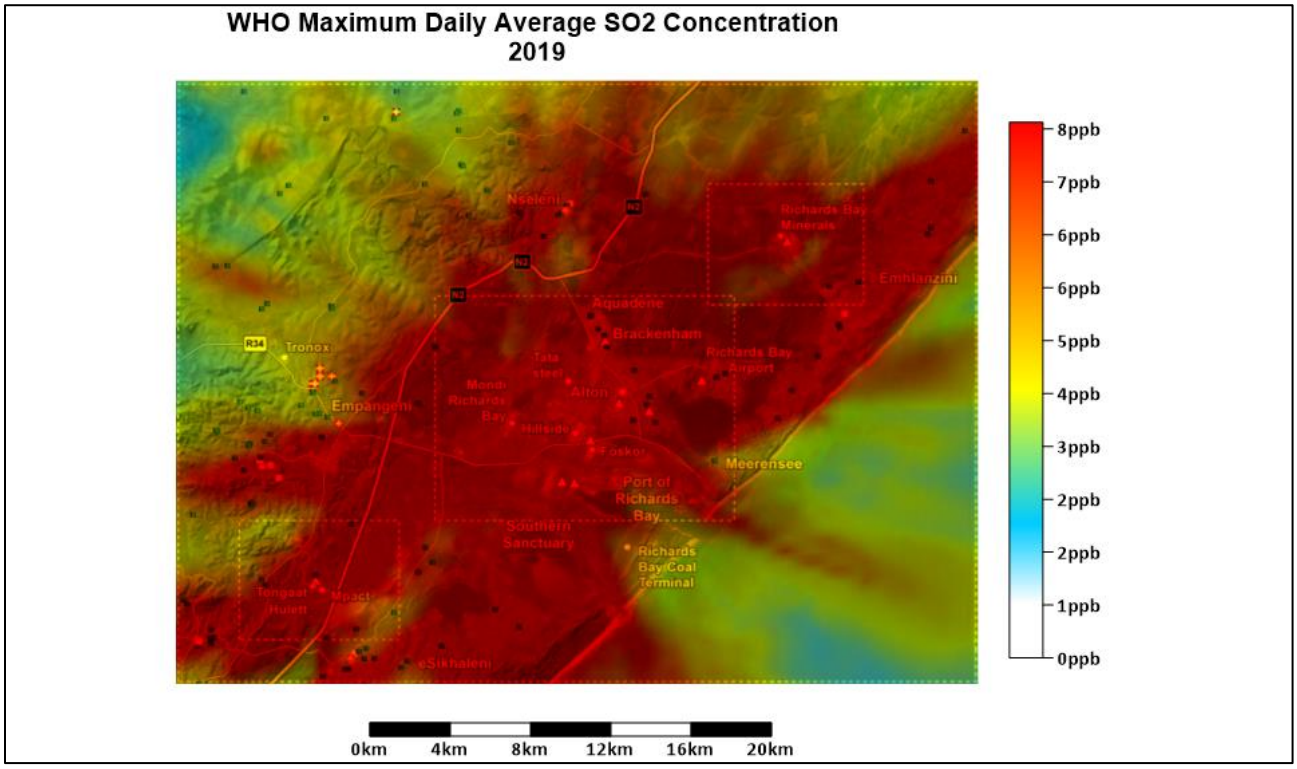



*Figure 33: $SO_2$ maximum daily average prediction (regional map).*

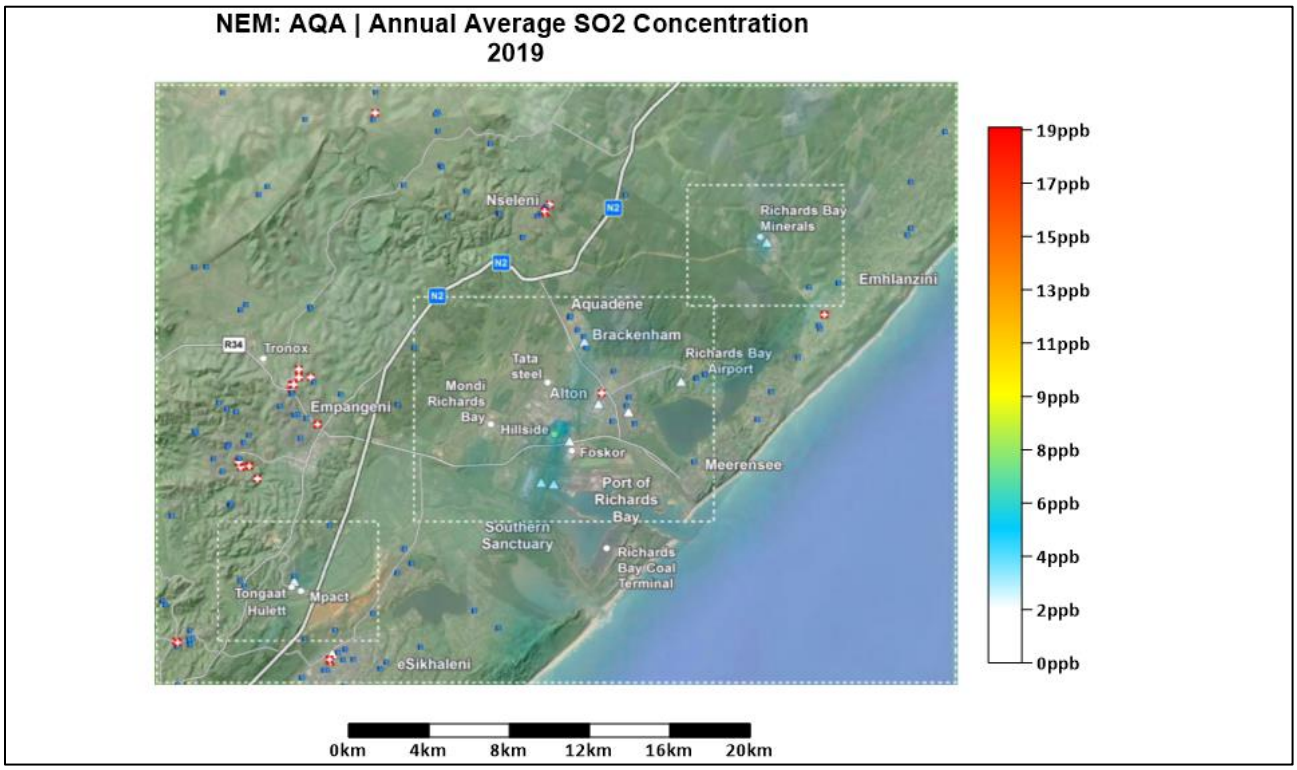



*Figure 34: $SO_2$ annual average prediction (regional map).*

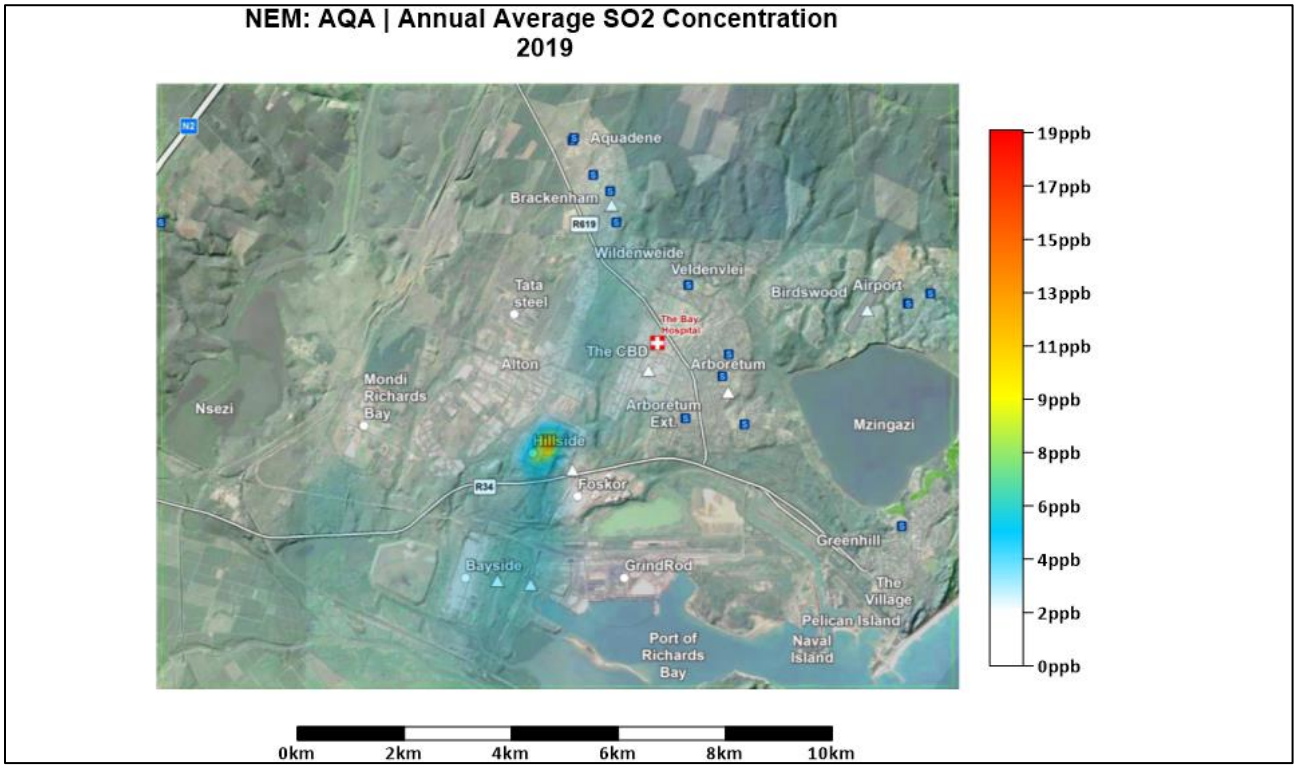



*Figure 35: $SO_2$ annual average prediction (Richards Bay map).*

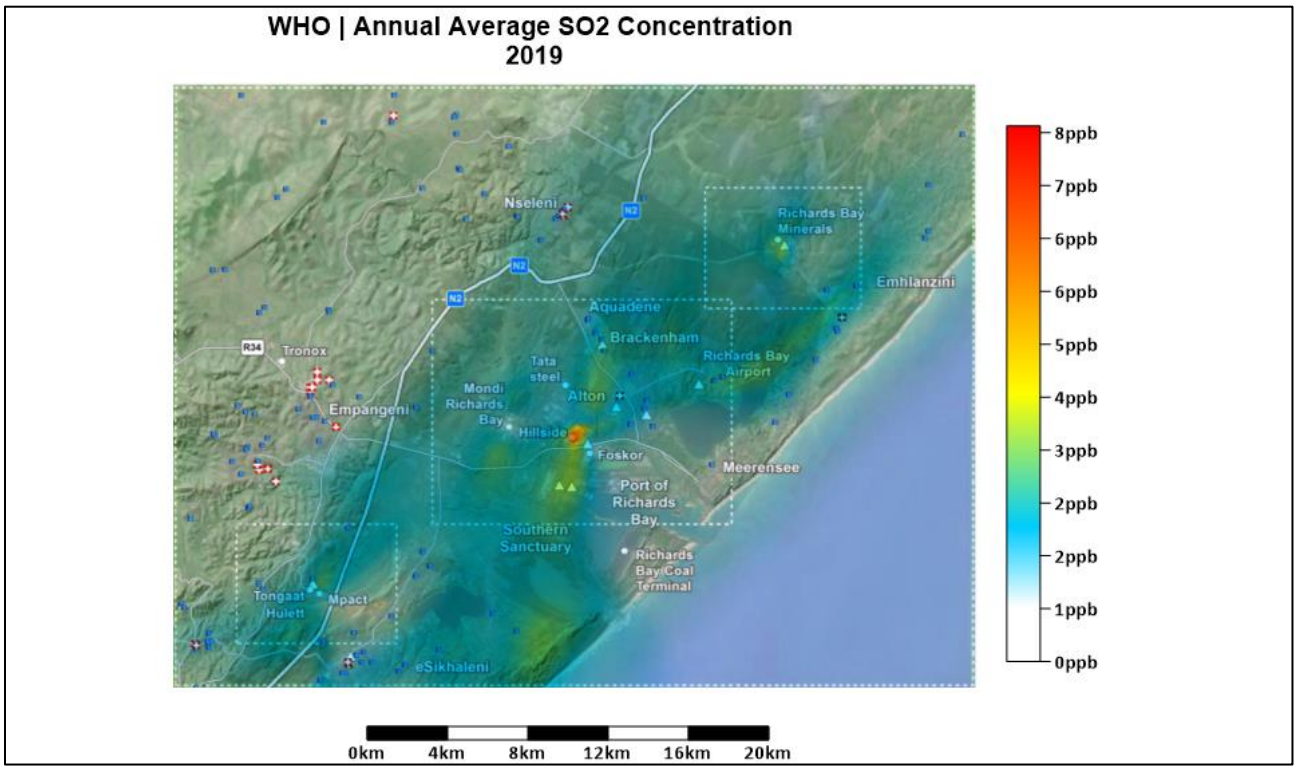



*Figure 36: $SO_2$ annual average prediction (regional map).*

## 5.10. SO2 Model Correlation

Annual average $SO_2$ concentration measured at each of the RBCAA stations and the CALPUFF predicted annual average is, shown in Figure 37. The annual average for the same period the previous year is, also provided. Compared to the previous year annual average $SO_2$ concentrations at all stations except for Harbour West were similar (within 10% of the NEMA annual standard). Annual average predicted values at most stations, were within accepted dispersion modelling norms (-50% to 200%). CBD, eSikhaleni, and Scorpio were under-predicted, the cause of the under predictions at these stations is most likely as a result of a combination of local fugitive emissions unaccounted for in the model, and the model's tendency to underpredict in the near field. Compared to the measurements predicted values at CBD, eSikhaleni, Harbour West and Scorpio were lower, and at Arboretum, Brackenham, eNseleni, and Felixton similar (within 10% of the standard).

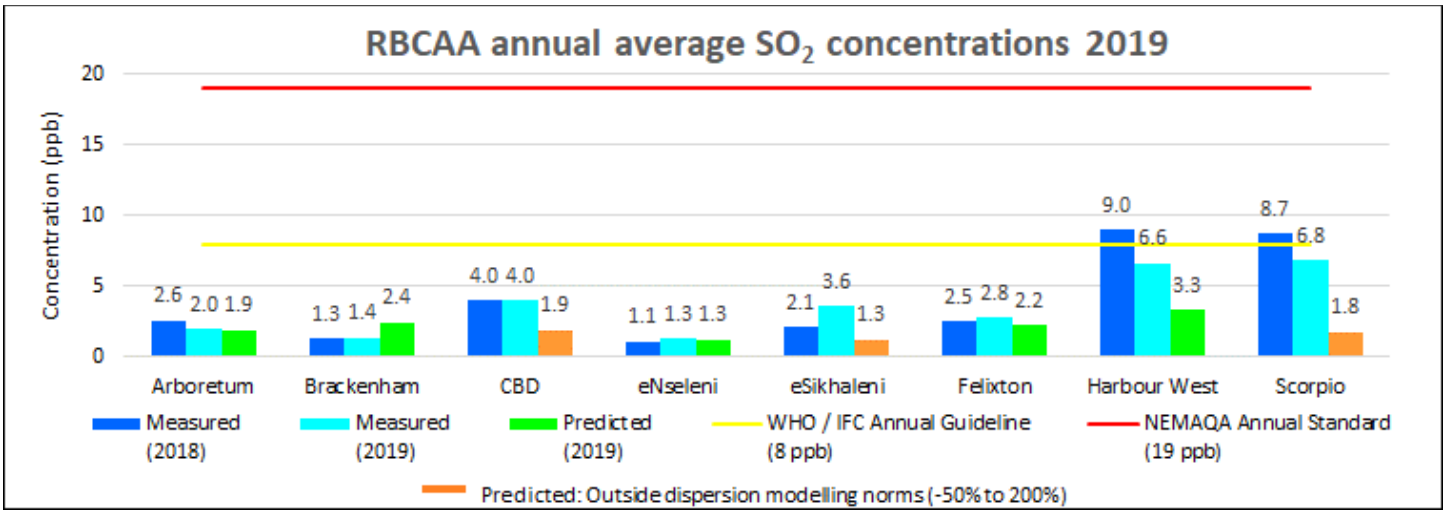



*Figure 37: $SO_2$ annual average concentration and prediction.*

# 6. TOTAL REDUCED SULPHUR MONITORING

Total Reduced Sulphur (TRS) is measured by at CBD. Total reduced sulphur compounds, often associated with rotten egg or cooked cabbage odour, refer to a gaseous mixture of compounds consisting mainly of hydrogen sulphide ($H_2S$), methyl mercaptan ($CH_3S$-H), dimethyl sulphide ($CH_3$-S-$CH_3$) and dimethyl disulphide ($CH_3$-S-S-$CH_3$). While there are other ambient TRS compounds, these four are the most common, abundant and the ones generally referred to in discussions about TRS. Once released into the atmosphere, oxidation products of TRS compounds, such as sulphuric acid, contribute to the acidity of the environment.

The most commonly, reported health concerns related to TRS substances are nausea and headaches, although each component has its characteristics and effects.

## 6.1. TRS Ambient Air Quality Standards

There are no South African standards for TRS.

The World Health Organization (WHO) recommends that to avoid substantial complaints about odour annoyance among the exposed population; hydrogen sulphide concentrations should not be allowed to exceed 7 µg/m$^3$ (5 ppb), with a 30-minute averaging period (WHO, 2000).

The Ontario Ministry for the Environment (OME) has derived the following standards for TRS for the Pulp and Paper sector (OME, 1999):

- A 24-hour average Ambient Air Quality Criterion (AAQC) of 14 µg/m$^3$ (10.1 ppb) for TRS, based on the adverse effects on the respiratory system (nasal lesions) of this mixture
- A 10-minute average AAQC of 13 µg/m$^3$ (9.3 ppb) for TRS, based on odour effects
- A 30-minute standard of 10 µg/m$^3$ (7.2 ppb) for TRS; based on both odour and health effects of this mixture

For all other sectors (including sectors such as Iron & Steel; Petroleum Refineries, Municipal Sewage Treatment Plants):

- A 24-hour average AAQC of 7 µg/m$^3$ (5.0 ppb) for TRS based on the adverse effects on the respiratory system of this mixture
- A 10-minute average AAQC of 13 µg/m$^3$ (9.3 ppb) for TRS based on odour effects
- A 30-minute standard of 10 µg/m$^3$ (7.2 ppb) for TRS; based on both odour and health effects of this mixture

The RBCAA has decided to implement the:

- WHO 30-minute $H_2S$ Guideline
- OME daily and 10-minute standards for Pulp and Paper sector
- RBCAA established a correlation between TRS concentrations exceeding 4.5 ppb and the number of complaints received; the RBCAA has therefore set this as its 10-minute target

## 6.2. TRS 10-minute Average Concentrations

The 10-minute average TRS concentrations are, shown below (Figure 38). There were 1078 measured exceedances of the RBCAA 10-minute Target (4.5 ppb), 234 measured exceedances of the OME 10-minute TRS Standard (9.3 ppb).

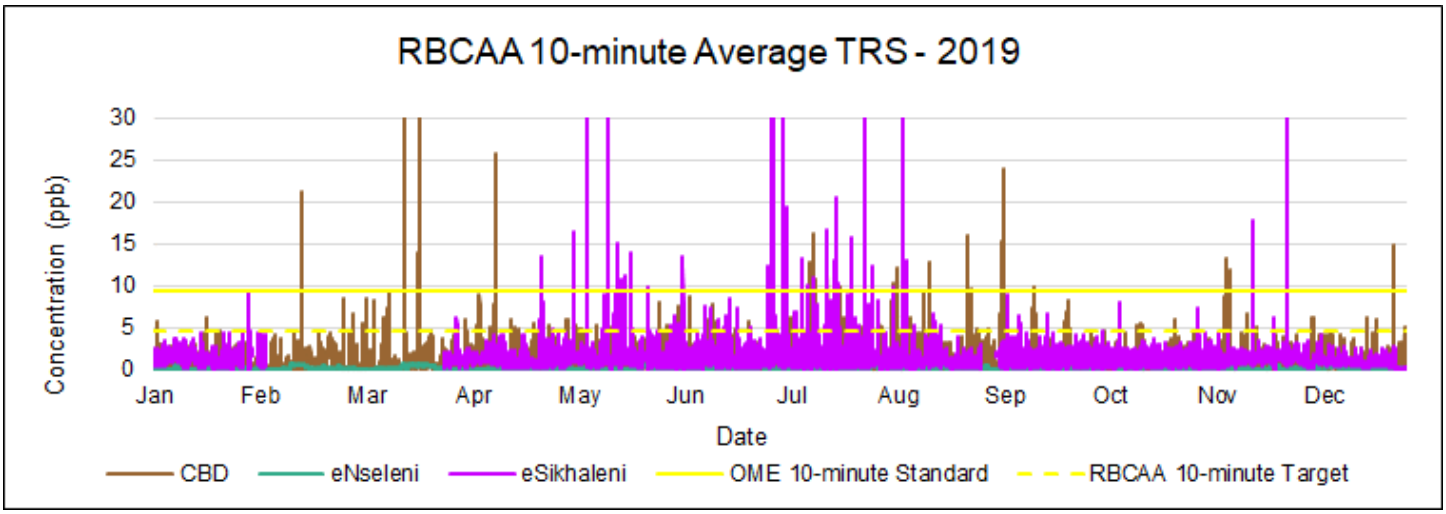



*Figure 38: TRS 10-minute average concentrations.*

## 6.3. TRS 30-minute Average Concentrations

The 30-minute average TRS concentrations at CBD are, shown below (Figure 39). There were 277 measured exceedances of the WHO 30-minute $H_2S$ Guideline (5.0 ppb).

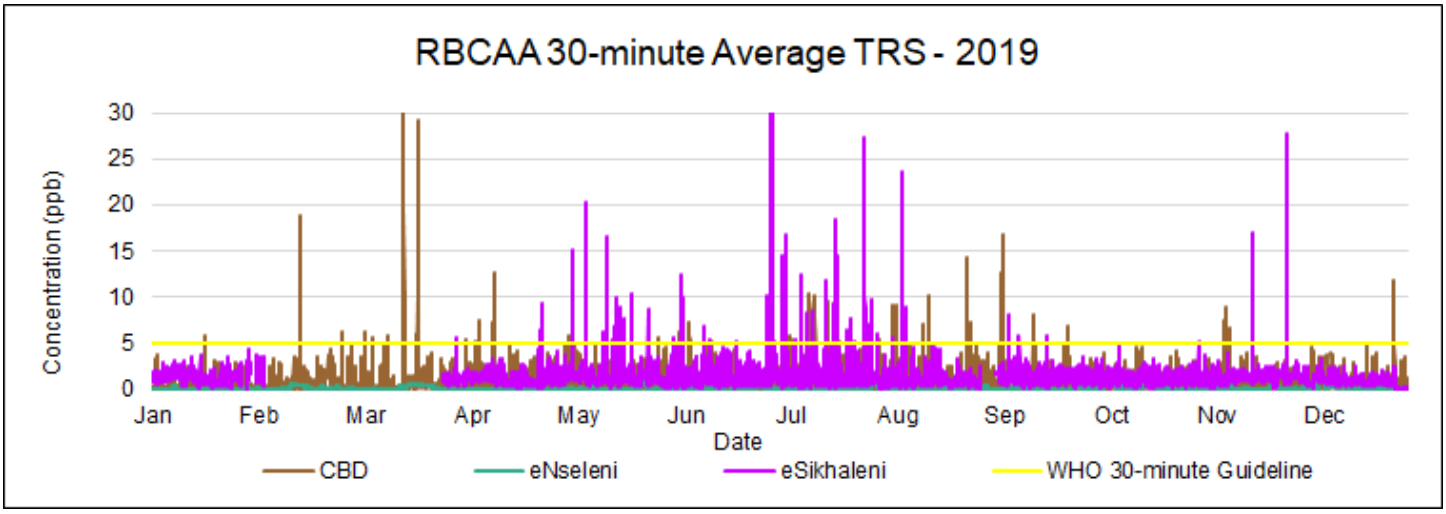



*Figure 39: TRS 30-minute average concentration.*

## 6.4. TRS Daily Average Concentrations

Daily average TRS concentrations at CBD are, shown below (Figure 40). There were no measured exceedances of the OME daily TRS Standard (10.1 ppb).

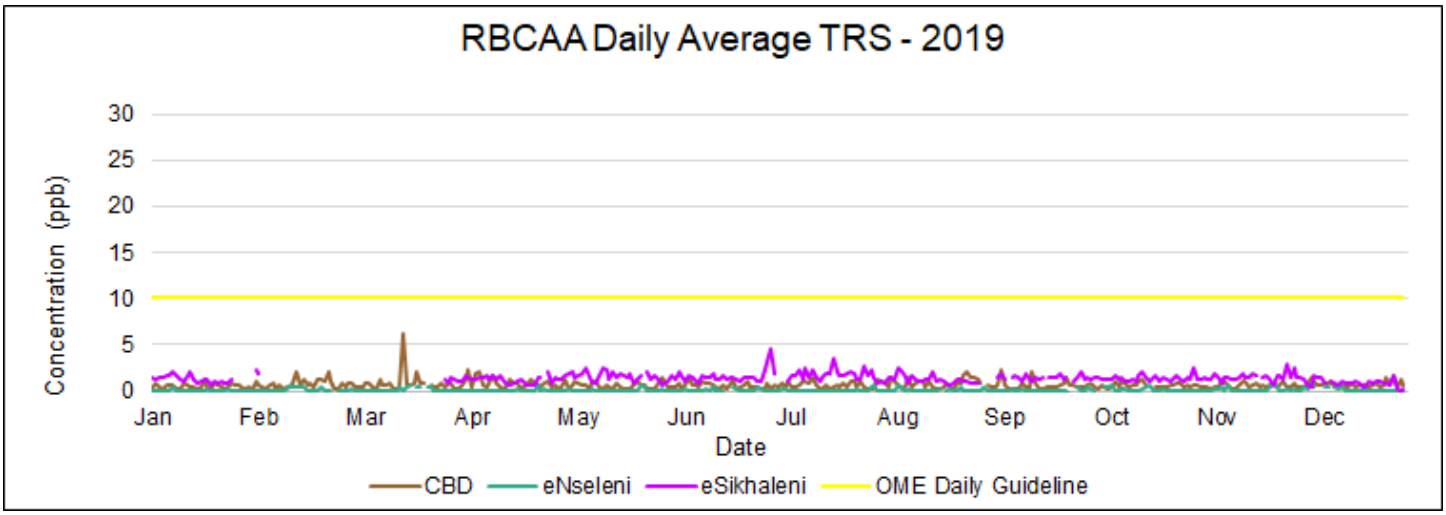



*Figure 40: TRS daily average concentration.*

## 6.5. TRS Diurnal Concentrations

The diurnal TRS concentrations are, shown below (Figure 41).

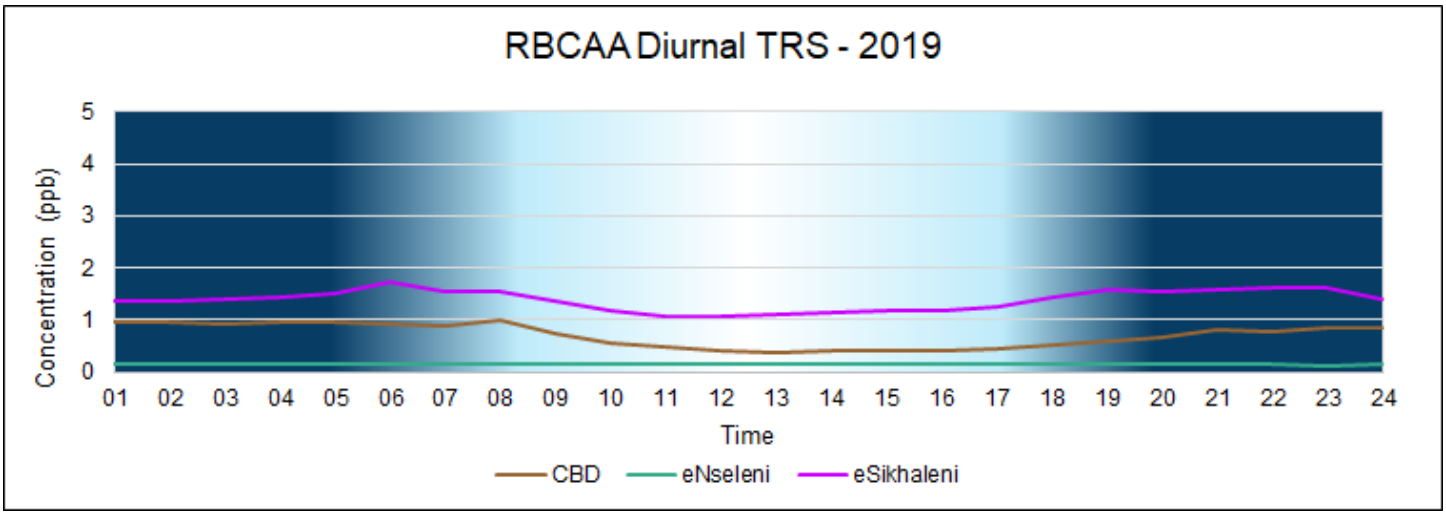



*Figure 41: TRS diurnal concentrations.*

## 6.6. TRS Monthly Concentrations

The seasonal TRS concentrations in 2019 are, provided in Figure 42.

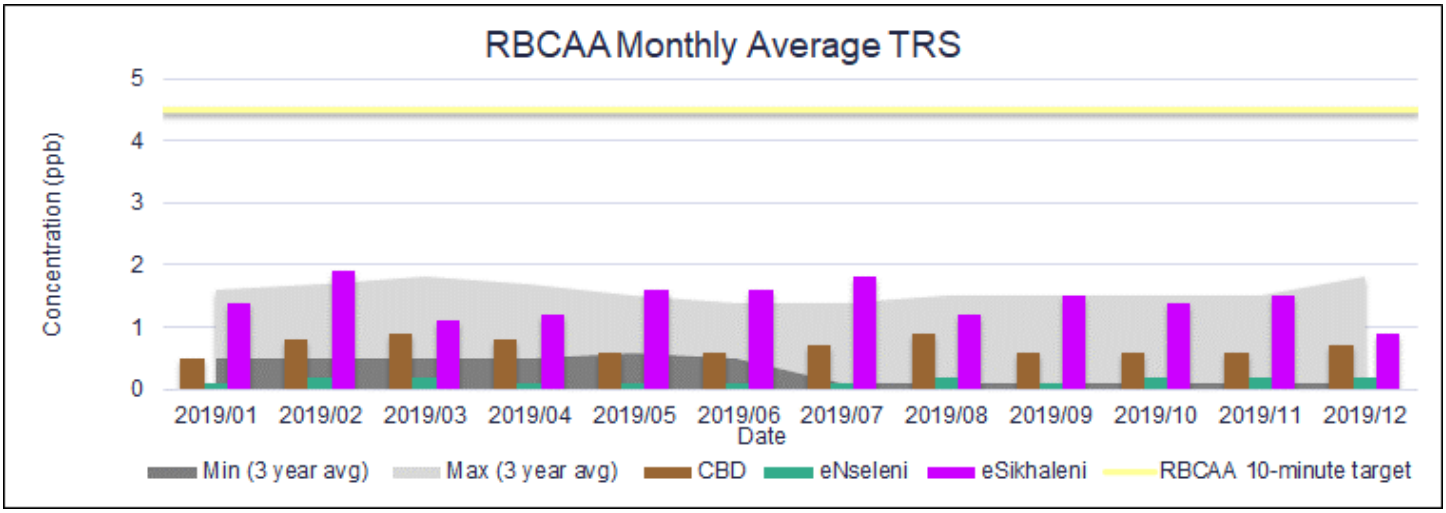



*Figure 42: TRS seasonal concentrations.*

## 6.7. TRS Annual Concentration

Annual average TRS concentrations are, illustrated in Figure 45. There was a marked decrease in annual average TRS concentrations from 2008 to 2011; concentrations seem to have stabilised since then though. In 2010 Mondi Richards Bay commissioned Phase 1 of their Odour Abatement Project, this involved installing carbon filters on all their odorous venting points. This phase would have resulted in a decrease in ambient TRS and does not explain the increase between 2010 and 2012 as Mondi continued with various smaller odour abatement projects during this time which should have resulted in a further decrease in TRS. It is, possible that weather conditions may have played a role. In 2012 Mondi Richards Bay commissioned Phase 2 of the Odour Abatement Project which successfully reduced TRS emissions from their Chip Bin. However, during the winter of 2012, they experienced a problem of fugitive odour from their effluent plant due to a turpentine tube condenser that was, taken out of service for repairs, the odour impact was unknown at the time. This impact was, addressed in 2012, and as a result in 2013 TRS decreased. Ambient TRS increased again in 2014 due to mill power instability, 2015 to 2017 also proved to be difficult years with an increase in fugitive emissions from the effluent plant because of decreased water consumption.

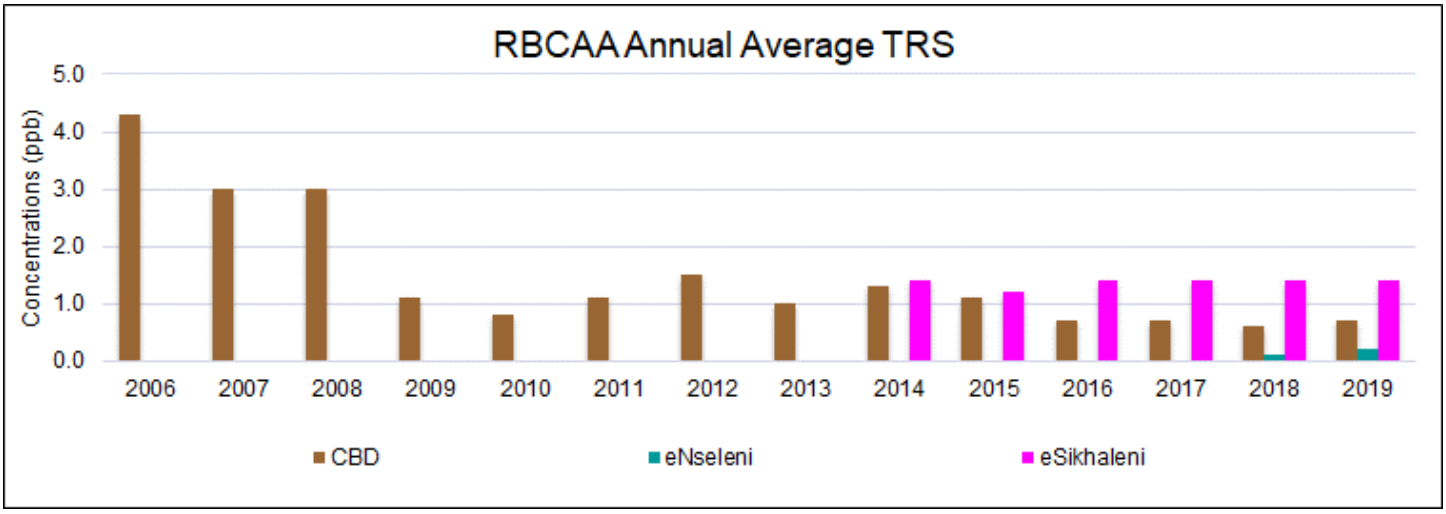



*Figure 43: TRS annual average concentrations.*

Compared to 2017 and 2018, 2019 annual average TRS concentrations at most stations were similar (differed by less than less than 10% of the limit) (Figure 44).

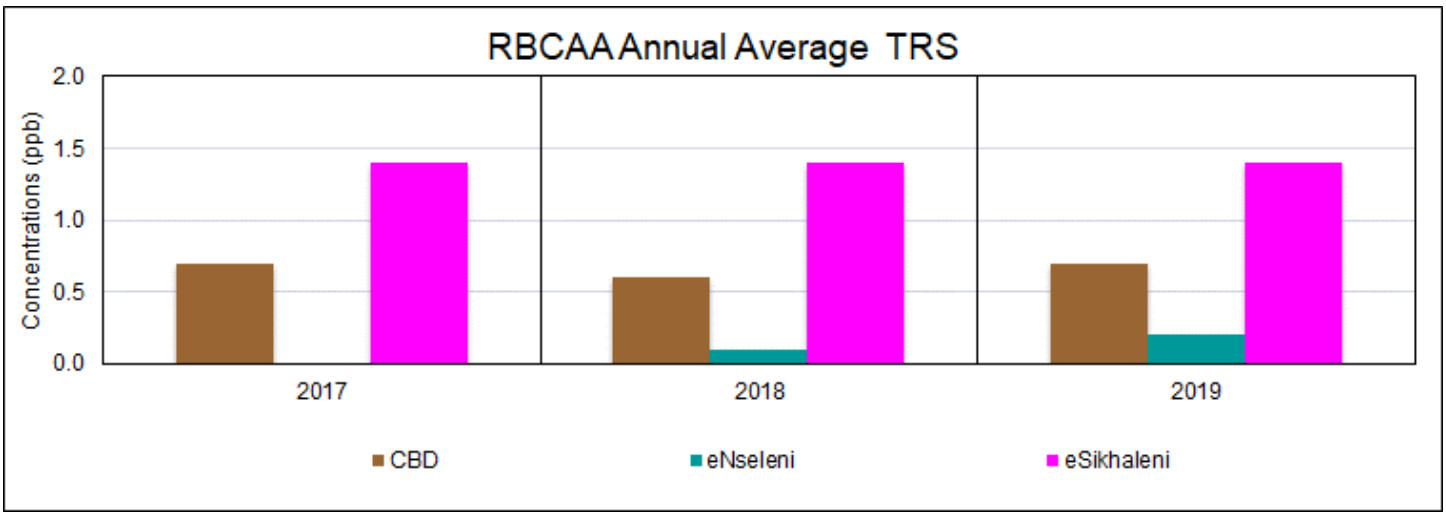



*Figure 44: TRS annual average concentration 2017 - 2019*

## 6.8. TRS Exceedances

A summary of the TRS exceedances and breakdown per station is, presented below (Table 9) Please see APPENDIX G for the TRS Exceedance Log.

*Table 9: TRS station exceedances summary.*

| Standard / Guideline / Target | Station | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| OME 10-minute TRS standard (9.3 ppb) | CBD | 10 | 87 | 90 |
| | eNseleni | No monitoring | No monitoring | 0 |
| | eSikhaleni | 43 | 46 | 144 |
| RBCAA 10-minute Target (4.5 ppb) | CBD | 410 | 450 | 489 |
| | eNseleni | No monitoring | No monitoring | 0 |
| | eSikhaleni | 210 | 208 | 589 |
| WHO 30-minute $H_2S$ Guideline (5.0 ppb) | CBD | 65 | 103 | 124 |
| | eNseleni | No monitoring | No monitoring | 0 |
| | eSikhaleni | 41 | 50 | 151 |
| OME Daily TRS standard (10.0 ppb) | All TRS stations | None measured | None measured | None measured |

TRS exceedances can be, associated with emissions because of process upsets (i.e. planned maintenance, plant shutdowns or start-up), leaks in equipment, pipelines, seals, valves (fugitive emissions) or an event (e.g. fires or emergency shutdowns). Most of the TRS exceedances recorded during 2019 were, allocated to Mondi. There were more TRS exceedance days recorded during 2019.

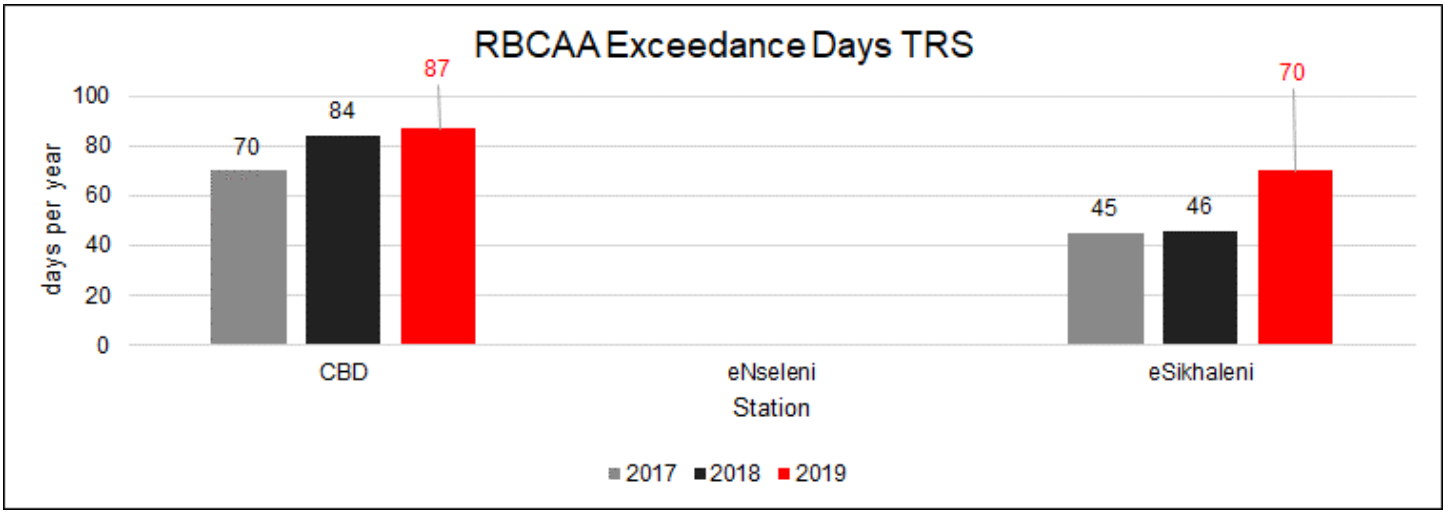



*Figure 45: Number of days on which TRS exceedances occurred 2017 – 2019.*

# 7. ANNUAL AIR QUALITY

Where possible the RBCAA assesses data collected by its network against National Standards, International Guidelines, and Local Targets. The WHO air quality guidelines (AQGs) are intended for worldwide use but have been, developed to support actions to achieve air quality that protects public health in different contexts. Air quality standards and local targets, on the other hand, are set by each country or region to protect the public health of their citizens and as such are an important component of national risk management and environmental policies. National standards and local targets will vary according to the approach adopted for balancing health risks, technological feasibility, economic considerations, and various other political and social factors. These factors, in turn, will depend on, among other things, the level of development and national capability in air quality management (WHO, 2005).

AIMS concludes that during 2019, based on:

- Annual ambient air quality concentration measurements, of concern, is:
  - $PM_{10}$ at Brackenham, eNseleni, eSikhaleni, and Felixton
- Exceedances, air quality, was compromised by:
  - $PM_{10}$ at Brackenham, eNseleni, eSikhaleni, and Felixton
  - $SO_2$ at CBD, Harbour West, and Scorpio
  - TRS at CBD and eSikhaleni

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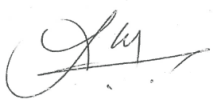
## 9. ACKNOWLEDGEMENT

This report was, compiled by Air Impact Measurement Specialists for the Richards Bay Clean Air Association, contributors included:

- Lance Coetzee
- Francois Nel

Lance Coetzee
Director



Francois Nel
Director

# APPENDIX A
# QUALITY ASSURANCE

The $SO_2$ concentrations reported are determined by the United States Environmental Protection Agency (US EPA) equivalent method EQSA-0193-092. $SO_2$ and TRS measurements allow for a maximum precision error of 10% of the reported value. A tolerance around the zero-point of plus or minus 5 ppb is permitted. All effort is, made to reduce the error to a minimum. In terms of quality assurance standards, data collection must be above 90% to be valid for statistical analysis.

*Table A1: Quality Assurance*

| Test | Range | Action |
|---|---|---|
| Zero | Zero 0 to 2 ppb | Leave as is. |
| | -2 to 0 ppb | Set to zero. |
| | -5 to -2 ppb and 2 to 5 ppb | Adjust data set to re-zero all data |
| | Outside above limits invalidate and recalibrate. | If a specific reason can be, identified for deviation, data can be, adjusted. |
| Span | Span value plus or minus a 3% deviation. | Leave as is. |
| | -10 to -3% and 3 to 10% deviation. | Scale the data set by the opposite, corresponding percentage. |
| | Outside above limits invalidate and recalibrate. | If a specific reason can be, identified for deviation, data can be, adjusted. |

# APPENDIX B
# EMISSION INVENTORY

*Table B1: Emission Inventory*

| Industry | Description | $SO_2$ Emission (g/s) | $SO_2$ Emission (t) | $SO_2$ Emission (t) | Contribution (%) |
|---|---|---|---|---|---|
| **Foskor** | Acid Plant | 75.8 | 2390 | 2401 | 13% |
| | Boiler | 0.3 | 11 | | |
| **Tongaat Hulett** | Boiler | 10.0 | 185 | 185 | 1% |
| **Mondi** | Flume 1 | 44.9 | 1417 | 3080 | 17% |
| | Flume 2 | 26.5 | 836 | | |
| | Power Boiler | 25.2 | 795 | | |
| | Incinerator | 0.3 | 8 | | |
| | Bleach Plant | 0.8 | 24 | | |
| **Mpact** | Babcock | 8.9 | 281 | 816 | 5% |
| | JT Boiler | 16.6 | 524 | | |
| | Oil Burner | 0.3 | 11 | | |
| **RBM** | Char Plant | 14.9 | 468 | 542 | 3% |
| | Miscellaneous | 1.1 | 34 | | |
| | MSP (Drier) | 1.2 | 38 | | |
| | Smokers | 0.0 | 1 | | |
| **South32** | FTC | 59.8 | 1885 | 10561 | 59% |
| | GTC 1 | 62.0 | 1955 | | |
| | GTC 2 | 53.3 | 1680 | | |
| | GTC 3 | 50.1 | 1579 | | |
| | GTC 4 | 50.1 | 1579 | | |
| | GTC 5 | 51.7 | 1630 | | |
| | Potrooms | 8.0 | 254 | | |
| **Tronox** | Tank 1 | 8.0 | 251 | 251 | 1% |
| **Total** | | **569.7** | **17836** | **17836** | **100%** |
| *Notes: Tongaat Hulett shuts down during the 1st quarter and last month of the year.* | | | | | |

# APPENDIX C
# OPERATIONAL REPORT

*Table C1: Meteorological data capture.*

| Station | Height (m) | Station Availability (%) | Wind Direction & Speed (%) | Temperature (%) | Relative Humidity (%) | Pressure (%) | Solar Radiation (%) | Rain (%) |
|---|---|---|---|---|---|---|---|---|
| Airport | 2 | 95 | | 95 | 95 | 95 | 95 | |
| Airport | 10 | 95 | 95 | | | | | |
| Arboretum | 3 | 97 | | 97 | | | | |
| Arboretum | 18 | 97 | 97 | | | | | |
| Brackenham | 3 | 97 | | 97 | | | | |
| Brackenham | 10 | 97 | 97 | | | | | |
| CBD | 2 | 99 | | 99 | 99 | | | 99 |
| CBD | 10 | 99 | 99 | | | | | |
| eNseleni | 2 | 97 | | 97 | 97 | | | |
| eNseleni | 9 | 97 | 97 | | | | | |
| eSikhaleni | 2 | 97 | | 97 | 97 | | | |
| eSikhaleni | 9 | 97 | 97 | | | | | |
| Harbour West | 2 | 100 | | 100 | | | | |
| Harbour West | 10 | 100 | ***78*** | | | | | |

*Notes:*
- *Red - Not acceptable for statistical purposes (<80%)*
- *Orange – Does not meet SANAS data capture requirements (<90%)*
- *Yellow – RBCAA reporting requirement (<=95%)*

*Missing Data:*
*Harbour West (Wind direction & speed) – anemometer faulty, replacement ordered (12th October – 31st December).*

*Table C2: Pollutant data capture.*

| Station | Station Availability (%) | $PM_{10}$ (%) | $SO_2$ (%) | TRS (%) |
|---|---|---|---|---|
| Arboretum | 98 | | 96 | |
| Brackenham | 97 | 97 | ***93*** | |
| CBD | 99 | 98 | 99 | 98 |
| eNseleni | 98 | 97 | 97 | 98 |
| eSikhaleni | 97 | ***94*** | ***94*** | ***80*** |
| Felixton | 98 | ***63*** | ***68*** | |
| Harbour West | 100 | | 100 | |
| Scorpio | 100 | | 99 | |
| Average | 98 | ***90*** | ***93*** | ***92*** |

*Notes:*
*Red - Not acceptable for statistical purposes (<80%)*
*Orange – Does not meet SANAS data capture requirements (<90%)*
*Yellow – RBCAA reporting requirement (<=95%)*

*Missing Data:*
- *Brackenham ($SO_2$) - see Table C3*
- *eSikhaleni ($PM_{10}$) - see Table C3*
- *eSikhaleni ($SO_2$) - see Table C3*
- *eSikhaleni (TRS)*
  - *Analyser unstable after power outages (5 February - 26 March)*
  - *Issues with the relay board, part replaced (2 September – 28 October)*
- *Felixton ($PM_{10}$) - Intermittent fault on the nephelometer, part replaced (20 September to the 22 December)*
- *Felixton ($SO_2$)*
  - *Faulty PC board, part replaced (15 February - 11 April)*
  - *Faulty photo multiplier tube, part replaced (4 June - 22 July)*

*Table C3: Pollutant data capture.*

*Missing Data - January:*
*Airport (Station) - Intermittent logger failure,*
*Brackenham (Station) - Station shutdown - AC unit was, stolen (14-15 January )*
*eSikhaleni (Station) - Power failure (25, 26, 28 & 30 January)*
*Felixton (SO2) - Intermittent analyser failure, data invalidated*

*Missing Data - February:*
*Airport (Station) - power failure / load shedding (7, 10, 12 February)*
*Arboretum (Station) - power failure / load shedding (10, 11, 12, 13 February)*
*CBD (Station) - load shedding (10, 11, 12, 13 February)*
*eNseleni (Station) - load shedding / power failure (10, 11, 12, 13, 14, 19, 23 February)*
*eSikhaleni (Station) - power failure / load shedding (5, 12, 13, 14, 25 February)*
*eSikhaleni (TRS) - analyser removed for repairs (2 - 28 February)*
*Felixton (Station) - load shedding / power failure (12, 13, 14 February)*
*Felixton ($SO_2$) - analyser removed for repairs (15 - 28 February)*

*Missing Data - March:*
*Arboretum ($SO_2$) - load shedding, power failures, and PC data logger issues*
*eSikhaleni (TRS) - load shedding, power failure, and analyser failure - returned to service on the 26th March*
*Felixton ($SO_2$) - analyser removed for repair on 15th March*

| |
|---|
| *Missing Data - April:*<br>*Arboretum (Station) - Logger PC faulty / HDD failed (5 - 9 April)*<br>*Felixton ($SO_2$) - analyser removed for repair on 15th February returned on 11th April.* |
| *Missing Data - May:*<br>*eSikhaleni (PM10) - analyser not recovering after power failures (16th and 28th May)* |
| *Missing Data - June:*<br>*Arboretum ($SO_2$) - data invalidated after power failure - analyser unstable ($6^{th}$ - $9^{th}$ June)*<br>*Felixton ($SO_2$) - analyser removed for repair - PMT faulty ($1^{st}$ - $30^{th}$ June)* |
| *Missing Data - July:*<br>*Felixton ($SO_2$) - analyser faulty removed for repair on the 1st June returned to service on 22nd July.* |
| *Missing Data - August:*<br>*Brackenham (Station) - power outage / cable theft (24, 28-29, 31 August)*<br>*eSikhaleni (PM10) - power outage / TEOM not starting 6, 8, 19, 24-26 August)*<br>*eSikhaleni (SO2) - power outage / analyser not starting (6, 8, 19, 29 August)* |
| *Missing Data - September:*<br>*eSikhaleni (Station) - power failures (7, 18, 19, 25 September)*<br>*Brackenham ($SO_2$) -analyser not starting after a power failure (4, 6th September)*<br>*eSikhaleni ($SO_2$) - power failures (7, 18, 19, 25 September)*<br>*eSikhaleni ($PM_{10}$) - power failures (7, 18, 19, 25 September)*<br>*Felixton ($PM_{10}$) - analyser faulty, removed for repair on the 20th September*<br>*eSikhaleni (TRS) - power failures (7, 18, 19, 25 September)* |
| *Missing Data - October:*<br>*CBD (Station) - power outages (3, 16-18, & 19 October)*<br>*eNseleni (Station) - power outages (4-5, 6, 16, 17, 18 October)*<br>*Felixton ($PM_{10}$) - analyser faulty, removed for repair on the 20th September* |
| *Missing Data - November:*<br>*eSikhaleni (Station) - power outages (7, 8, 16, 19, 20, 28, 29 November)*<br>*eSikhaleni ($PM_{10}$) - analyser not recovering from power outages (20, 29th November)*<br>*Felixton (Station) - power outages (23, 24, 25 November)*<br>*Felixton ($PM_{10}$) - analyser faulty, removed for repair ($20^{th}$ October to $22^{nd}$ November)*<br>*Harbour West (WD/WS) - faulty analyser data invalidated from 12th September* |
| *Missing Data - December:*<br>*Airport (Station) - power outage / load shedding (5, 6, 7, 8, 9, 10, 11, 12, 24, 29, 30 December)*<br>*Brackenham (Station) - power outage / load shedding / air conditioner failure(5, 6, 7, 8, 9, 10, 11, 12, 13, 25 - 31 December)*<br>*Brackenham ($SO_2$) - power outage/load shedding/analyser not recovering (7 - 16 December)*<br>*eNseleni (Station) - power outage / load shedding (5, 6, 7, 8, 9, 10, 11, 12, 13 December)*<br>*eSikhaleni (Station) - power outage / load shedding (6, 7, 9, 10, 11, 13 -17 December)*<br>*Felixton (Station) - power outage / load shedding / trip at site (6 - 10, 11, 12, 13 -17 December)* |

*Table C3: Maintenance.*

| Action | Dates |
|---|---|
| Particulate Calibrations | January & August |
| Trace Gas Calibrations | April, July & November |
| Meteorological Calibrations | August |
| UPS serviced / battery replacements | March |
| Equipment | June - $SO_2$ analyser received |

*Table C5: Particulate analyser status.*

| Serial | Purchased | Age | Type | Site | Status | Calibration |
|---|---|---|---|---|---|---|
| 248970311 | Jan 2004 | **16 years** | $PM_{10}$ | eSikhaleni | Ok | Aug 2019 |
| 274100812 | Dec 2008 | **11 years** | $PM_{10}$ | eNseleni | OK | Aug 2019 |
| 273580810 | Feb 2009 | **11 years** | $PM_{10}$ | CBD | OK | Aug 2019 |
| 206850912 | Jan 2010 | **10 years** | $PM_{10}$ | Brackenham | OK | Aug 2019 |
| E-sampler | Mar 2012 | 8 years | $PM_{10}$ | Felixton | OK | Nov 2019 Flow + K-factor |
| *Note Red – Older than 10 years.* | | | | | | |

*Table C6: Trace gas analyser status.*

| Serial | Purchased | Age | Type | Location | Status | Calibration |
|---|---|---|---|---|---|---|
| New | May 2020 | 0 years | $SO_2$ | Office | Spare, received 28th May 2020 | Not calibrated |
| 4848 | Jun 2019 | 1 years | $SO_2$ | Arboretum | Spare | May 2020 |
| 165 (T102) | Apr 2018 | 2 years | $SO_2$ | eNseleni | OK | May 2020 |
| 3020 | May 2017 | 3 years | $SO_2$ | Arboretum | OK | May 2020 |
| 2793 | Jan 2017 | 3 years | $SO_2$ | Harbour West | OK | May 2020 |
| 85B | Jan 1997 | **23 years** | $SO_2$ | C&M | Written off, to be used for spares | |
| 92B | Mar 1997 | **23 years** | $SO_2$ | Brackenham | OK, power recovery issues | May 2020 |
| M2015-M736 | Mar 1997 | **23 years** | $SO_2$ | Scorpio | Written off, to be used for spares | May 2020 |
| M714 | Oct 2005 | **14 years** | $SO_2$ | C&M | Written off, to be used for spares | |
| M2812 | Sep 2006 | **13 years** | $SO_2$ | Harbour West | Written off, to be used for spares | |
| 1980 | Jul 2008 | **12 years** | $SO_2$ | Felixton | OK | May 2020 |
| 3055 | May 2011 | 9 years | TRS | CBD TRS | OK | May 2020 |
| 253 | Mar 2012 | 8 years | $SO_2$ | Scorpio | OK | May 2020 |
| 593 | Apr 2013 | 7 years | $SO_2$ | CBD | OK | May 2020 |
| 1049 | Feb 2014 | 6 years | TRS | eSikhaleni | Ok | May 2020 |
| 1540 | Mar 2015 | 5 years | $SO_2$ | eSikhaleni | Ok | May 2020 |
| *Note Red – Older than 10 years.* | | | | | | |

*Table C7: $PM_{10}$ data summary.*

| Station | | South Africa NEMA Daily Standard (75 µg/m³) | International WHO Daily Guideline (50 µg/m³) | South Africa NEMA Annual Standard (40 µg/m³) | International WHO Annual Guideline (20 µg/m³) |
|---|---|---|---|---|---|
| Brackenham | % of guideline | 97% | 146% | 75% | 150% |
| | µg/m³ TEOM | 73 | 73 | 30 | 30 |
| | Date | 2019/01/12 | 2019/01/12 | 2019/01 | 2019/01 |
| CBD | % of guideline | 92% | 138% | 63% | 125% |
| | µg/m³ TEOM | 69 | 69 | 25 | 25 |
| | Date | 2019/07/31 | 2019/07/31 | 2019/07 | 2019/07 |
| eNseleni | % of guideline | 133% | 200% | 73% | 145% |
| | µg/m³ TEOM | 100 | 100 | 29 | 29 |
| | Date | 2019/07/19 | 2019/07/19 | 2019/07 | 2019/07 |
| eSikhaleni | % of guideline | 109% | 164% | 60% | 120% |
| | µg/m³ TEOM | 82 | 82 | 24 | 24 |
| | Date | 2019/07/19 | 2019/07/19 | 2019/07 | 2019/07 |
| Felixton | % of guideline | 93% | 140% | 65% | 130% |
| | µg/m³ E-sampler | 70 | 70 | 26 | 26 |
| | Date | 2019/07/19 | 2019/07/19 | 2019/07 | 2019/07 |

*Notes:*
*The table is colour coded according to the level of concentration recorded. The colour scale ranges from blue (indicating a low concentration relative to the standard), to red (indicating an exceedance of the standard)*
*Monthly average concentrations are, compared to annual standards*

*Table C8: $SO_2$ data summary.*

| Station | | National & International NEMA & WHO 10-minute Standard 500 µg/m³ 191 ppb | National NEMA 1-hour Standard 350 µg/m³ 134 ppb | National NEMA 24-hour Standard 125 µg/m³ 48 ppb | International WHO 24-hour Guideline 20 µg/m³ 8 ppb | National NEMA Annual Standard 50 µg/m³ 19 ppb |
|---|---|---|---|---|---|---|
| Arboretum | % of guideline | 50% | 25% | 16% | 99% | 11% |
| | (ppb) | 96 | 33 | 8 | 8 | 2 |
| | Date & time | 2019/04/05 07:40 | 2019/05/10 05:00 | 2019/06/23 | 2019/06/23 | 2019/04 |
| Brackenham | % of guideline | 37% | 15% | 15% | 88% | 7% |
| | (ppb) | 70 | 20 | 7 | 7 | 1 |
| | Date & time | 2019/04/05 07:40 | 2019/05/10 05:00 | 2019/06/23 | 2019/06/23 | 2019/04 |
| CBD | % of guideline | 90% | 48% | 51% | **304%** | 21% |
| | (ppb) | 171 | 64 | 24 | 24 | 4 |
| | Date & time | 2019/10/19 06:40 | 2019/10/16 00:00 | 2019/04/06 | 2019/04/06 | 2019/10 |
| eNseleni | % of guideline | 68% | 26% | 16% | 95% | 7% |
| | (ppb) | 130 | 35 | 8 | 8 | 1 |
| | Date & time | 2019/12/18 13:20 | 2019/03/19 17:00 | 2019/09/25 | 2019/09/25 | 2019/12 |
| eSikhaleni | % of guideline | 97% | 39% | 17% | 100% | 19% |
| | (ppb) | 185 | 53 | 8 | 8 | 4 |
| | Date & time | 2019/05/23 10:10 | 2019/03/16 20:00 | 2019/07/17 | 2019/07/17 | 2019/05 |
| Felixton | % of guideline | 43% | 20% | 16% | 99% | 15% |
| | (ppb) | 82 | 27 | 8 | 8 | 3 |
| | Date & time | 2019/01/03 01:20 | 2019/01/13 09:00 | 2019/01/01 | 2019/01/01 | 2019/01 |
| Harbour West | % of guideline | **239%** | 91% | **110%** | **659%** | 35% |
| | (ppb) | 457 | 122 | 53 | 53 | 7 |
| | Date & time | 2019/06/28 22:00 | 2019/07/22 23:00 | 2019/07/22 | 2019/07/22 | 2019/06 |
| Scorpio | % of guideline | **176%** | **148%** | 85% | **510%** | 36% |
| | (ppb) | 336 | 198 | 41 | 41 | 7 |
| | Date & time | 2019/12/27 16:00 | 2019/12/08 21:00 | 2019/07/23 | 2019/07/23 | 2019/12 |

*Notes:*
*1) The table is colour coded according to the level of concentration recorded. The colour scale ranges from blue (indicating a low concentration relative to the standard), to red (indicating an exceedance of the standard)*
*2) Monthly average concentrations are, compared to annual standards*

*Table C9: $SO_2$ data summary.*

| Station | | Local RBCAA 10-minute Guideline 5.9 µg/m³ 4.5ppb | Local OME 10-minute Guideline 13 µg/m³ 9.3ppb | Local WHO 30-minute Guideline 7 µg/m³ 5.0 ppb | Local OME Daily Guideline 14 µg/m³ 10.1 ppb | Monthly Average |
|---|---|---|---|---|---|---|
| CBD | % of guideline | **1984%** | **960%** | **1094%** | 62% | - |
| | (ppb) | 89.3 | 89.3 | 54.7 | 6.3 | 0.7 |
| | Date & time | 2019/03/15 00:20 | 2019/03/15 00:20 | 2019/03/15 00:00 | 2019/03/15 | 2019/03 |
| eNseleni | % of guideline | 24% | 12% | 20% | 8% | - |
| | (ppb) | 1.1 | 1.1 | 1.0 | 0.8 | 0.2 |
| | Date & time | 2019/09/27 08:30 | 2019/09/27 08:30 | 2019/10/03 00:00 | 2019/12/04 | 2019/09 |
| eSikhaleni | % of guideline | **1733%** | **839%** | **508%** | 46% | - |
| | (ppb) | 78.0 | 78.0 | 25.4 | 4.6 | 0.2 |
| | Date & time | 2019/06/29 21:50 | 2019/06/29 21:50 | 2019/07/27 05:00 | 2019/06/30 | 2019/09 |

*Notes:*
*1) The table is colour coded according to the level of concentration recorded. The colour scale ranges from blue (indicating a low concentration relative to the standard), to red (indicating an exceedance of the standard)*
*2) Monthly average concentrations are, compared to annual standards*

# APPENDIX D
# COMPLAINTS LOG

*Table D1: Complaints – 2019*

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 1 | David Davidson 082 887 0221 | 2019/01/02 10:00 | eNseleni | “Cat Urine” smell 100m East of eNseleni station. Mondi was notified. Still present at 12h45 | 26 |
| Mondi | 2 | Elize 083 227 5616 | 2019/01/03 04:00 | Kruisbessie – Arboretum. | "Strong Nauseating Mondi smell. It is the Mondi smell but with something different. I can taste it. The worst I've smelt" Complainant dropped someone off at Mondi as says that "It was so bad at Mondi, I don't know how people work there"; | 28 |
| Mondi | 3 | Elize 083 227 5616 | 2019/01/03 06:15 | Mondi | "Strong Nauseating Mondi smell. It is the Mondi smell but with something different. I can taste it. The worst I've smelt" Complainant dropped someone off at Mondi as says that "It was so bad at Mondi, I don't know how people work there"; | 28 |
| Mondi | 4 | Elize 083 227 5616 | 2019/01/03 06:40 | Kruisbessie – Arboretum. | "Strong Nauseating Mondi smell. It is the Mondi smell but with something different. I can taste it. The worst I've smelt" Complainant dropped someone off at Mondi as says that "It was so bad at Mondi, I don't know how people work there"; | 28 |
| Mondi | 5 | Demian 082 725 8730 | 2019/01/03 06:40 | Alton – Alumina Alley | "Very strong guava\acid smell causing respiratory irritation." | 28 |
| Mondi | 6 | S Camminga 0835152384 | 2019/01/03 06:45 | Heideheuwel – Veldenvlei | We woke to a pungent Mondi cat urine odour permeating throughout our home, causing a bad taste, headache, and nausea. | 28 |
| Mondi | 7 | R Camminga 0835152384 | 2019/01/03 06:45 | Heideheuwel – Veldenvlei | We woke to a pungent Mondi cat urine odour permeating throughout our home, causing a bad taste, headache, and nausea. | 28 |
| Mondi | 8 | Alan 083 287 6766 | 2019/01/03 06:55 | Vicinity of RBM | "The same Mondi odour as last time, causing a headache." | 28 |
| Mondi | 9 | Elaine 082 448 2518 | 2019/01/03 07:00 | Geranium Place – Veldenvlei | "We have that bad smell again. It is very strong. We have a runny nose, burning eyes and sore throat." | 28 |
| Mondi | 10 | Sandy 083 417 7232 | 2019/01/03 07:30 | Brackenham | "Really bad nauseating odour." Complainant reports that she experienced the same odour early yesterday morning. | 28 |
| Mondi | 11 | Franz Schmidt 0836758356 | 2019/01/03 08:30 | Alton North - Bronze Bar | A particularly strong Mondi odour was noticed in Alton North - Bronze Bar by employees arriving for work. By 08h00 the smell had dissipated but, lingered on | 28 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| | | | | | inside the RBA administrative office block adjacent to Bronze Bar, for some time after that. Description: Rancid / guava / acidic – no clinical symptoms noted. | |
| Unknown Source | 12 | M Dekker 083 399 5514 | 2019/01/09 14:00 | Galjoengolf – Meerensee | , "Very strong gas type smell. Smells like when you strike a match. "Based on wind direction, 2 hours before the time of the complaint, Industry is NOT required to investigate. I have informed the complainant that based on wind direction; the odour does not originate from any of our Industry members. | 2 |
| Unknown Source | 13 | Karlien Pretorius 084 437 3719 | 2019/01/08 11:30 | Green Africa Nursery | "Burning & Tearing eyes. So severe that I had to take an allergy tablet. Did not notice a smell." | 2 |
| Unknown Source | 14 | Karlien Pretorius 084 437 3719 | 2019/01/10 12:00 | Golf Estate – Southern Side | "Burning & Tearing eyes. Did not notice a smell." | 2 |
| Foskor | 1 | Dave Savides 072 392 0511 | 2019/02/12 23:30 | Cassia Close – Arboretum Extension | "Very acrid Foskor odour causing burning eyes and nose and sore throat." | 16 |
| Foskor | 2 | Liz Savides 072 392 0511 | 2019/02/12 23:30 | Cassia Close – Arboretum Extension | "Very acrid Foskor odour causing burning eyes and nose and sore throat." | 16 |
| Foskor | 3 | Dave Savides 072 392 0511 | 2019/02/13 19:15 | Cassia Close – Arboretum Extension | "Same acrid Foskor odour as last night, causing burning eyes and nose and sore throat." | 15 |
| Foskor | 4 | Liz Savides 072 392 0511 | 2019/02/13 19:15 | Cassia Close – Arboretum Extension | "Same acrid Foskor odour as last night, causing burning eyes and nose and sore throat." | 15 |
| Mondi | 5 | Dave Savides 072 392 0511 | 2019/02/20 07:11 | John Ross Highway – Vicinity of Mondi | Excessive emissions and "cat urine" odour. | 48 |
| Reclamation Group | 1 | Mr Govender 0828959622 | 2019/03/04 00:00 | M.D.I 5 Alugang Alton | "Excessive dust from a crushing plant, salt storage and coal storage areas in the Old Alton area is a serious risk to health and continues unmonitored and uncontrolled. Please advise the correct avenue to follow to ensure that blatant disregard of both environmental and occupational hygiene guidelines is, simply ignored." The RBCAA has engaged with Mr Govender, and he has provided the RBCAA with a copy of a letter dated 21st February 2017 which he sent to the City of uMhlathuze (CoU). Mr Govender has also sent an e-mail to the office the Minister, with a copy to the RBCAA (See attached). This complaint is not the first complaint received regarding activities at this facility. On 23rd August 2018, the RBCAA received a complaint from Constantia Kunsmis, which the RBCAA referred to the CoU (See attached). The response from the CoU to the August 2018 complaint confirms that the facility is owned and operated by The Reclamation Group Richards Bay. The RBCAA will refer this complaint to the City of uMhlathuze Air Quality Management Unit for investigation. | 62 |
| Mondi | 2 | Dinesh 083 775 7444 | 2019/03/11 05:30 | John Ross – Vicinity of Mondi | "For the past three days, there has been a terrible stench as I pass Mondi on the John Ross." | 49 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 3 | Dinesh<br>083 775 7444 | 2019/03/12<br>05:30 | John Ross – Vicinity of Mondi | "For the past 3 days there has been a terrible stench as I pass Mondi on the John Ross" | 49 |
| Mondi | 4 | Dinesh<br>083 775 7444 | 2019/03/13<br>05:30 | John Ross – Vicinity of Mondi | "For the past 3 days there has been a terrible stench as I pass Mondi on the John Ross" | 49 |
| Unknown Source | 5 | Chris<br>073 0094 430 | 2019/03/13<br>07:00 | Sanlam Centre – Empangeni | Very strong odour. First described as "Hydrochloric Acid" and then described as smelling like "rotten eggs". The odour was present inside and outside the centre. The complainant has stated that they thorough investigation but could not identify a The RBCAA has informed the complainant that based on wind direction (prevailing NE), members of the RBCAA could not have contributed to the odour. Industry is therefore NOT required to investigate. I have requested the complainant to contact the RBCAA immediately should they experience the same odour in the future. | 1 |
| Mondi | 6 | Shaun Govender<br>083 320 7303 | 2019/03/15<br>07:55 | Kabelkring – Alton North | Very strong odour causing headache. "You cannot breathe in Alton North." | 49 |
| Mondi | 7 | Desire Calitz (descalitz@gmail.com | 2019/03/15<br>07:55 | Alton | "Terrible smell this morning coming to work in Alton. Struggling with burning lungs." | 49 |
| Mondi | 8 | Dave Savides<br>072 392 0511 | 2019/03/19<br>05:00 | Cassia Close – Arboretum Extension | "Had to close windows just after 5am because of Foskor Odour, causing burning of the nose" | 12 |
| Mondi | 9 | Liz Savides<br>072 392 0511 | 2019/03/19<br>05:00 | Cassia Close – Arboretum Extension | "Had to close windows just after 5am because of Foskor Odour, causing burning of the nose" | 12 |
| Mondi | 10 | Dave Savides<br>072 392 0511 | 2019/03/19<br>07:18 | Bullion Boulevard-CBD | “Bad Foskor odour” | 12 |
| Mondi | 11 | Elize<br>083 227 5616 | 2019/03/19<br>07:18 | Kruisbessie – Veldenvlei | “Mondi Odour” | 50 |
| Foskor | 12 | S Camminga<br>083515 2384 | 2019/03/20<br>08:25 | Bullion Boulevard-CBD | Excessive and unusually dark emissions emanating from Foskor. (photographs attached) | 19 |
| Richards Bay Chemicals | 13 | Mr Arthur Gray (Regional Manager), BMG World.<br>082 456 1580 | 2019/03/22<br>00:00 | 118 Alumina Alley - Alton | On Friday 22nd March numerous BMG World and Man-Dirk (Tenant of BMG) employees complained of a chemical smell emanating from the adjacent Richbay Chemicals facility. Staff complained of itchy sore eyes and throats, and headaches. Richbay Chemicals was reportedly decanting Hydrochloric Acid, which left a toxic cloud hovering over Richbay Chemicals and BMG World premises. The significance of the incident resulted in Man-Dirk issuing their employees with respirators. Mr Gray has further reported that in addition to the significant impacts on the health of the employees, the structural degradation of the cladding on their building continues to worsen, which has become a safety hazard. | 64 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Bidvest Tank Terminals | 14 | Melinda Ashington 082 558 4275 | 2019/03/25 21:35 | Moonfish Meerensee | Very strong gas smell causing nausea. | 70 |
| Bidvest Tank Terminals | 15 | 066 202 2614 | 2019/03/25 22:04 | Davidson Lane Meerensee | Smells like LPG | 71 |
| Bidvest Tank Terminals | 16 | Keeqanu Serrao 074 298 9967 | 2019/03/25 22:12 | Meerensee | Gas smell | 71 |
| Bidvest Tank Terminals | 17 | 074848 7520 | 2019/03/25 22:30 | Pompano Place Meerensee | Very strong gas smell | 71 |
| Bidvest Tank Terminals | 18 | Arinda 083 520 9871 | 2019/03/25 21:45 | Sole Sands Meerensee | Smelled a gas causing headache | 71 |
| Bidvest Tank Terminals | 19 | Dave 061 335 8014 | 2019/03/25 22:07 | Stables Meerensee | Smells like methane. Burning eyes. | 71 |
| Bidvest Tank Terminals | 20 | Dave 061 335 8014 | 2019/03/25 22:16 | Shell garage Meerensee | Smell even stronger | 71 |
| Bidvest Tank Terminals | 21 | 076 937 1637 | 2019/03/25 22:05 | Octopus Arm Meerensee | Very strong chemical odour causing nausea and headache. | 71 |
| Bidvest Tank Terminals | 22 | Thabo 083 406 1759 | 2019/03/25 22:38 | Kitefish Meerensee | Very strong gas smell. Difficult to breathe. So bad took my children to Empangeni. | 71 |
| Bidvest Tank Terminals | 23 | Estelle 083 571 5488 | 2019/03/26 16:52 | RBCT | We have had a bad gas smell the whole day at RBCT | 71 |
| Bidvest Tank Terminals | 24 | Adele 083 656 6093 | 2019/03/26 16:52 | Meerensee | "Awful smell in Meerensee this morning. We were suffocating:" | 71 |
| Bidvest Tank Terminals | 25 | Nick Okello 072 133 5466 | 2019/03/26 03:30 | Pelserplaat (Meerensee) | “Pungent Guava smell in Pelserplaat (Meerensee), and again around 08h30”. | 5 |
| Bidvest Tank Terminals | 26 | Debbie 083 417 0866 | 2019/03/26 00:00 | Meerensee | "Woke early hours of this morning with a migraine due to a bad odour in Meerensee." | 5 |
| Bidvest Tank Terminals | 27 | 061 807 0707 | 2019/03/26 07:40 | Meerensee | "dreadful gas smell". | 5 |
| Bidvest Tank Terminals | 28 | Jeanine Maakal 082 572 6945 | 2019/03/26 08:50 | Pompano Place Meerensee | "gas smell causing irritated sinuses and headache." | 5 |
| Bidvest Tank Terminals | 29 | Kerryn 072 195 0922 | 2019/03/26 08:50 | Meerensee | " really bad gas smell in Meerensee causing burning of the nose and making my children nauseous." | 5 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Bidvest Tank Terminals | 30 | Christo 074 848 7520 | 2019/03/26 08:50 | Cray fish Creek & Pompano Place Meerensee | “Smelling gas again in Meerensee” | 5 |
| Bidvest Tank Terminals | 31 | Bronwyn Stewart 083 384 8803 | 2019/03/26 08:50 | Musselcracker Meerensee | " Bad odour throughout the night." | 5 |
| Bidvest Tank Terminals | 32 | 082 528 4916 | 2019/03/26 08:50 | Meerensee | "My entire house stinks of rot. My wife has been complaining of headaches and I have a headache. My eldest son has also been complaining and my youngest son has a complete loss of appetite. My entire house has become ill overnight. This is not on". | 5 |
| Bidvest Tank Terminals | 33 | Arinda 083 520 9871 | 2019/03/26 08:36 | Sole Sands Meerensee | "same smell of gas in the air again" | 5 |
| Bidvest Tank Terminals | 34 | Gerda Pieterse 082 720 9064 | 2019/03/26 08:45 | Pompano Place Meerensee | Gas smell causing nausea, nose irritation, coughing and difficulty breathing. | 5 |
| Bidvest Tank Terminals | 35 | Dirk Raave 060 966 7630 | 2019/03/26 08:45 | Pompano Place Meerensee | Gas smell causing nausea, nose irritation, coughing and difficulty breathing. | 5 |
| Bidvest Tank Terminals | 36 | Jaco 071 303 9770 | 2019/03/26 08:38 | Marlynhoek Meerensee | “LPG gas smell” | 5 |
| Bidvest Tank Terminals | 37 | 083 379 5920 | 2019/03/26 08:38 | Octopus Arm Meerensee | "Air smells bad" | 5 |
| Bidvest Tank Terminals | 38 | Tyneal Jhugroo 035-904 4016 | 2019/03/26 09:09 | RBCT | Please note that myself as well as my other colleagues are complaining of the following: Scratchy sore throat, burning nose with postnasal drip, Headaches and nausea, very weak and tired, Sore eyes, Chest closing and unable to breathe | 5 |
| Bidvest Tank Terminals | 39 | Tyneal Jhugroo 035-904 4016 | 2019/03/26 16:30 | RBCT | The odour was in the air again now at 16h30 and it was quite bad. It is an odour that is very familiar to us as employees but it's just a bit more intensified than usual.<br>There are more employees complaining so now I'm asking for some kind of formal communication that k can send to our general manager so this can be communicated to all employees. | 5 |
| Mondi | 40 | Elaine 082 448 2518 | 2019/03/26 18:59 | Geranium Place – Veldenvlei | “Terrible cat urine smell causing nausea” | 1 |
| Mondi | 41 | S Camminga 083515 2384 | 2019/03/26 19:00 | Heideheuwel – Veldenvlei | Pungent Mondi type odour, which was so intense that we immediately gagged and became severely nauseas. | 1 |
| Mondi | 42 | R Camminga 083515 2384 | 2019/03/26 19:00 | Heideheuwel – Veldenvlei | Pungent Mondi type odour, which was so intense that we immediately gagged and became severely nauseas. | 1 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Charcoal Manufacturing Facility | 1 | Nic Van Zyl 082 771 7939 | 2019/04/02 00:00 | Small holding west of Empangeni | Noxious emissions from a Charcoal Manufacturing Facility located west of Empangeni. Complainant states that their health is being severely affected and claims that the facility is burning old creosote poles. The complaints have been referred to the City's Air Quality Management Unit, who in turn have referred the complaints to Ms Khathi at the District Municipality. To date no response has been received. | 7 |
| Reclamation Group | 2 | Mr Govender 0828959622 | 2019/04/04 12:24 | M.D.I 5 Alugang Alton | Excessive dust emanating from adjacent crushing facility (Reclamation Group). The RBCAA has telephonically and via email brought the complaint to the attention of the City of uMhlathuze Air Quality Management Unit. The RBCAA has also requested feedback on the March complaint. | 8 |
| Mondi | 3 | Sharin 082 450 4187 | 2019/04/10 03:00 | Birdswood | Pungent odour. | 35 |
| Mondi | 4 | Sharin 082 450 4187 | 2019/04/10 07:35 | Veldenvlei | Driving through Veldenvlei, Pungent guava odour. | 35 |
| Mondi | 5 | Sharin 082 450 4187 | 2019/04/10 08:11 | Civic centre, CBD | Distinct Guava odour in office which was closed. | 35 |
| Mondi | 6 | S Camminga 083 515 2384 | 2019/04/10 08:00 | Heideheuwel – Veldenvlei | PUNGENT Mondi guava odour causing severe nausea and headache. | 35 |
| Mondi | 7 | R Camminga 083 515 2384 | 2019/04/10 08:00 | Heideheuwel – Veldenvlei | PUNGENT Mondi guava odour causing severe nausea and headache. | 35 |
| Mondi | 8 | B Camminga 083 515 2384 | 2019/04/10 08:00 | Heideheuwel – Veldenvlei | PUNGENT Mondi guava odour causing severe nausea and headache. | 35 |
| Mondi | 9 | Elize 083 227 5616 | 2019/04/10 06:00 | Vicinity of Mondi | Very bad Mondi odour causing nausea. | 35 |
| Mondi | 10 | Elize 083 227 5616 | 2019/04/10 07:50 | Kruisbessie - Veldenvlei | Very bad Mondi odour causing nausea. | 35 |
| Mondi | 11 | Ronald Blom | 2019/04/10 08:35 | Alton | Terrible smell. | 35 |
| Mondi | 12 | Demian 082 725 8730 | 2019/04/10 08:35 | Arum Lily – Veldenvlei | Terrible "rotten egg\guava" smell causing irritation of the nose and chest. | 35 |
| Mondi | 13 | Tracey 083 525 6146 | 2019/04/10 07:38 | Bell Equipment - Alton | Really bad Mondi smell. | 35 |
| Mondi | 14 | Ian Rapson 073 367 8046 | 2019/04/10 08:20 | RBM | Bad odour. | 35 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 15 | Valerie<br>072 304 4250 | 2019/04/10<br>07:44 | Bell Equipment - Alton | Terrible smell around Brackenham, Veldenvlei and Alton causing nausea. | 35 |
| Mondi | 16 | Tim Ellis<br>072 223 1655 | 2019/04/10<br>07:38 | Bell Equipment - Alton | Terrible smell around Alton causing nausea. | 35 |
| Mondi | 17 | Scheryl<br>083 492 2107 | 2019/04/10<br>07:45 | Alton | Really bad smell causing nausea. | 35 |
| Mondi | 18 | Phillip<br>083 642 | 2019/04/10<br>07:39 | Bell Equipment - Alton | Really bad smell. | 35 |
| Charcoal Manufacturing Facility | 19 | Nic<br>082 771 7939 | 2019/04/11<br>00:00 | West of Empangeni | Excessive smoke from a Charcoal Manufacturing facility causing significant health issues. Complainant has heard that they are also burning old creosote poles.<br>The RBCAA has referred the complaint to the City's Air Quality Management Unit for investigation. | 7 |
| Charcoal Manufacturing Facility | 20 | Nic<br>082 771 7939 | 2019/04/12<br>00:00 | West of Empangeni | Excessive smoke from a Charcoal Manufacturing facility causing significant health issues. Complainant has heard that they are also burning old creosote poles.<br>The RBCAA has referred the complaint to the City's Air Quality Management Unit for investigation. | 7 |
| Unresolved | 21 | Norman<br>082 659 9636 | 2019/04/12<br>08:00 | Small Craft Harbour Meerensee | Sulphur type smell. Based on wind direction, and wind speed, BIDVEST TANK TERMINALS (BTT) is kindly requested to investigate and report back to the RBCAA within 24 hours, as per the RBCAA Complaints Procedure. | 3 |
| Unresolved | 22 | Mr Mthiyane<br>083 468 1647 | 2019/04/12<br>09:35 | ArcelorMittal Premises – Port of Richards Bay | "Very bad acid smell"<br>Based on wind direction Foskor was notified. FOSKOR is kindly requested to investigate and report back to the RBCAA within 24 hours. | 18 |
| Mondi | 23 | S Camminga<br>083 515 2384 | 2019/04/15<br>04:00 | Heideheuwel – Veldenvlei | Woke to a lingering Mondi odour, and with an awful headache. | 41 |
| Mondi | 24 | Elize<br>083 227 5616 | 2019/04/15<br>00:00 | Kruisbessie – Veldenvlei | From around midnight, Nauseating Mondi smell. Quote - "And there we have it again. The stench of Mondi. I had to sleep with a cloth over my face the stench was so bad. Even now, 04h55 the smell outside is bad. How these people are operating that place is beyond me. They spend so much money (allegedly) to minimise the smell but by the smell of it, things just get worse." | 41 |
| Mondi | 25 | Tracy<br>076 196 7257 | 2019/04/15<br>11:00 | eNseleni | Nauseating Mondi odour causing headache. Worse at 12h30 | 41 |
| Mondi | 26 | S Camminga<br>083 515 2384 | 2019/04/16<br>11:00 | Heideheuwel – Veldenvlei | Nauseating Mondi “guava” odour” | 52 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 27 | Tracy<br>076 196 7257 | 2019/04/16<br>09:39 | eNseleni | “Very strong Mondi smell causing headache” | 52 |
| Mondi | 28 | Mel<br>082 558 4275 | 2019/04/20<br>19:20 | Geranium Place – Veldenvlei | Very strong odour causing burning eyes. | 53 |
| Mondi | 29 | Elaine<br>082 448 2518 | 2019/04/20<br>19:41 | Geranium Place – Veldenvlei | Terrible odour. | 53 |
| Mondi | 30 | Tracy<br>076 196 7257 | 2019/04/21<br>07:55 | eNseleni | Mondi “cat urine” odour causing sore throat. | 54 |
| Bidvest Tank Terminals | 31 | Tyneal<br>071 858 5159 | 2019/04/23<br>07:15 | Vicinity of BTT - Port of Richards Bay | "Bad chemical smell. Immediately, my throat was scratchy followed by a sinus headache and postnasal drip." | 4 |
| Bidvest Tank Terminals | 32 | Nokuthula | 2019/04/23<br>07:20 | Vicinity of BTT - Port of Richards Bay | Chemical smell causing nausea. | 4 |
| Charcoal Manufacturing Facility | 33 | Nic Van Zyl<br>082 771 7939 | 2019/04/24<br>00:00 | Small holding west of Empangeni | Noxious emissions from a Charcoal Manufacturing Facility located west of Empangeni. Complainant states that their health is being severely affected and claims that the facility is burning old creosote poles. The complaints have been referred to the City's Air Quality Management Unit, who in turn have referred the complaints to Ms Khathi at the District Municipality. To date no response has been received. | 7 |
| Mondi | 34 | Anita<br>082 893 9673 | 2019/04/24<br>07:30 | Perlemoen – Meerensee | From 07h30 (still present at 09h31), "Terrible bad odour, smells like rotten egg "Given that Foskor uses Mondi effluent, Foskor is hereby kindly requested to investigate. | 11 |
| Mondi | 35 | Elize<br>083 227 5616 | 2019/04/26<br>08:25 | Kruisbessie – Veldenvlei | “Nasty Mondi smell” | 39 |
| Mondi | 36 | S Camminga<br>083 515 2384 | 2019/04/26<br>08:37 | Heideheuwel – Veldenvlei | Nauseating Mondi odour. | 39 |
| Mondi | 1 | S Camminga<br>083 515 2384 | 2019/05/06<br>07:15 | Heideheuwel – Veldenvlei | Faint lingering Mondi odour. Woke with an unexplained headache. | 46 |
| RBCT | 2 | Anonymous | 2019/05/06<br>07:30 | Vicinity of RBCT | Emissions from burning coal stockpiles at RBCT. RBCT is kindly requested to investigate and provide feedback to the RBCAA. | 65 |
| Foskor | 3 | D Savides<br>(072 392 0511) | 2019/05/09<br>07:00 | Zululand Observer Offices – Bullion Boulevard - CBD | Pungent Foskor odour. Foskor has been notified. | 17 |
| Foskor | 4 | Zululand Observer Staff<br>(072 392 0511) | 2019/05/09<br>07:00 | Zululand Observer Offices – Bullion Boulevard - CBD | Pungent Foskor odour. Foskor has been notified. | 17 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Unresolved | 5 | Anonymous | 2019/05/17 00:00 | Felixton Village | Complainant claims that there was an odour present in Felixton for the better part of last week, very strong on the 16th. Mpact and Tongaat Hulett are kindly requested to investigate and provide feedback to the RBCAA. | 61 |
| Tongaat Hulett | 6 | Anonymous | 2019/05/24 07:05 | Felixton Village | Pungent odour causing "stinging on the nose & throat", and thick cloud of smoke hanging over Tongaat-Hulett. Tongaat-Hulett & Mpact have been notified. | 72 |
| Mondi | 7 | Liz Savides 072 392 0511 | 2019/05/28 03:00 | Cassia Close – Arboretum | Pungent Foskor odour causing burning of the eyes and nose. Complainant had to close windows. | 63 |
| Mondi | 8 | Dave Savides 072 392 0511 | 2019/05/28 03:00 | Cassia Close – Arboretum | Pungent Foskor odour causing burning of the eyes and nose. Complainant had to close windows. | 63 |
| Unresolved | 1 | Resolved - Mondi Richards Bay | 2019/06/03 07:36 | N2 vicinity of Felixton travelling towards Richards Bay | "Very strong rotten egg odour". The following industries are kindly requested to investigate; Tongaat Hulett, Mondi, Mpact | 73 |
| Mondi | 2 | S Camminga 083 515 2384 | 2019/06/03 09:30 | Heideheuwel – Veldenvlei | PUNGENT nauseating Mondi guava odour. Had to close our house. Mondi was notified. | 60 |
| Mondi | 3 | R Camminga 083 515 2384 | 2019/06/03 09:30 | Heideheuwel – Veldenvlei | PUNGENT nauseating Mondi guava odour. Had to close our house. Mondi was notified. | 60 |
| Mondi | 4 | S Camminga 083 515 2384 | 2019/06/06 06:50 | Heideheuwel – Veldenvlei | Nauseating Mondi “guava” odour. Mondi was notified. | 36 |
| Mondi | 5 | R Camminga 083 515 2384 | 2019/06/06 06:50 | Heideheuwel – Veldenvlei | Nauseating Mondi “guava” odour. Mondi was notified. | 36 |
| RBCT | 6 | Anonymous | 2019/06/18 08:00 | Vicinity of RBCT | “Black ash all over my face and strong noxious odour irritating my throat. Thick cloud of smoke towards the road” The RBCAA has established that the ash and odour appeared to be emanating from within the RBCT facility. RBCT is kindly requested to investigate and report back to the RBCAA. | 67 |
| RBCT | 7 | BTT Employees 035 797 6763 | 2019/06/20 08:08 | Vicinity of RBCT | “We are experiencing bad odours at our site (Burning coal/ jeyes fluid smell). Employees are complaining about headaches, nasal drips and coughing.” RBCT is kindly requested to investigate and provide feedback to the RBCAA. | 68 |
| Foskor | 8 | Kobus du Plessis (0824581653) | 2019/06/23 11:00 | John Ross at Foskor robot | “Mist hanging over the road and could smell acid(metallic) smell when driving thru. The mist was from the bridge up to the robot in the bottom (about 400m)” FOSKOR is kindly requested to investigate and report back to the RBCAA. | 20 |
| Mondi | 9 | Elize (083 227 5616) | 2019/06/24 06:00 | Vicinity of Mondi | Terrible Mondi smell. | 55 |
| Mondi | 10 | Nontsundu Ndongo | 2019/06/24 09:30 | Richards Bay Civic Centre -CBD | “Guava like smell causing Nausea” | 55 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 11 | Dave Savides (072 392 0511) | 2019/06/24 08:00 | ZO Offices Bullion Boulevard - CBD | Terrible Mondi smell causing headache. | 55 |
| Mondi | 12 | ZO Staff (072 392 0511) | 2019/06/24 08:00 | ZO Offices Bullion Boulevard - CBD | Terrible Mondi smell causing headache. | 55 |
| Mondi | 13 | Elize (083 227 5616) | 2019/06/24 08:20 | Vicinity of Civic Centre Richards Bay -CBD | “Horrendous Mondi smell. Nauseas and can’t breathe” | 55 |
| Mondi | 14 | Angelique (071 462 4448) | 2019/06/24 08:20 | 20 Dollar Drive - Alton | Really bad smell. | 55 |
| Mondi | 15 | Angelique's Employees (071 462 4448) | 2019/06/24 08:20 | 20 Dollar Drive - Alton | Really bad smell. | 55 |
| Mondi | 16 | Dave Savides (072 392 0511) | 2019/06/24 08:58 | ZO Offices Bullion Boulevard - CBD | “Smell is still really bad, and headaches are worse” | 55 |
| Mondi | 17 | ZO Staff (072 392 0511) | 2019/06/24 08:58 | ZO Offices Bullion Boulevard - CBD | “Smell is still really bad, and headaches are worse” | 55 |
| Mondi | 18 | Elaine (082 448 2518) | 2019/06/24 09:00 | Geranium Place – Veldenvlei | “Terrible smell causing burning eyes and my chest to close” | 55 |
| Mondi | 19 | Petra (079 628 8964) | 2019/06/24 09:04 | Greyvillia – Arboretum | “Terrible smell causing burning nose and headache” | 55 |
| Mondi | 20 | S Camminga (083 515 2384) | 2019/06/24 09:10 | Heideheuwel – Veldenvlei | Pungent Mondi guava smell causing nausea and headache. | 55 |
| Mondi | 21 | S Camminga (083 515 2384) | 2019/06/24 09:10 | Heideheuwel – Veldenvlei | Pungent Mondi guava smell causing nausea and headache. | 55 |
| Mondi | 22 | A Breet | 2019/06/24 09:10 | Heideheuwel – Veldenvlei | Pungent Mondi guava smell causing nausea and headache. | 55 |
| Mondi | 23 | P Ntuli | 2019/06/24 09:10 | Heideheuwel – Veldenvlei | Pungent Mondi guava smell causing nausea and headache. | 55 |
| Mondi | 24 | Demian (082 725 8730) | 2019/06/24 09:20 | Alumina Allee – Alton | “Very bad rotten guava smell.” | 55 |
| Mondi | 25 | S Camminga (083 515 2384) | 2019/06/24 09:30 | Heideheuwel – Veldenvlei | Odour has become more pungent. HORRIFIC Guava \Cat Urine smell causing severe nausea and headache. Feel like we cannot breathe. | 55 |
| Mondi | 26 | S Camminga (083 515 2384) | 2019/06/24 09:30 | Heideheuwel – Veldenvlei | Odour has become more pungent. HORRIFIC Guava \Cat Urine smell causing severe nausea and headache. Feel like we cannot breathe. | 55 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 27 | A Breet | 2019/06/24 09:30 | Heideheuwel – Veldenvlei | Odour has become more pungent. HORRIFIC Guava \Cat Urine smell causing severe nausea and headache. Feel like we cannot breathe. | 55 |
| Mondi | 28 | P Ntuli | 2019/06/24 09:30 | Heideheuwel – Veldenvlei | Odour has become more pungent. HORRIFIC Guava \Cat Urine smell causing severe nausea and headache. Feel like we cannot breathe. | 55 |
| Mondi | 29 | Ashleigh Castle | 2019/06/24 00:00 | Alton Area | Foul smell in the air today - Alton area | 55 |
| Mondi | 30 | Tracy 076 196 7257 | 2019/06/24 11:54 | eNseleni | “Awful smell suddenly in the air. Smells like Mondi. It is overwhelming. Giving us headaches and a dizzy feeling” | 55 |
| Grindrod | 31 | Anonymous | 2019/06/24 14:00 | John Ross highway adjacent to Grindrod coal stockpiles | Excessive coal dust emanating from stockpiles at Grindrod facility. | 21 |
| Mondi | 32 | Tamlyn 076 920 8852, | 2019/06/24 21:00 | Meerensee | Bad Smell. Smelt like rotten eggs\onions. | 55 |
| Mondi | 33 | Liz Savides | 2019/06/25 08:00 | Cassia Close – Arboretum EXT | Terrible smell. | 56 |
| Mondi | 34 | Rone 071 262 6811 | 2019/06/25 08:30 | Brass link – Alton | Terrible “cat urine” smell. | 56 |
| Mondi | 35 | Debbie 083 417 0866 | 2019/06/25 08:47 | Knorhaanbaai – Meerensee | Very strong “cat urine” odour. | 56 |
| Mondi | 36 | Dave Savides (072 392 0511) | 2019/06/25 08:49 | ZO Offices – Bullion Boulevard | Terrible Mondi smell, same as yesterday, causing nausea and headaches. | 56 |
| Mondi | 37 | ZO Staff | 2019/06/25 08:49 | ZO Offices – Bullion Boulevard | Terrible Mondi smell, same as yesterday, causing nausea and headaches. | 56 |
| Mondi | 38 | Tamlyn 076 920 8852, | 2019/06/25 08:54 | Meerensee | Bad Smell. Same smell as last night (rotten eggs\onions) but more pungent. | 56 |
| Mondi | 39 | John Ferreira 083 384 6713 | 2019/06/25 09:23 | Klipviskinkel – Meerensee | Pungent cat urine odour causing nausea. There is a haze outside. | 56 |
| Mondi | 40 | Alan 083 287 6766 | 2019/06/25 08:56 | Vicinity of John Ross High School - Arboretum | Very strong odour. | 56 |
| Mondi | 41 | Demian 082 725 8730 | 2019/06/25 09:06 | Alumina Allee – Alton | The smell is back but far more acidic than yesterday. | 56 |
| Mondi | 42 | Elize 083 227 5616 | 2019/06/25 09:06 | Kruisbessie – Veldenvlei | Same nauseating smell as yesterday. | 56 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 43 | S Camminga (083 515 2384) | 2019/06/25 09:30 | Heideheuwel – Veldenvlei | pungent Mondi “cat urine” odour causing SEVER nausea and headache. Far worse than yesterday’s odour. | 56 |
| Mondi | 44 | S Camminga (083 515 2384) | 2019/06/25 09:30 | Heideheuwel – Veldenvlei | pungent Mondi “cat urine” odour causing SEVER nausea and headache. Far worse than yesterday’s odour. | 56 |
| Mondi | 45 | A Breet | 2019/06/25 09:30 | Heideheuwel – Veldenvlei | pungent Mondi “cat urine” odour causing SEVER nausea and headache. Far worse than yesterday’s odour. | 56 |
| Mondi | 46 | P Ntuli | 2019/06/25 09:30 | Heideheuwel – Veldenvlei | pungent Mondi “cat urine” odour causing SEVER nausea and headache. Far worse than yesterday’s odour. | 56 |
| Mondi | 47 | Ms S Govender 082 450 4187 | 2019/06/25 09:31 | Civic Centre – Richards Bay -CBD | “Further to our discussion yesterday, I felt the need to lodge an official complaint that the pungent Guava smell that still lingers in the Civic Building. My colleagues and I are nauseous and experiencing headaches. The situation is really unacceptable.” | 56 |
| Mondi | 48 | Sibonisile Maduma | 2019/06/25 09:31 | Civic Centre – Richards Bay -CBD | “Further to our discussion yesterday, I felt the need to lodge an official complaint that the pungent Guava smell that still lingers in the Civic Building. My colleagues and I are nauseous and experiencing headaches. The situation is really unacceptable.” | 56 |
| Mondi | 49 | Bongiwe Mkhwanazi | 2019/06/25 09:31 | Civic Centre – Richards Bay -CBD | “Further to our discussion yesterday, I felt the need to lodge an official complaint that the pungent Guava smell that still lingers in the Civic Building. My colleagues and I are nauseous and experiencing headaches. The situation is really unacceptable.” | 56 |
| Mondi | 50 | Liz Savides | 2019/06/25 09:33 | Cassia Close – Arboretum EXT | Terrible smell still present causing nausea | 56 |
| Mondi | 51 | Debbie 074 380 4741 | 2019/06/25 09:47 | Ceramic Curve – Alton | Terrible smell in the air causing tight chest. | 56 |
| Mondi | 52 | Hannlie 083 778 3775 | 2019/06/25 10:00 | Alumina Allee – Alton | Terrible nauseating odour. | 56 |
| Mondi | 53 | Angie 079 3403403 | 2019/06/25 10:09 | Arum Lily – Veldenvlei | Very strong smell | 56 |
| Mondi | 54 | Melisha 081 207 9795 | 2019/06/25 10:26 | Lira Link – R. Bay CBD | Experiencing a very strong constant “rotten onion” smell that we can taste. Causing headache. | 56 |
| Mondi | 55 | David Davidson 082 887 0221 | 2019/06/25 10:50 | eNseleni | Strong “cat urine” smell. | 56 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 56 | R Camminga (083 663 3796) | 2019/06/30 10:25 | John Ross Highway | Pungent Mondi Guava odour. Mondi was notified at the time. | 27 |
| Foskor | 1 | Ms Gugu Gazu (CoU) | 2019/07/05 09:00 | Foskor Area | Excessive emissions emanating from Foskor stack. Feedback: Upon receipt of the complaint, City of uMhlathuze: Air Quality Management Unit visited Foskor facility and Mr. Sandile Mdamba was contacted by the officials and he indicated that there was an instrument failure at the Sulphuric Plant. The Plant was stopped for further investigations and repairs. A detailed report is awaited from Foskor and will be circulated upon receipt. | 13 |
| RBCT | 2 | S Camminga 083 515 2384 | 2019/07/06 00:00 | Small Craft Harbour | Excessive emissions emanating from the RBCT facility. (See attached photographs) | 66 |
| Mondi | 3 | Elize 083 227 5616 | 2019/07/09 09:13 | Kruisbessie – Veldenvlei | “Nasty Mondi Stench” Mondi was notified. | 37 |
| uMhlathuze Municipality | 4 | Mr Erasmus 084 352 9437 | 2019/07/18 00:00 | Albatross Engineering – 49 Ceramic Curve, Alton | Significant dust from adjacent Sand Basting Facility (reported by the complainant to be company called “Castle Hill”. The RBCAA visited the site and can confirm that a significant amount of dust was emanating from the Sand Blasting facility. I could not see any signage identifying the sand blasting company. | 10 |
| Port of Richards Bay | 5 | S Camminga 083 515 2384 | 2019/07/20 00:00 | Heideheuwel – Veldenvlei | Black fallout in pool, which I was able to remove from my pool using a magnet. Given the magnetic properties it is assumed that this is magnetite dust from the Port of Richards Bay. | 1 |
| Mondi | 6 | Sharin Govender 082 450 4187 | 2019/07/28 16:30 | John Ross Highway vicinity of Mondi | Very strong Cat Urine odour. | 57 |
| Mondi | 7 | D Savides 072 292 0511 | 2019/07/29 07:00 | Richards bay CBD | Excessive Black smoke emanating from Mondi. The photograph below was taken at 10h40. | 58 |
| uMhlathuze Municipality | 8 | Mr Erasmus 084 352 9437 | 2019/07/31 08:15 | Albatross Engineering – 49 Ceramic Curve, Alton | Significant dust from adjacent sand blasting facility impacting on employees. The complaint has been reported to the City’s Air Quality Management Unit for investigation. | 10 |
| Mondi | 1 | T Ellis 072 223 1655 | 2019/08/05 07:00 | Vicinity of Bell Equipment – Alton | “The Mondi stench around Bell Equipment this morning was ghastly” Mondi was notified. | 29 |
| Mondi | 2 | R Camminga 083 515 2384 | 2019/08/09 05:40 | Heideheuwel – Veldenvlei | Nauseating Mondi “guava” odour. Mondi was notified. | 40 |
| Mondi | 3 | S Camminga 083 515 2384 | 2019/08/09 05:40 | Heideheuwel – Veldenvlei | Nauseating Mondi “guava” odour. Mondi was notified. | 40 |
| Mondi | 4 | B Camminga 083 515 2384 | 2019/08/09 05:40 | Heideheuwel – Veldenvlei | Nauseating Mondi “guava” odour. Mondi was notified. | 40 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 5 | Tracy 076 196 7257 | 2019/08/14 21:54 | eNseleni area | “Awful Mondi smell tonight. It started off not too bad around 6-7is and now is unbearable. It was on and off the past couple of days but today is very strong. "Mondi has been notified. | 47 |
| Unresolved | 6 | Yolandi 079 381 3107 | 2019/08/19 09:30 | 5 Klipviskinkel – Meerensee | “Foul smell causing burning, itchy eyes – smells like the Foskor”. Foskor was notified. | 1 |
| Mondi | 7 | Tracy 076 196 7257 | 2019/08/19 17:50 | eNseleni area | Mondi odour since approximately 10h00. Got steadily worse throughout the day. Mondi was notified. | 51 |
| South32 | 8 | Dave Savides (072 392 0511) | 2019/08/28 11:09 | Vicinity of Hillside | “Going along East Central Arterial I saw a huge plume of alumina dust enveloping the silo at Hillside. But by the time I got there the wind had blown most of it away. It must have covered ZCBF area.” See photo. | 69 |
| Mondi | 9 | Elize (083 227 5616) | 2019/08/29 07:10 | Kruisbessie – Veldenvlei | Very bad rotten cabbage odour. | 44 |
| Mondi | 10 | Sandy Camminga (083 515 2384) | 2019/08/29 07:18 | Heideheuwel – Veldenvlei | Mondi “rotten cabbage” odour. | 44 |
| Foskor | 1 | Tracey Trezise 083 525 6146 | 2019/09/01 16:50 | Foskor Plant | Abnormal emissions emanating from Foskor stack Foskor was notified at the time the complaint was logged. | 14 |
| Unknown Source | 2 | Melinda 082 558 4275 | 2019/09/01 19:35 | Moonfish – Meerensee | “Gas” type smell causing burning eyes. Smell “comes and goes. Based on wind direction at the time, RBM is kindly requested to investigate. | 1 |
| Mondi | 3 | S Camminga 083 515 2384 | 2019/09/02 09:25 | Heideheuwel – Veldenvlei | HORRIFIC Mondi guava” odour, causing nausea. It was so bad that we had to close doors and windows. | 32 |
| Mondi | 4 | R Camminga 083 515 2384 | 2019/09/02 09:25 | Heideheuwel – Veldenvlei | HORRIFIC Mondi guava” odour, causing nausea. It was so bad that we had to close doors and windows. | 32 |
| Mondi | 5 | Elize 083 227 5616 | 2019/09/02 09:33 | Kruisbessie – Veldenvlei | “Nasty Mondi smell” | 32 |
| Mondi | 6 | Tracy 076 196 7257 | 2019/09/02 10:20 | eNseleni | “” Strong Mondi Smell” causing dizziness, headaches and sore throat. Dissipated for a while, and then was very strong again at 11h39. Mondi was notified. | 32 |
| Mondi | 7 | Tracy 076 196 7257 | 2019/09/03 23:00 | eNseleni | Mondi odour. Had to close windows. | 31 |
| Mondi | 8 | Tracy 076 196 7257 | 2019/09/04 10:45 | eNseleni | Mondi guava” odour. Odour was lingering this morning but has got stronger. Family and staff struggling with upper respiratory issues and headaches. | 33 |
| Unknown Source | 9 | Melinda 082 558 4275 | 2019/09/04 19:20 | Moonfish – Meerensee | “Gas smell. Battling to breathe” BTT has been notified. | 6 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 10 | John Readman 082 801 1160 | 2019/09/04 04:00 | N2 in the vicinity of Felixton | Strong “Mondi type” odour. | 1 |
| Mondi | 11 | Elaine 082 448 2518 | 2019/09/05 02:00 | Geranium Place – Veldenvlei | Very bad at 08h25 - Very bad Mondi odour causing upper respiratory symptoms and headache. | 30 |
| Mondi | 12 | Elize 083 227 5616 | 2019/09/05 04:00 | Kruisbessie – Veldenvlei | Very bad at 05h16, Terrible Mondi odour causing nausea. | 30 |
| Unknown Source | 13 | N Govender 072 180 2335 | 2019/09/05 07:30 | Kitefish – Meerensee | “Bad odour – smells like gas.” | 1 |
| Mondi | 14 | Elize 083 227 5616 | 2019/09/05 09:33 | Vicinity of Mondi | Very bad chemical smell emanating from the Mondi Effluent Plant. | 30 |
| Mondi | 15 | Tracy 076 196 7257 | 2019/09/23 23:55 | eNseleni | Around midnight, Mondi odour causing instant headache. | 24 |
| Mondi | 16 | Tracy 076 196 7257 | 2019/09/24 09:30 | Birdswood | Strong Mondi odour. | 23 |
| Mondi | 17 | Tracy 076 196 7257 | 2019/09/25 02:00 | eNseleni | Strong Mondi odour. | 25 |
| Mondi | 18 | Karen Rapson | 2019/09/25 07:57 | Mondi | Black Smoke emanating from Mondi – “I've never seen such extreme black smoke billowing out of that "chimney" before. When I drove towards the CBD this AM, coming from the John Ross High schools’ direction into town. I could see a very clear streak of black smoke lining the sky all the way past Brackenham. On arrival at my office, when I got out of my car, my sinuses almost instantly started to flare up. I've been sneezing, suffering burning eyes, as well as a very uncomfortable headache.” | 34 |
| Mondi | 19 | Neil 083 658 3219 | 2019/09/25 08:00 | North Central Arterial-CBD | Significant Black Smoke emanating from Mondi. Complainant expressed alarm that such an activity is permitted | 34 |
| Mondi | 20 | Anonymous | 2019/09/25 08:40 | John Ross highway | Thick black smoke emanating from Mondi stack. | 34 |
| Foskor | 21 | Dave Savides 072 392 0511 | 2019/09/25 08:40 | Bullion Boulevard-CBD | Dark emissions from Foskor stacks. | 34 |
| Foskor | 22 | Jemaine Naicker | 2019/09/25 08:40 | ZO Office in Bullion Boulevard | Foskor smell causing irritation. | 1 |
| Mondi | 23 | Ilana 082 877 8017 | 2019/09/26 06:50 | John Ross | Excessive emissions emanating from Mondi. | 34 |
| Mondi | 24 | Dave Savides 072 392 0511 | 2019/09/26 07:00 | CBD | Thick black emissions emanating from Mondi, blowing towards residential areas. | 34 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| Mondi | 1 | Tracy<br>076 196 7257 | 2019/10/15<br>16:40 | eNseleni | Terrible Mondi cabbage smell causing headache. Mondi was notified. | 42 |
| uMhlathuze Municipality | 2 | David Davidson<br>082 887 0221 | 2019/10/23<br>12:20 | Aquadene | “Dust emanating from construction site adjacent for new housing project adjacent to Aquadene. Project has been dragging on for 2 years. No efforts to reduce dust as site gets bigger and bigger.” The RBCAA will forward the complaint to the City of uMhlathuze Air Quality Management Unit for investigation. | 9 |
| Mondi | 3 | Tracy<br>076 196 7257 | 2019/10/25<br>00:00 | eNseleni | Strong Mondi cabbage \ cat urine odour from around 17h00 on the 25th into the early hours of the morning (26th), causing headaches and nose irritation. | 22 |
| Mondi | 4 | Tracy<br>076 196 7257 | 2019/10/26<br>00:00 | eNseleni | Strong Mondi cabbage \ cat urine odour from around 17h00 on the 25th into the early hours of the morning (26th), causing headaches and nose irritation. | 22 |
| Tongaat Hulett | 5 | Sam<br>035 7911139 | 2019/10/29<br>12:00 | Felixton Village | Very thick smoke coming from Tongaat Hulett over school. | 74 |
| Tongaat Hulett | 6 | Anonymous | 2019/10/29<br>12:20 | Felixton Village | Very thick smoke coming from Tongaat Hulett, all morning, affecting the community. | 74 |
| Unknown Source | 7 | Elma<br>078 552 9400 | 2019/10/30<br>04:00 | 50 Bream Hill – Meerensee | Strong “gas” smell causing coughing and burning eyes. Resident is new to the area so the description of odour as a “gas” is subjective. Based on wind direction Mondi and Foskor are kindly requested to investigate. | 59 |
| Unknown Source | 1 | Mel<br>082 558 4275 | 2019/11/06<br>23:07 | Moonfish – Meerensee | a “Gas” smell since about 17h30 causing headache, burning eyes and nausea. The prevailing wind was from the NE (depicted by the red lines). The RBCAA has contacted 2 residents in the area and neither detected any odour. It can therefore be concluded that the source is very localised, and the complainant has been informed accordingly. | 1 |
| Mondi | 2 | Elize<br>083 227 5616 | 2019/11/08<br>06:20 | Vicinity of Mondi Effluent Plant | “Horrific Mondi odour causing severe nausea.” Black smoke reported to be emanating from the Effluent Plant." | 38 |
| Mondi | 3 | Tracy<br>0761967257 | 2019/11/15<br>21:11 | eNseleni | Strong rotten cabbage odour since about 15h30 this afternoon. | 45 |
| Mondi | 4 | Tracy<br>0761967257 | 2019/11/16<br>08:00 | eNseleni | Bad Mondi odour – worse than last night. | 45 |
| Mondi | 5 | Tracy<br>0761967257 | 2019/11/16<br>15:10 | eNseleni | Strong nauseating Mondi guava odour since 15h00. | 45 |
| Mondi | 6 | Tracy<br>0761967257 | 2019/11/16<br>20:35 | eNseleni | Strong Mondi odour. | 45 |
| Mondi | 7 | Angelique<br>071 462 4448 | 2019/11/19<br>08:12 | Dollar Drive – R. Bay CBD | Terrible guava type odour causing sinus symptoms. | 45 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| South32 | 8 | Zululand Observer Staff | 2019/11/19 08:20 | Bullion Boulevard -, R. Bay CBD | Strong Mondi odour. | 45 |
| Mondi | 9 | Sandy Camminga | 2019/11/19 09:11 | Heideheuwel – Veldenvlei | Nauseating Mondi guava odour. | 45 |
| Mondi | 10 | Demian 0827258730 | 2019/11/19 09:23 | Alumina Alley – Alton | Very Bad Mondi Odour causing eye and nose irritation. Complainant reported odour on-and-off since the 18th. | 45 |
| Mondi | 1 | Frieda Johnson 073 314 2284 | 2019/12/28 07:00 | Marlynhoek - Meerensee | Very strong odour causing nausea, vomiting and violent headache. Odour described as a mixture of cat urine and Jeyes fluid. | 43 |
| Mondi | 2 | Linda 076 214 2322 | 2019/12/28 09:30 | Kabeljoukade – Meerensee | “Bad smell in the air causing headache and dizziness.” | 43 |
| Mondi | 3 | Catherine 061 807 0707 | 2019/12/28 09:30 | Mullet Leap – Meerensee | “Dreadful smell in the air causing hay fever | 43 |
| Mondi | 4 | Arinda 083 520 9871 | 2019/12/28 09:30 | Sole Sands – Meerensee | “Very strong smell in the air” | 43 |

| Response # | Response |
|---|---|
| 1 | RBCAA - allocation |
| 2 | Based on wind direction this complaint could not be attributed to Industry operations. |
| 3 | BTT 12/04/2019 Nicolette Govender responded: BTT has investigated the below and there were no activities taking place at the time of this complaint hence BTT cannot be the source of the odour. |
| 4 | BTT 23/04/2019 Kamaine Govender responded: BTT would like to advise that we had an ammonia leak at approximately 07:00 this morning (23/04/2019), from a loading pump gland. Based on this information, BTT could have been the source of the odour. The system valves have been isolated and BTT maintenance department is currently repairing the leak. |
| 5 | BTT 26/3/2019 Nicolette Govender responded: In responding to the recent odour complaints, BTT would like to advise that we have established that we had a release of Mercaptan this morning (26 March 2019) that led to this situation. Mercaptan is a product that is used to odorize LPG to detect leaks. This system is normally a closed system. The preliminary details are as follows: - The PSV on the pressurized container containing Mercaptan malfunctioned and lifted, it is unknown at this point what caused this. PSVs (Pressure Safety Valves) are installed on tanks to prevent the tank from exploding and causing a major incident if there is a pressure increases in the tank. - The BTT team noticed the lifted PSV at 12:00 this morning and immediately depressurized the system<br>- The pressurized container containing Mercaptan does not belong to BTT as it is supplied by an external service provider.<br>We have called the supplier to uplift the container, conduct their inspections and advise on the reason for the PSV malfunctioning and provide calibration records for the PSV. |
| 6 | BTT 4/9/2019 Kamaine Govender responded. BTT has investigated the below complaint. The Operations Manager was on site last night and assessed all dosing activities and gas loading activities and there were no odours or leaks on our site that could have led to this odour complaint. There were also no abnormal activities that took place on our site prior to and during the time of the complaint. Our portable VOC meter was also utilized to determine if there were any VOCs in the atmosphere at our site, and there was a zero-ppm reading. Based on the above, the source of odour was not emanating from BTT site. Kindly note that the operations manager arrived on site at around 20:20 pm last night. The VOC monitoring started from the time the operations manager arrived on site until 21:00 |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| | pm. | | | | | |
| 7 | Complaint was referred to the City's Air Quality Management Unit, who in turn referred the matter to District (KCDM) Air Quality officer. Ms Khathi the Environmental Management inspector has issued the operator of the Charcoal Manufacturing facility (Ms Leoni Anderson) with a Pre-Compliance Notice. | | | | | |
| 8 | Complaint was referred to the City's Air Quality Management Unit. Response from CoU: Regarding the complaint on the 7th of March an inspection was done, and we noticed that most of the dust was windblown from underneath the conveyors and by the gate where the trucks were offloading. The facility had already started sprinkling water when we left, and the dust was subsiding. | | | | | |
| 9 | Construction site Aquadene Housing | | | | | |
| 10 | CoU 31/07/2019 Lindiwe Khumalo responded: The City of uMhlathuze: Air Quality Management Unit officials visited the site, which is Castle Hill facility. The blasting activity was taking place at the site on arrival of the officials. The facility was advised to stop the blasting operation and to ensure that the activity occurs in an enclosed warehouse. Close monitoring of this facility will be done to ensure no re-occurrence of such activity occurs. | | | | | |
| 11 | Foskor 03/05/2019 Sandile Mdamba responded: Please note that Foskor is currently not using Mondi effluent for dilution and this has been the case since November last year. This is in response to the email below and therefore, other Sources are to be investigated as Foskor could not have contributed to the rotten egg smell as per complaint below. | | | | | |
| 12 | Foskor 05/04/2019 Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 867,25 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: A preliminary investigation was conducted, and no root cause was identified. all plant operations were found to be normal. The Granulation and Phosphoric acid Plants were operating. normally and there was no ammonia offloading during this time.<br>Sulphuric Acid Plants were operating at minimum rates due to the strike and there were no SO2 point source exceedances recorded. There were no Sulphuric Acid Plant start-ups or any reported gas leaks during this period. During this period for both complaints the wind direction was predominantly towards the Meerensee/harbour side with and average ranging from 285o to 311o therefore, based on wind direction Foskor could not have contributed to the odour at Arboretum Extension.<br>Mondi 16/07/2019 Brendan Crawford Responded: Mondi has investigated the TRS exceedances and found the following:<br>During the time of the exceedances the average wind direction measured at CBD station was 271 degrees with low wind speeds.<br>There were TRS exceedances recorded at Mondi's Alton ambient monitoring station periodically from 01:00am to 06:10am.<br>The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019.<br>Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain. | | | | | |
| 13 | Foskor 08/07/2019 Sandile Mdamba responded: Background<br>Foskor produce sulphuric acid at 98.5 % (w/w) which is within the optimum range for efficient absorption. On the 05 July 2019 it was noticed that the 'C' plant stack appeared more visible than usual. Root cause: The online acid strength controller system failed resulting in the restriction on the line supplying acid to the acid analyser probes. Consequently, there was an incorrect indication of the acid strength in the process control room. The indication was 98.5 % whereas verification results from the lab indicated 99% which was out of the optimum process range.<br>The acid strength controller system helps control acid strength at the required concentration by adding water (dilution) into the system when required.<br>Corrective/Preventative measures: The plant was stopped as soon as the problem was realised while the maintenance team attended to the faulty acid analyser. The fault analyser was repaired. | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| 14 | Foskor 13/09/2019 Sandile Mdamba responded. Nature of complaint/s: Abnormal emissions emanating from Foskor stack. Background: On the 31st of August 2019 there was a power failure at 05:30 AM which lasted approximately 8 hours until about 14:00 PM. The following day on the 01st September 2019 it was noticed that the 'AB' plant stack appeared more visible than usual. Root cause: Unavailability of power on the draining pumps leading to inefficient draining in the acid section.<br>Consequently, this led to formation of weak acid caused by moisture ingress. Weak acid corrodes the equipment and the piping system and forms sulphates sludge which restricts the distribution troughs in the acid absorption towers. Mist eliminator drains/ seal pots were found to be saturated. Corrective/Preventative measures: The plant was stopped and spouts inside the final absorption tower were cleaned continuously to remove formation of sulphates. Mist eliminator seal pots were also taken of and cleaned to enhance absorption. | | | | | |
| 15 | Foskor 15/02/2019 Mannana Ntoampe responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 747,35 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: At the time Foskor was notified, a preliminary investigation was conducted, and no root cause was identified. A further investigation was done and all plant operations were found to be normal, The Granulation and Phosphoric acid Plants were operating normally and there was no ammonia offloading during this time, Sulphuric Acid Plants were operating normally during this time with no SO2 point source exceedances, There were no Sulphuric Acid Plant start-ups or any reported gas leaks during this period. Based on wind direction Foskor could have contributed to the odour at Arboretum Extension. | | | | | |
| 16 | Foskor 15/02/2019 Mannana Ntoampe responded: v Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 899,63 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: None identified, The Granulation Plant was operating normally and there was no ammonia offloading during this time, Phosphoric Acid Plants were also operating normally. Sulphuric Acid Plants were operating normally during this time with no SO2 point source exceedances, there were no Sulphuric Acid Plant start-ups or any reported gas leaks during this period. Based on wind direction, Foskor could have contributed to the odour at Arboretum Extension. | | | | | |
| 17 | Foskor 15/05/2019 Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 956,86 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: A preliminary investigation was conducted, and no root cause was identified. all plant operations were found to be normal. The Granulation Plants were operating normally there was no ammonia offloading and Phosphoric acid plants were operating normally with no process upsets. Sulphuric Acid Plants were operating normally with only "B" plant currently on shut. There were no Sulphuric Acid Plant start-ups or any reported gas leaks during this period. based on wind direction ranging from (196 – 200) degrees it is quite possible that Foskor could not have contributed to the odour at Bullion Boulevard (ZO office) | | | | | |
| 18 | Foskor 24/05/2019 Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 938,22 mg/Nm3 were recorded for the 'C' Stack these were however, within our AEL limits. Root Cause/Correct Actions: An investigation was conducted, and no root cause was identified. all plant operations were found to be normal. The Granulation Plant was operating normally with no ammonia offloading conducted on that day. Phosphoric acid plants were operating normally with no process upsets. Sulphuric Acid Plants were operating at minimum rates due to the strike and there were no SO2 point source exceedances recorded. There were no Sulphuric Acid Plant start-ups or any reported gas leaks nor fires during this period. It should be noted that sulphuric "B" plant is currently on shut and has been on shut since the 22nd of March 2019 and part of the activities conducted during the shut is the opening of filters for cleaning and this could have contributed to the odour. Based on wind direction, it is possible that Foskor could have contributed to the odour at the port. | | | | | |
| 19 | Foskor 27/03/2019 Sandile Mdamba responded: Root cause: Cold Heat Exchanger (CHE) damaged and not cooling the gases to the required temperature for optimum absorption. Interpass tower mist eliminators fouled. Change the CHE and replace mist eliminators during the shut. Currently there is no stack visibility as the plant is on shut to replace these equipment's.<br>The plant has been stopped for its annual shut whereby, the abovementioned will be rectified. Deteriorated mist eliminators will be replaced with a new full set during the B plant shutdown for effective trapping of acid carryover from the final absorption tower. New Ceramics will also be packed inside the absorption tower and this will assist in ensuring more efficiency in absorption. | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| 20 | Foskor 28/06/2019 Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 1229,94 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no Sulphuric Acid Plant start-ups during this period: There were no fugitive gas leaks reported on the day. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. There was no ammonia offloading during this time. FOR YOUR NOTE!!! We tried to contact the complainant to establish exactly where the mist was coming from but unfortunately, we could not reach the complainant. On days when the ambient temperature is low the vapour from our cooling towers appears more visible than days when the skies are clearer. The time of the complaint was at 11h00 and the complaint states that there was "Mist hanging over the road" given the time of the complaint we doubt it could have been mist on the road it could vapor from our cooling towers. The complainant also states that there was an acid/metallic the metallic smell is not one for Foskor's however; acid is part of our process and given the position as to where the complainant was and predominant the wind direction on the day Foskor could have contributed to the odour. Foskor will continue to try and get hold of the complainant to get clarity regarding the reported mist and odour description this will be reported back to the RBCAA. | | | | | |
| 21 | Grindrod 26/06/2019 Christo Coetzer responded: This is the first complaint in many years that we have received for dust pollution so regret the incident has taken place. I have done enquiries about this and it seems that excessive dust has emanated from the haulage roads as we were busy loading a vessel with the use of Front-end loaders. The water tanker was in use for dust suppression although it seems that it was not sufficient at the time. RBTG will take extra care in future to ensure haulage roads are kept wet to eliminate airborne dust. | | | | | |
| 22 | Mondi 01/11/2019 Candice Webb responded: Source of Odour (AEL source code where applicable) Fugitive emissions from shut conditions. Meteorological Conditions Mondi monitoring stations Wind direction Min = 150o. Max = 203o. Average wind speed = 1.4 m/s. RBCAA monitoring stations Wind direction Min = 131o. Max = 293o. RBCAA Wind speed =2.6 m/s. Calculation of Impacts: Mondi Monitoring Stations Mondi recorded a peak at the Landfill station at 00:51 (26th of October 2019) and Alton station 03:39 (26th of October). RBCAA Monitoring Stations CBD station recorded TRS peak of 8.5ppb at 15:20 (25th October 2029) and 5.3ppb at 01:20 (26th October 2019). Root Cause of Incident After an investigation, Mondi found all point source emissions to be within specification during the period of the complaint. However, TRS peaks were recorded at both Mondi and RBCAA ambient station during the period of the complaint. As Mondi was in a shutdown period, it is possible that odour was emitted from a low-level fugitive source such as the effluent plant and high-level fugitive sources such as process tanks. Wind direction confirms that Mondi was the most likely source of the odour. Corrective Actions: NA Preventative Measures: Actions Due Date High-level fugitive sources: Mondi is working on an odour inventory, which involves sampling all possible sources on continuous bases to identify significant odour emitters, and allow process engineers to work on reducing odours from these sources. Low-level fugitive sources: Mondi is working on improving the quality of effluent discharged to the Mondi Effluent plant and will commence with an odour suppression trial within the next two weeks. Emission inventory commenced in August 2019 and is ongoing. Effluent quality improvement projects have commenced and is ongoing. Effluent odour suppression trial due to start 11 November 2019. | | | | | |
| 23 | Mondi 02/10/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Effluent Plant 6. Meteorological Conditions 24th September 2019 07:30 – 10:30 Average wind direction = 188o Min = 182o. Max = 192o. Average wind speed = 2.4 m/s Recovery Stack: Average wind direction = 251o Min = 239o. Max = 263o. 24th September 2019 07:30 – 10:30 Average wind direction = 238o Min = 202o. Max = 282o. 24th September 2019 07:30 – 10:30 Average wind speed = 3.7 m/s. 24th September 2019 07:30 – 10:30 Hytec Station TRS > 5ppb between 8:30am and 8:40am. 24th September 2019 07:30 – 10:30 No TRS exceedances recorded. Root Cause of Incident The odour emissions were identified as having originated from the Effluent Plant. At the time mill condensate was overflowing into the sewer. Corrective Actions? The mill is currently focusing on reducing condensate overflows to sewer by increasing uptake of condensate in the process. Preventative Measures Actions Due Date 1 Mondi will be conducting odour abatement trials at the Effluent Plant to minimise the impact of odour emissions. 15th October 2019 2 Extensive repair work on the Evaporations Plant Lamella has been planned for the next annual shut. This will improve condensate quality which will improve uptake of condensate. 20th April 2020. | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| 24 | Mondi 02/10/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Effluent Plant 6. Meteorological Conditions Mondi monitoring stations 23rd September 2019 22:00 – 01:00 Average wind direction = 169o Min = 157o. Max = 193o. Average wind speed = 2.2 m/s Recovery Stack: Average wind direction = 202o Min = 157o. Max = 260o. RBCAA monitoring stations 23rd September 2019 22:00 – 01:00 Average wind direction = 210o Min = 160o. Max = 275o. 23rd September 2019 22:00 – 01:00 Average wind speed = 4.7 m/s Mondi Monitoring Stations 23rd September 2019 22:00 – 01:00 No TRS exceedances recorded. RBCAA Monitoring Stations 23rd September 2019 22:00 – 01:00 CBD Station TRS > 5ppb from 00:55am. Root Cause of Incident The odour emissions were identified as having originated from the Effluent Plant. At the time mill condensate was overflowing into the sewer. Corrective Actions? The mill is currently focusing on reducing condensate overflows to sewer by increasing uptake of condensate in the process. Preventative Measures Actions Due Date 1 Mondi will be conducting odour abatement trials at the Effluent Plant to minimise the impact of odour emissions. 15th October 2019 2 Extensive repair work on the Evaporations Plant Lamella has been planned for the next annual shut. This will improve condensate quality which will improve uptake of condensate. 20th. | | | | | |
| 25 | Mondi 02/10/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Effluent Plant 6. Meteorological Conditions 25th September 2019 00:00 – 03:00 Average wind direction = 162o Min = 157o. Max = 169o. Average wind speed = 3.7 m/s Recovery Stack: Average wind direction = 188o Min = 141o. Max = 213o. 25th September 2019 00:00 – 03:00 Average wind direction = 202o Min = 164o. Max = 252o. 25th September 2019 00:00 – 03:00 Average wind speed = 8.8 m/s. 25th September 2019 00:00 – 03:00 No TRS exceedances recorded. 25th September 2019 00:00 – 03:00 No TRS exceedances recorded. No data from eSikhaleni from 00:45am. Root Cause of Incident The odour emissions were identified as having originated from the Effluent Plant. At the time mill condensate was overflowing into the sewer. Corrective Actions? The mill is currently focusing on reducing condensate overflows to sewer by increasing uptake of condensate in the process.<br>Preventative Measures Actions Due Date 1 Mondi will be conducting odour abatement trials at the Effluent Plant to minimise the impact of odour emissions. 15th October 2019 2 Extensive repair work on the Evaporations Plant Lamella has been planned for the next annual shut. This will improve condensate quality which will improve uptake of condensate. 20th April 2020. | | | | | |
| 26 | Mondi 03/01/2019 Brendan Crawford responded: Source of Odour: CPX tank. Meteorological Conditions: Mondi monitoring stations: Average wind direction = 242o Min = 229o. Max = 256o. RBCAA monitoring stations: Average wind direction = 228o Min = 210o. Max = 255o. Mondi Monitoring Stations<br>No TRS exceedances or increases notoedric monitoring stations: No TRS exceedances or increases noted. Compliance against Permits: CNCG gases were routed to the Flare at the time of the complaint. Average Flare TRS = 28 mg/m3.<br>Root Cause of Incident: On the 31st December 2018 at 22:30pm the Lime Kiln suffered a failure on the hydraulic pump. This necessitated the shutdown of the Kiln and the routing CNCG gases to the Flare and Incinerator for repairs to take place. The mill was reduced to minimum production rates and Methanol was cycled in the CPX tank. The hydraulic pump was back in service by the 1st January 2019 at 23:15pm but CNCG gases and Methanol were only switched back into the Kiln on the 2nd January 2019 at 13:00pm to allow the Kiln to heat up.<br>The extended cycling of Methanol in the CPX tank caused the concentration to increase in the condensate and therefore caused an increase in odour emissions. This eventually led to the odour complaint registered. Corrective Actions: Methanol was switched back into the Lime Kiln at 13:00pm which reduced the Methanol concentration in condensate and odour emissions. | | | | | |
| 27 | Mondi 03/07/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Source not identified Meteorological Conditions Mondi monitoring stations Average wind direction = 100o Min = 84o. Max = 120o. Average wind speed = 2.0 m/s Recovery Stack: Average wind direction = 44o Min = 26o. Max = 119o. RBCAA monitoring stations Average wind direction = 35o Min = 2o. Max = 56o. Average wind speed = 1.9 m/s. Calculation of Impacts Mondi Monitoring Stations No exceedances recorded. RBCAA Monitoring Stations Exceedance of the WHO 30-minute limit of 5ppb between 9:30am to 9:50am. Root Cause of Incident: The source of the odour was not identified even though wind conditions were favourable from Mondi. Corrective Actions. None. No odour source was identified to take actions against. Preventative Measures: Actions Due Date None. | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| 28 | Mondi 04/01/2019 Brendan Crawford responded: Source of Odour Burning on CNCG gases in the Flare: Meteorological Conditions Mondi monitoring stations: Average wind direction = 238o Min = 192o. Max = 269o. RBCAA monitoring stations Average wind direction = 213o Min = 160o. Max = 273o. Ambient Air Monitoring Stations: Mondi Monitoring Stations TRS exceedance at Hytec station at 4:00am. Increased TRS at Portable station from 3:40am to 4:30am and again from 6:10am to 6:40am. RBCAA monitoring stations: No TRS exceedances. Increase noted from 3:12am to 4:10am. Peaked at 3.5ppb at 3:25am. Compliance against Permits: CNCG gases were routed to the Flare at the time of the complaint. Average Flare TRS = 55 mg/m3. 9. Root Cause of Incident: On the 3rd January 2019 at 3:17am the Lime Kiln tripped due to a profibus alarm that activated on the vacuum pumps. This required the Hardwood CNCG gases to be diverted to the Flare. At 4:30am TRS from the Flare suddenly increased to maximum on the analyser. This was brought back to normal within 15 minutes by opening the flare damper manually to increase air flow for combustion. The Lime Kiln was back online by 10:35am and Hardwood CNCG gases were diverted back into the Kiln at 14:53pm. Corrective Actions: The air supply inefficiency to the Flare is a known issue which was identified during the Flare audit conducted by the OEM in September 2018. A modified burner, as per the OEM's recommendations was ordered in November 2018 and is expected to be delivered on the 8th January 2019 as per the supplier's communication. The modified burner will improve air supply efficiency and therefore improve combustion of CNCG gases. In the long term a CAPEX project to replace the Flare with a dedicated combustion unit is in development. | | | | | |
| 29 | Mondi 08/08/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Effluent Plant 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 247o Min = 235o. Max = 259o. Average wind speed = 1.1 m/s. Calculation of Impacts Mondi Monitoring Stations Ambient TRS exceedances of WHO guideline of 5ppb over 30 minutes recorded at: Hytec station between 5:00am to 5:30am and 5:50am to 6:20am.? Alton station between 6:00am to 7:40am. RBCAA Monitoring Stations Ambient TRS exceedances of WHO guideline of 5ppb over 30 minutes recorded at CBD station between 7:05am to 7:45am. Compliance against Permits. Appliance. Pollutant AEL Limit (mg/Nm3) Average Period (hr) Average concentration (mg/Nm3) No. of exceedances Recovery Boiler 1<br>Particulates 100 24 7.8 0 SO2 300 1 0.42 0 NOX 300 1 183.8 0 TRS 15 1 0.00 0 Recovery Boiler 2 Particulates 100 24 24.5 0 SO2 300 1 87.0 0 NOX 300 1 143.4 0 TRS 15 1 0.00 0 Power boilers Particulates 100 24 94.0 0 0 2 4 6 8 10 12 14 ppb<br>RBCAA Ambient TRS. CBD eNseleni eSikhaleni SO2 3500 1 204.3 0 NOX 1100 24 158.4 0 Lime Kiln. Particulates 100 24 49.7 0 TRS 10 1 0.68 0 NOX 2000 24 0.00 0, Gas Turbine<br>Particulates 50 24 0.24 0 NOX 800 1 0.00 0 9. Root Cause of Incident Upon investigation the mill's effluent average pH was found to be lower than normal. Detailed inspections were conducted to determine the source of the low pH. During these investigations, a leak was found on the outlet line of the Sulphuric Acid holding tank. Sulphuric Acid migration into the sewer network would have lowered the pre-neutralised Effluent pH resulting in increased H2S emissions from the Effluent Plant.<br>. Corrective Actions? The leak was stopped immediately by installing a clamp on the line over the leak.? Inspections are being conducted on all other acidic sources to ensure there are no other leaks of acid to sewer. Preventative Measures Actions Due Date The affected line will be replaced 30 September 2019 Routine plant inspections will be updated ensure focus on potential sources of acid to drain. 30 August 2019 | | | | | |
| 30 | Mondi 09/09/2019 Brendan Crawford responded: Mondi Effluent Plant 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 169.7o Min = 157o. Max = 211o. Average wind speed = 1.3 m/s Recovery Stack: Average wind direction = 268o Min = 226o. Max = 273o. RBCAA monitoring stations Average wind direction = 239o Min = 106o. Max = 341o. Average wind speed = 1.2 m/s. Calculation of Impacts Mondi Monitoring Stations High Ambient TRS exceedances recorded. Increase at Hytec and Alton stations consistent with time of the complaints. RBCAA Monitoring Stations Ambient TRS exceedances recorded at CBD station both prior and after the time of the complaints. Root Cause of Incident the Mondi Odour Task Team identified the effluent plant as the source of the complaint. However, Mondi was unable to identify the root cause. Corrective Actions: Preventative Measures Actions Due Date: Capex for an H2S analyser on the incoming effluent plant's drainage line has been approved. This will allow the Odour Task Team to identify effluent streams. | | | | | |
| 31 | Mondi 09/09/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Flare (481) 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 186o Min = 151o. Max = 222o. Average wind speed = 1.4 m/s Recovery Stack: Average wind direction = 29o Min = 23o. Max = 64o. RBCAA monitoring stations Average wind direction = 132o. Average wind speed = 2.8 m/s. Calculation of Impacts Mondi Monitoring Stations | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| | Ambient TRS exceedances recorded at: Landfill station between 8:20pm and 8:50pm. Root Cause of Incident the Lime Kiln was still in start-up condition following the planned Water Wash shut on 27th August 2019 due to the Lime Kiln having a significantly longer heat curve compared to other equipment. As a result, Non-condensable Gases (NCG) were being burned in the Flare. The Flare burner temperature set point had been decreased at 17:30pm which had resulted in an increase in TRS emissions. No reason had been given for the change in set point. Corrective Actions: None at the time. The Lime Kiln was back online at 4:00am on 4th September 2019 and as a result NCG was switched out of the Flare and back into the Kiln. Preventative Measures Review operating procedures for the Flare and retrain Operators. | | | | | |
| 32 | Mondi 09/09/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Flare (481) 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 239o Min = 207o. Max = 275o. Average wind speed = 1.6 m/s Recovery Stack: Average wind direction = 226o Min = 149o. Max = 281o. RBCAA monitoring stations Average wind direction = 227o Min = 117o. Max = 353o. Average wind speed = 2.8 m/s. Calculation of Impacts Mondi Monitoring Stations Ambient TRS exceedances recorded at: ? Alton station between 7:30am and 8:50am? Landfill station between 7:20am and 7:50am? Hytec station between 9:40am and 10:10am. Root Cause of Incident the Lime Kiln was still in start-up condition following the planned Water Wash shut on 27th August 2019 due to the Lime Kiln having a significantly longer heat curve compared to other equipment. As a result, Non-condensable Gases (NCG) were being burned in the Flare. The Flare experienced a sudden trip at 8:40am which resulted in temporary venting of NCG to atmosphere. It is suspected that a Methanol nozzle blockage resulted in loss of combustion fuel. Corrective Actions the Flare was put back online within two minutes. Preventative Measures the Odour Task Team are investigating root cause of nozzle blockage and implement preventative measures. | | | | | |
| 33 | Mondi 09/09/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Mondi Lime Kiln 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 220o Min = 212o. Max = 238o. Average wind speed = 3.7 m/s Recovery Stack: Average wind direction = 178o Min = 175o. Max = 225o. RBCAA monitoring stations Average wind direction = 202o Min = 198o. Max = 209o. Average wind speed = 7.1 m/s Calculation of Impacts Mondi Monitoring Stations High Ambient TRS exceedances recorded. Increase at Hytec and Alton stations prior to the time of the complaints. RBCAA Monitoring Stations Ambient TRS exceedances recorded at CBD station prior to the time of the complaint. Root Cause of Incident the Mondi Lime Kiln experienced a sudden trip prior to the time of the complaint. This resulted in a vent of odours gasses to atmosphere. The kiln was in process of starting up after the water wash. Corrective Actions<br>The kiln was put back online within 2 minutes. Preventative Measures Actions Due Date: The Odour Task Team continue to investigate both equipment and process improvement measures to improve kiln stability during abnormal operating conditions. | | | | | |
| 34 | Mondi 09/10/2019 Brendan Crawford responded: Source of Emission (AEL source code where applicable) Recovery Boiler 1 (461) 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 179o Min = 123o. Max = 202o. Average wind speed = 1.6 m/s Recovery Stack: Average wind direction = 237o Min = 110o. Max = 275o. RBCAA monitoring stations Average wind direction = 223o Min = 84o. Max = 296o.Average wind speed = 2.3 m/s. Calculation of Impacts Mondi Monitoring Stations No exceedances of daily, hourly or 10 minute SO2 limits. RBCAA Monitoring Stations No exceedance of daily PM10 limits. No exceedances of daily, hourly or 10-minute SO2 limits. A significant spike was recorded at Scorpio station; however, this was not in the prevalent wind direction from Mondi. Root Cause of Incident The mill was in a start-up condition following a planned Water Wash shut. Heavy fuel oil (HFO) is required to start the recovery boiler. As a result, during start-up, the air emission from the recovery boiler is visible. The O2 probes were removed during the Water Wash to avoid damage to the probe. Although the probe was re-installed after the Water Wash it needs to be heated to 700oC before it can start producing readings. As such the stack analysers did not produce any readings until the O2 probe was fully heated. It is expected during this time that the operator must operate at high excess O2 and monitor the stack using a CCTV camera.<br>Corrective Actions: Black liquor was introduced once the boiler had reached its temperature range, resulting in the dissipation of the stack plume. Preventative Measures: Actions Due Date 1 Restore the 2nd position O2 probe in the furnace Completed 2 Refocus the attention on observing the stack discharge via the camera and adjusting the combustion air accordingly during the start-up period. 30th November 2019 3 Investigate introducing tertiary air, CRU1 is operated with primary and secondary air only during the start-up phase 30th November 2019 4 Trial a different grade of HFO 15th December 2019. | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| 35 | Mondi 11/04/2019 Brendan Crawford responded: Source of Odour: Flare. Meteorological Conditions: Mondi monitoring stations Average wind direction = 252o Min = 211o. Max = 274o. RBCAA monitoring stations: Average wind direction = 260o Min = 98o. Max = 350o. Ambient Air Monitoring Stations Mondi Monitoring Stations Increase in Alton TRS first noted at 2:20am. By 3:40am Alton had exceeded the RBCAA target of 4.5ppb but was still within Mondi max limit. Between 8:00am an 8:20am Hytec TRS had exceed the Mondi max limit of 10ppb. RBCAA Monitoring Stations: TRS target of 4.5ppb exceeded between 1:30am and 4:30am and again between 7:35am and 8:20am. Compliance against Permits Mill was in start-up mode from planned Annual Shut. Lime Kiln was still offline with Hardwood CNCG gases being combusted in the Flare. 9. Root Cause of Incident At 23:15pm on 9 April 2019 the Flare Stack temperature (red trend line) dropped from an average of 430oC to 305oC. The Flare Burner temperature (blue trend line) was maintained close to its set point of 850oC (green trend line) due to automatic adjustments of the Flare damper. While the damper automatically maintains the Flare Burner temperature it does not do the same for the Flare Stack temperature as the hardware required to do this is not installed on the Flare. To maintain the Flare Stack temperature, the Operator must put the damper control on manual and adjust the damper position manually until the optimal Flare Stack temperature of 400oC - 600oC is achieved. At the time of the temperature drop the manual change to the damper had not been made and the Flare Stack Temperature remained below the optimal 400oC until the manual adjustment was made at 8:40am on 10 April 2019. Corrective Actions: 1. The Flare damper was manually adjusted to bring the Flare Stack temperature to above 400oC. 2. Flare tie-ins were installed during the Annual Shut to enable the installation of additional actuators. These new actuators will enable automatic control of the Flare Stack temperature as well the Flare Burner temperature and Fuel to Air ratios. The actuators are expected to arrive in June 2019 when they will be installed. | | | | | |
| 36 | Mondi 11/06/2019 Brendan Crawford responded: Source of Odour Lime Kiln 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 213o Min = 207o. Max = 218o. Average wind speed = 1.8 m/s Recovery Stack: Average wind direction = 255o Min = 244o. Max = 261o. RBCAA monitoring stations Average wind direction = 252o Min = 219o. Max = 274o. Average wind speed = 2.7 m/s. Ambient Air Monitoring Stations: Mondi Monitoring Stations Exceedances of WHO 30 minute limit of 5ppb at Portable monitoring station (Afrox) starting from 5:00am and continued through to 6:00am. RBCAA Monitoring Stations Exceedances of WHO 30 minute limit of 5ppb from 6:05am to 6:45am. Compliance against Permits Recovery Boiler 2 had been taken off line for a planned shut. No non-compliances however TRS from Lime Kiln did intermittently spike above 10 mg/Nm3 between 6:15am and 7:03am. Root Cause of Incident: A density control issue on the WLCD (White Liquor Clari Disc) as a result of partially blocked chute shower nozzles affected the 1st stage washing and resulted in Soda carryover to the Lime Kiln. This in effect increased the TRS emissions from the Lime Kiln. shower nozzles washed. Once the WLCD was put back in service the Lime Kiln TRS emissions started to decrease. | | | | | |
| 37 | Mondi 11/07/2019 Nosipho Ntombela responded: Source of Odour Effluent pH dip. Meteorological Conditions: Mondi monitoring stations Average wind direction = 226o Min = 218o. Max = 227o. Average wind speed = 1.3 m/s Recovery Stack: Average wind direction = 214o Min = 206o. Max = 212o. RBCAA monitoring stations CBD Average wind direction = 265o Min = 218o. Max = 296o. Average wind speed = 1.4 m/s. Ambient Air Monitoring Stations Mondi Monitoring Stations: Both Alton and Hytec Monitoring Stations were peaking above WHO (30-minute) limit of 5.0 ppb 07:45 to 09:30 Alton TRS Reading: Max: 49.99 TRS, Min: 16.31 (2 hours before complaint). Compliance against Permits No exceedances against AEL limits. Root Cause of Incident Mondi conducted a cation regen in the effluent system which coincided with high Demin effluent release that caused a pH dip and generated odour. Corrective Actions: Stabilize pH after effluent release prior to conducting a cation regen. Control effluent release from Demin plant so to avoid pH shock into the system. | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| 38 | Mondi 12/11/2019 Candice Webb responded: Source of Odour (AEL source code where applicable) Effluent plant because of condensate to drain. Meteorological Conditions: Mondi monitoring stations Average wind direction = 185o Min = 161o. Max = 227o. Average wind speed = 1.7 m/s Recovery Stack: Average wind direction = 189o. RBCAA monitoring stations Average wind direction Brackenham= 184o Min = 152o. Max = 204o. Average wind speed = 4.1 m/s. Calculation of Impacts Mondi Monitoring Stations TRS of 5.1ppb recorded at Mondi Landfill station between 06:00 and 06:20. Regretfully the Alton station was out of serves due to theft of the air conditioning unit. RBCAA Monitoring Stations No TRS exceedances recorded. Root Cause of Incident The odour was identified as originating from the Mondi Effluent Plant due to mill condensate overflowing into the effluent drainage system and then on to the effluent plant. The Mondi Odour Abatement Task Team has investigated the recent increase in odour from the effluent plant and identified the gradual reduction in condensate quality as the source of the odour. Mondi has investigated the black smoke seen from the effluent plant but has been unable to identify a source. Operators have been asked to continuously check for black smoke during plant walkabouts. Corrective Actions: A condensate quality task team has been initiated to investigate possible causes of the condensate quality reduction. The task team will investigate any equipment failures and/or process changes. A plan of action will be finalised by Friday 15th November 2019. Preventative Measures Actions Due Date 1 To be determined. 15 November 2019. | | | | | |
| 39 | Mondi 13/05/2019 Brendan Crawford responded: Source of Odour Evaporation Plant 4C 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 230o Min = 196o. Max = 271o. RBCAA monitoring stations Average wind direction = 257o Min = 135o. Max = 303o. Ambient Air Monitoring Stations Mondi Monitoring Stations Intermittent exceedances at Alton monitoring station starting from 4:40am and continued through to 8:30am. RBCAA Monitoring Stations No exceedances of RBCAA target but increase noted from 8:00am to 9:15am. Compliance against Permits All point sources were within AEL limits. Flare was not in use. Root Cause of Incident Subsequent to the mill start up from the Annual Shut 2019 Evaps 4C plant was found to be bottlenecked and could not attain full production rates. Upon investigation it was found that new equipment installed during the Annual Shut was under-designed and thereby restricting flow through the plant. This was confirmed by the Engineering Contractor who took sole responsibility for the error. During the initial investigation, the overflow of B Condensate to the effluent drain was incorrectly identified as the root cause for the odours as the overflows seemed to correlate with station exceedances and complaints. When the issue at Evaps 4C was looked at further it was discovered that pressure build up due to the restriction was causing the plant to vent NCG gases to atmosphere. This plant does not vent under normal circumstances and therefore was not included in the original odour trends. Corrective Actions: 1. A “hot tap” was done on the equipment to allow the pressure to temporarily relieve back into the process and stop the venting to atmosphere. 2. Evaps 4C vent was added to odour monitoring trends. 3. During the planned short shut from 13 – 15 May 2019 the critical path work is to install the correctly sized equipment to Evaps 4C plant. | | | | | |
| 40 | Mondi 15/08/2019 Candice Webb responded: Source of Odour (AEL source code where applicable). Effluent Plant. Meteorological Conditions. Mondi monitoring stations<br>Average wind direction = 240o Min = 239o. Max = 243o. Average wind speed = 2.6 m/s, Recovery Stack: Average wind direction = 260o Min = 255o. Max = 265o. RBCAA monitoring stations. Average wind direction = 247o Min = 218o. Max = 271o. Calculation of Impacts. Mondi Monitoring Stations<br>No ambient TRS exceedances recorded. RBCAA Monitoring Stations. No ambient TRS exceedances at CBD of WHO guideline of 5ppb over 30 minutes, however intermittent spikes above the limit recorded at:3:40am to 3:50am, 4:05am, 4:50am<br>6:30am to 6: 35am.eSikhaleni recorded above the WHO limit throughout the timespan investigated. Since Mondi was consistently downwind of this station at the time, this needs to be investigated separately. Compliance against Permits: (hr)(mg/Nm3) No. of exceedances<br>Recovery Boiler 1 Particulates 100 24 20.0 0<br>SO2 300 .1 14.1 0<br>NOX 300 1 207.2 0<br>TRS 15 1 0.00 0<br>Recovery Boiler 2 Particulates 100 24 32.8 0 | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| | SO2 300 1 36.5 0<br>NOX 300 1 171.7 0<br>TRS 15 1 0.00 0<br>Power boilers Particulates 100 24 89.0 0<br>SO2 3500 1 5.10 0<br>NOX 1100 24 187.5 0<br>Lime Kiln Particulates 100 24 54.5 0<br>TRS 10 1 0.00 0<br>NOX 2000 24 3.06 0<br>Gas Turbine Particulates 50 24 0.28 0<br>NOX 800 1 0.00 0<br>Root Cause of Incident: In preparation for a Cation regen in the Demin plant, the effluent buffer tank was drained to sewer to create space for acidic effluent at 4:40am. Despite this action being taken, the buffer tank had not been drained adequately. As a result, the buffer tank capacity was exceeded at 5:35am and began to overflow to the sewer. This created a sharp pH drop in the pre-neutralised effluent which resulted in increased odour emissions from the Effluent Plant.<br>Corrective Actions<br><br>• The methodology for draining the buffer tank before a cation regen was reviewed.<br>Preventative Measures<br>Actions Due Date<br>Preparations are being made to trial odour mitigation proposals at the Effluent Plant. Successful trials will be implemented permanently. 31 December 2019<br>A project is in place to upgrade the Demin regen system which will reduce overflow of acidic effluent into the main sewer. 1 September 2020 | | | | | |
| 41 | Mondi 17/04/2019 Brendan Crawford responded: Source of Odour: Flare. Meteorological Conditions: Mondi monitoring stations Average wind direction = 244o RBCAA monitoring stations: Average wind direction = 238o Min = 180o. Max = 302o. Min = 207o. Max = 274o. Ambient Air Monitoring Stations: Mondi Monitoring Stations Increase in Alton TRS first noted at 0:00am. By 1:30am Alton had exceeded the Mondi max limit of 10ppb. This occurred on two other occasions at 3:40am and 5:50am. RBCAA Monitoring Stations TRS target of 4.5ppb exceeded from 0:13am to 0:33am and again from 0:53am to 0:58am. Compliance against Permits Mill was in start-up mode from planned Annual Shut. Lime Kiln was still offline with Hardwood CNCG gases being combusted in the Flare. 9. Root Cause of Incident From the night of 14 April 2019 the Evaps A plant started experiencing issues on the Vacuum Level control and by 3:00am on 15 April 2019 lost Vacuum Level Control completely. The loss of vacuum resulted in instability in the CNCG gas stream which caused instability in the Flare. The resulting Flare instability resulted in increased TRS emissions. The root cause for the loss of Vacuum control is at this time not known and still under investigation, however the plant has been stable since the restart. Corrective Actions 1. The Flare damper was manually adjusted to stabilise the Flare temperature. 2. The Evaps A plant was shut, reset, and restarted and stabilised by 12:30pm. | | | | | |
| 42 | Mondi 18/10/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Effluent Plant 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 166o Min = 161o. Max = 171o. Average wind speed = 4.8 m/s Recovery Stack: Average wind direction = 224o Min = 212o. Max = 235o. RBCAA monitoring stations Average wind direction = 210o Min = 104o. Max = 274o. Average wind speed = 7.3 m/s Calculation of Impacts Mondi Monitoring Stations No TRS exceedances recorded RBCAA Monitoring Stations No TRS exceedances recorded. Root Cause of Incident The odour emissions were identified as having originated from the Effluent Plant. At the time mill condensate was overflowing into the sewer. Corrective Actions? The mill is currently focusing on reducing condensate overflows to sewer by increasing uptake of condensate in the process. Preventative Measures Actions Due Date 1 Mondi will be conducting odour abatement trials at the Effluent Plant to minimise the impact of odour emissions. 28th October 2019 2 Extensive repair work on the Evaporations Plant Lamella has been planned for the next annual shut. This will improve condensate quality which will improve uptake of condensate. 20th April 2020. | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| 43 | Mondi 2/01/2020 Candice Webb responded: Details of Complaint Very strong odour causing nausea, vomiting and violent headache. Odour described as a mixture of cat urine and Jeyes fluid. Source of Odour (AEL source code where applicable): Effluent plant because of condensate to drain. Meteorological Conditions Mondi monitoring stations Average wind direction = 184o Average wind speed = 2.6 m/s Recovery Stack: Average wind direction = 238o. RBCAA monitoring stations Average wind direction CBD = 283o. Average wind speed CBD = 3.4 m/s. Calculation of Impacts Mondi Monitoring Stations High TRS was recorded at Mondi Alton Station between 02:20 and 03:100. During this time TRS peaked to 39ppb at 02:39. RBCAA Monitoring Stations High TRS was recorded at the CBD station throughout the morning. A peak of 15.8ppb was recorded at 03:56. Root Cause of Incident The odour was identified as originating from the Mondi Effluent Plant due to mill condensate overflowing into the effluent drainage system and then on to the effluent plant. Excess condensate overflows to effluent plant as per design. However, condensate quality has reduced and has been identified as the source of the odour. Corrective Actions: Mondi commenced with an odour reduction trial at the Effluent Plant to minimise the impact of odour emissions at the beginning of Dec 2019. Modification were made to the odour reduction system to reduce odour further. Preventative Measures Actions Due Date 1 Extensive repair work on the Evaporations Plant Lamella has been planned for the next annual shut. This will improve condensate quality which will improve uptake of condensate. 20th April 2020. | | | | | |
| 44 | Mondi 2/09/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Flare (481). Meteorological Conditions Mondi monitoring stations Average wind direction = 204o Min = 186o. Max = 231o. Average wind speed = 1.2 m/s Recovery Stack: Average wind direction = 252o Min = 238o. Max = 265o. Calculation of Impacts Mondi Monitoring Stations No ambient TRS exceedances recorded. Slight increase at Landfill station, located 220o from Mondi, from 7:10am to 8:10am. RBCAA Monitoring Stations No ambient TRS exceedances recorded. Increase noted at CBD from 7:00am. Root Cause of Incident The mill was still in start-up condition following the planned Water Wash shut on 27th August 2019. As a result, Non-condensable Gases (NCG) were directed into the Flare while the Lime Kiln was down. At 6:30 the Flare operator noted that TRS emissions from the Flare were trending up. To try and reduce the TRS emissions the Flare damper control was put on to manual and opened slightly. This reduced the Flare burner temperature which resulted in increased TRS emissions. Corrective Actions: The Flare damper was put back on auto control and the set point temperature was increased. TRS emissions started to trend down after these changes. Preventative Measures: Actions Due Date Best run settings for current mill position were calculated and communicated to Flare operators. 30 August 2019. | | | | | |
| 45 | Mondi 2/12/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Process pipeline leak. Meteorological Conditions Mondi monitoring stations: 19th November 2019 6:12 – 16:10 Average wind direction = 206o Min = 79o. Max = 284o. Average wind speed = 3.1 m/s Recovery Stack: Average wind direction = 219o Min = 145o. Max = 318o. 20th November 2019 5:48 – 8:48 Average wind direction = 226o Min = 212o. Max = 240o. Average wind speed = 2.4 m/s Recovery Stack: Average wind direction = 245o Min = 213o. Max = 260o. RBCAA monitoring stations:19th November 2019 6:12 – 16:10 Average wind direction = 221o Min = 2o. Max = 358o. Average wind speed = 4.7 m/s. 20th November 2019 5:48 – 8:48 Average wind direction = 224o Min = 137o. Max = 305o. Average wind speed = 3.0 m/s. Calculation of Impacts Mondi monitoring stations: 19th November 2019 6:12 – 16:10 Intermittent exceedances from 7:30am to 15:20pm. 20th November 2019 5:48 – 8:48 No TRS exceedances. RBCAA monitoring stations: 19th November 2019 6:12 – 16:10 Intermittent exceedances from 7:30am to 15:20pm. 20th November 2019 5:48 – 8:48 No TRS exceedances. Root Cause of Incident After the complaints were received plant inspections and investigations were conducted and a leak was identified on the Methanol line in the Evaps Plant 10. Corrective Actions: The leak was repaired immediately 11. Preventative Measures Actions Due Date 1 Operators to walk areas with H2S monitors to identify leaks proactively with immediate effect. | | | | | |
| 46 | Mondi 20/05/2019 Brendan Crawford responded: Source of Odour: Effluent Plant. Meteorological Conditions Mondi monitoring stations: Average wind direction = 210o Min = 197o. Max = 224o. RBCAA monitoring stations Average wind direction = 242o Min = 204o. Max = 272o. Ambient Air Monitoring Stations: Mondi Monitoring Stations Intermittent exceedances and exceedances at Alton and Landfill monitoring stations starting from 4:30am and continued through to 6:20am. RBCAA Monitoring Stations Exceedances of RBCAA target noted from 5:47am to 5:53am. Compliance against Permits All point sources were within AEL limits. Flare was not in use. Root Cause of Incident At 3:40am a cation regens took place on the Demin plant. The regen results in acidic effluent which is stored in a buffer tank for later processing. Due to its relatively small size the buffer tank capacity was exceeded and resulted in acidic effluent entering the alkaline sewer. | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| | The mixing of acidic and alkaline effluent momentarily created a pH shock which increased sulphide emissions from the effluent. These emissions were contained within the closed effluent pipeline until they were exposed to the atmosphere at the Effluent Plant. Corrective Actions 1. The level control in the buffer tank was manually adjusted to bring the level down. 2. The buffer tank capacity is a known contributor to odour emissions and CAPEX has been set aside to increase the capacity of the tank. Due to the increased storage of hazardous goods the increased tank capacity will require an environmental authorisation for which Mondi is preparing an application. | | | | | |
| 47 | Mondi 21/08/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Unidentified fugitive emission 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 219o Min = 215o. Max = 230o. Average wind speed = 2.8 m/s Recovery Stack: Average wind direction = 212o Min = 181o. Max = 254o. RBCAA monitoring stations Average wind direction = 212o Min = 177o. Max = 270o. Calculation of Impacts Mondi Monitoring Stations No ambient TRS exceedances recorded. RBCAA Monitoring Stations No ambient TRS exceedances recorded. Appliance: Pollutant AEL Limit (mg/Nm3)Average Period (hr)<br>Average concentration (mg/Nm3) No. of exceedances<br>Recovery Boiler 1 Particulates 100 24 10.8 0 SO2 300 1 1.9 0 NOX 300 1 195.5 0 TRS 15 1 0.00 0 Recovery Boiler 2<br>Particulates 100 24 21.3 0 SO2 300 1 91.2 0 NOX 300 1 176.6 0 TRS 15 1 0.00 0 Power boilers Particulates 100 24 51.0 0 SO2 3500 1 75.1 0 NOX 1100 24 158.6 0 0 1 2 3 4 5 6 7 8 9 10<br>14/08/2019 17:55 14/08/2019 18:05 14/08/2019 18:15 14/08/2019 18:25 14/08/2019 18:35 14/08/2019 18:45 14/08/2019 18:55 14/08/2019 19:05 14/08/2019 19:15 14/08/2019 19:25 14/08/2019 19:35 14/08/2019 19:45 14/08/2019 19:55 14/08/2019 20:05 14/08/2019 20:15 14/08/2019 20:25 14/08/2019 20:35 14/08/2019 20:45 14/08/2019 20:55 14/08/2019 21:05 14/08/2019 21:15 14/08/2019 21:25 14/08/2019 21:35 14/08/2019 21:45 14/08/2019 21:55 14/08/2019 22:05 14/08/2019 22:15 14/08/2019 22:25 14/08/2019 22:35 14/08/2019 22:45<br>RBCAA Ambient TRS: CBD eNseleni eSikhaleni: Lime Kiln<br>Particulates 100 24 52.5 0 TRS 10 1 2.5 0 NOX 2000 24 0.04 0<br>Gas Turbine: Particulates 50 24 0.18 0 NOX 800 1 0.00 0<br>. Root Cause of Incident There were no deviations or increases noted at any of the monitored odour sources and ambient monitoring stations (RBCAA and Mondi) did not register any increases in ambient TRS. Following the complaint an intensive odour investigation was conducted by manually monitoring odour sources as per the odour emissions inventory. No source of concentrated odour could be found using this method.<br>Mondi can only assume that an unidentified fugitive odour emission from the mill was responsible due to the favourable wind conditions measured at the eNseleni station. Corrective Actions: None as no odour source was positively identified<br>Preventative Measures Actions Due Date Mondi has commenced with an extensive Odour Emission Inventory project which will allow us to identify and understand odour concentrations from fugitive sources. This project will give Mondi the information needed to prioritise fugitive sources as part of our overarching Odour Reduction Project. 30 September 2019. | | | | | |
| 48 | Mondi 22/02/2019 Brendan Crawford responded: Source of Odour: Start-up of Recovery Boilers after unplanned shut, Tripping of the Flare while burning CNCG gases Meteorological Conditions: Mondi monitoring stations Average wind direction = 70o Min = 64o. Max = 78o. RBCAA monitoring stations: No access to RBCAA website. Mondi access to internet down due to ongoing cable repairs. Mondi Monitoring Stations Increased TRS at Alton station from 6:50am to 7:10am. RBCAA monitoring stations No access to RBCAA website. Mondi access to internet down due to ongoing cable repairs. Compliance against Permits Mill was in start-up condition. Root Cause of Incident Due to a cable rack fire that occurred on the night of 15 February 2019 the entire mill had to be shut down. Notification of the fire and the subsequent shut was sent to the authorities and external stakeholders. By 19 February 2019, after repairs had been completed, mill start up activities began. On the 20 February 2019 Recovery Boiler 2 started firing Heavy Fuel Oil (HFO) to get into the correct temperature range to fire Black Liquor. The firing of HFO results in “excessive emissions” and is only conducted when starting up the boiler. The possibility of a visible plume during start-up was included in the notification. During start up CNCG gases were required to be burned in the Flare and Incinerator as the Lime Kiln requires 72 hours for heat up and acceptance of gases. At 5:30am on 20 February 2019 the Flare started experiencing several trips on flame out. Troubleshooting eventually found that excessive air in the gas mixture was causing the flame to be extinguished. The cause of the excess air was found to be an open vent valve on the Evaps plant resulting in excessive air ingress into the gas mixture. 10. Corrective Actions 1. The open vent valve was shut immediately which resulted in the improvement of | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| | Flare burning. 2. Despite pre-start plant checks having been done previously, the vent valve had been found left open. A communication was conducted with all relevant operations staff regarding the importance of conducting transparent plant checks prior to start up. 3. A limit switch is planned to be installed on the vent valve to prevent it from being left open. | | | | | |
| 49 | Mondi 22/03/2019 Brendan Crawford responded: Source of Odour: Effluent Plant H2S emissions. Meteorological Conditions: Mondi monitoring stations Average wind direction = 239o Min = 166o. Max = 280o. RBCAA monitoring stations: Stations data not available at time of investigation. Ambient Air Monitoring Stations: Mondi Monitoring Stations No TRS exceedances or increases noted. Compliance against Permits All monitored emissions were within AEL limits. Root Cause of Incident: A few hours prior to the complaints Mondi personnel noted very high TRS recording at Mondi Hytec and RBCAA CBD ambient monitoring stations. A strong odour was noted as emanating from the Effluent Plant at the time. The source of the odour has since been confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill have been impacting on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions which would result in a “rotten egg” odour. Corrective Actions: Internal directive communicated to all mill staff to reduce spills and overflows to effluent drain. Periodic bypassing on SETP for COD load reduction to allow the biological species to recover. Conclude root cause investigation into biological species failure including external consultation as required. | | | | | |
| 50 | Mondi 22/03/2019 Brendan Crawford responded: Source of Odour: Meteorological Conditions Mondi monitoring stations Average wind direction = 253o Min = 2166o. Max = 282o. RBCAA monitoring stations data not available at time of investigation. Ambient Air Monitoring Stations Mondi Monitoring Stations TRS exceedances at Alton station from 4:20am to 5:00am and from 5:40am to 6:10am. Compliance against Permits Flare was in use from 3:45am to 4:25am. Average TRS = 1.56 mg/Nm3. 9. Root Cause of Incident At 3:40am the Hardwood and Softwood CNCG gases tripped out of the Lime Kiln for low temperature and were switched to the Flare and Incinerator, respectively. Flare stability was maintained, however upon switching the gases back to the Lime Kiln at 4:25am the Softwood gases vented from the Evaps carbon filter for less than 1 minute. Although the duration of exposure was very short, the low wind speeds caused the emission to accumulate for a longer duration. Corrective Actions The cause for the venting from the Evaps Carbon Filter is currently under investigation. Mondi 06/05/2019 Brendan Crawford responded: Mondi acknowledges your request to re-investigate the complaints as outlined below. While it may be possible for Mondi to have contributed to the highlighted complaints based on the average wind direction and the fact that we did have a venting incident as reported previously (see attached feedback), it would be difficult to confirm if these complaints are indeed attributed to Mondi for the following reasons: 1. Wind speeds were extremely low on the day which resulted in the wind direction being variable during the time of the complaints. The variable wind direction means that the odour may have been emitted from one of many sources that were in that variable wind vector, including Mondi. 2 The complainants are long-time residents of Richards Bay and therefore have experience in associating specific odours with Mondi operations. In this case the odours were not identified as being associated with Mondi. 3. The absence of a TRS analyser at Arboretum station makes it difficult to confirm whether the complaints relate to TRS odour. 4. The venting incident of 19/3/2019 (Complaint no 11) in the feedback report occurred for less than a minute whereas the odour complaints received were over a 2-hour period. Point source emissions from the mill were within AEL limits at the time. In summary,<br>1. Due to the variable wind direction and low wind speed, odours may have accumulated in this area from various emission sources and source. | | | | | |
| 51 | Mondi 23/08/2019 Candice Webb responded: Source of Odour (AEL source code where applicable) Fugitive emissions<br>Meteorological Conditions: Mondi monitoring stations<br>Average wind direction = 190o Min = 175o. Max = 265o.<br>Average wind speed = 3.4 m/s. RBCAA monitoring stations<br>Average wind direction = 209o Min = 198o. Max = 323o. Calculation of Impacts: Mondi Monitoring Stations<br>No ambient TRS exceedances recorded. RBCAA Monitoring Stations: No ambient TRS exceedances recorded. Root Cause of Incident: There were no deviations or increases noted at any of the monitored odour sources and ambient monitoring stations (RBCAA and Mondi) did not register any increases in ambient TRS. Following the complaint an intensive odour investigation was conducted by manually monitoring odour sources as per the odour emissions inventory. No source of concentrated odour could be found using this method. Mondi can only assume that an unidentified fugitive odour emission from the mill was responsible due to the favourable wind conditions measured at the eNseleni station. Corrective Actions: None as no odour source was positively identified. Preventative Measures: Actions: Due Date: Mondi has commenced with an extensive Odour Emission Inventory project which will allow us to identify and | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
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| | understand odour concentrations from fugitive sources. This project will give Mondi the information needed to prioritise fugitive sources as part of our overarching Odour Reduction Project.30 September 2019: | | | | | |
| 52 | Mondi 25/04/2019 Brendan Crawford responded: Source of Odour: Flare Meteorological Conditions Mondi monitoring stations Average wind direction = 214o Min = 160o. Max = 270o. RBCAA monitoring stations Average wind direction = 245o Min = 8o. Max = 359o. Ambient Air Monitoring Stations Mondi Monitoring Stations Increase in Alton TRS first noted at 0:00am. By 1:30am Alton had exceeded the Mondi max limit of 10ppb. This occurred on two other occasions at 3:40am and 5:50am. RBCAA Monitoring Stations TRS target of 4.5ppb exceeded from 0:13am to 0:33am and again from 0:53am to 0:58am. 8. Compliance against Permits Mill was in start-up mode from planned Annual Shut. Lime Kiln was still offline with Hardwood CNCG gases being combusted in the Flare. 9. Root Cause of Incident Although the Flare was in use during the time of the complaints, the burner and stack temperatures were kept steady and there was no increase noted in the TRS emissions from the Flare. It must be noted that the Flare has previously been identified as a low efficiency burner of CNCG gases and Mondi is currently looking at replacement scenarios for the Flare. Corrective Actions: The Flare damper was manually adjusted to further improve combustion temperature. | | | | | |
| 53 | Mondi 26/04/2019 Brendan Crawford responded: Source of Odour: Flare. Meteorological Conditions Mondi monitoring stations: Average wind direction = 239o Min = 210o. Max = 259o. RBCAA monitoring stations: Average wind direction = 231o Min = 191o. Max = 275o. Average wind direction = 236o Min = 205o. Max = 261o. . Ambient Air Monitoring Stations: Mondi Monitoring Stations Increase in TRS first noted at Portable station (located at Afrox facility) at 20:50pm. Thereafter Hytec station spiked once at 0:40am. Landfill station spiked several times from 2:35am to 9:00am. RBCAA Monitoring Stations TRS started to increase from 17:25pm. Very little activity. 8. Compliance against Permits Mill was on an unplanned shut at the time. CNCG gases were routed to the Flare. 9. Root Cause of Incident On the evening of 20th April 2019 operators noticed that Evaps feed pump 451-005 was losing flow. The Evaps plant was shut down and the pump isolated for mechanical inspection. Due to the criticality of the Evaps plant in the Black Liquor balance, the rest of the mill was also shut down to conserve Black Liquor and CNCG gases; were routed to the Flare. The instability of the Evaps plant when shutting down also created instability in the CNCG gas header which affected Flare performance and resulted in the increase of TRS emissions from the Flare. The mechanical inspection of pump 451-005 revealed that the Non-return Valve bush collapsed which resulted in the loss of flow. The cause of the Non-return valve failure is currently the subject of a high-level investigation. Corrective Actions 1. The Non-return valve was replaced, and the plant was restarted at 2:30am. 2. A high-level Root Cause Failure Analysis is currently in progress to understand the failure of the Non-return Valve and to prevent recurrence.<br>Foskor 03/05/2019 Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 997,96 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: A preliminary investigation was conducted, and no root cause was identified. all plant operations were found to be normal. The Granulation Plants was not in operation at the time; hence, there was no ammonia offloading and Phosphoric acid plants were operating normally with no process upsets. Sulphuric Acid Plants were operating at minimum rates due to the strike and there were no SO2 point source exceedances recorded. There were no Sulphuric Acid Plant start-ups or any reported gas leaks during this period. based on wind direction it is quite possible that Foskor could not have contributed to the odour at Veldenvlei. | | | | | |
| 54 | Mondi 26/04/2019 Brendan Crawford responded: Source of Odour: Flare. Meteorological Conditions Mondi monitoring stations: Average wind direction = 239o Min = 210o. Max = 259o. RBCAA monitoring stations: Average wind direction = 231o Min = 191o. Max = 275o. Average wind direction = 236o Min = 205o. Max = 261o. . Ambient Air Monitoring Stations: Mondi Monitoring Stations Increase in TRS first noted at Portable station (located at Afrox facility) at 20:50pm. Thereafter Hytec station spiked once at 0:40am. Landfill station spiked several times from 2:35am to 9:00am. RBCAA Monitoring Stations TRS started to increase from 17:25pm. Very little activity. 8. Compliance against Permits Mill was on an unplanned shut at the time. CNCG gases were routed to the Flare. 9. Root Cause of Incident On the evening of 20th April 2019 operators noticed that Evaps feed pump 451-005 was losing flow. The Evaps plant was shut down and the pump isolated for mechanical inspection. Due to the criticality of the Evaps plant in the Black Liquor balance, the rest of the mill was also shut down to conserve Black Liquor and CNCG gases were routed to the Flare. The instability of the Evaps plant when shutting down also created instability in the CNCG gas header which affected Flare performance and resulted in the increase of TRS emissions from the Flare. The mechanical inspection of pump 451-005 revealed that the Non-return Valve bush collapsed which resulted in the loss of flow. The cause of the Non-return valve failure is currently the subject of a high-level investigation. Corrective Actions 1. The Non-return valve was replaced, and the plant was restarted at 2:30am. 2. A high-level Root Cause Failure Analysis is | | | | | |

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|---|---|---|---|---|---|---|
| | currently in progress to understand the failure of the Non-return Valve and to prevent recurrence. | | | | | |
| 55 | Mondi 26/06/2019 Brendan Crawford responded: Source of Odour Evaps Plant, leaking flange. Meteorological Conditions Mondi monitoring stations Average wind direction = 256o Min = 229o. Max = 288o. Average wind speed = 1.9 m/s Recovery Stack: Average wind direction = 279o Min = 230o. Max = 310o. Source of Odour Evaps Plant, vapour leaks from tank. Meteorological Conditions Mondi monitoring stations Average wind direction = 204o Min = 150o. Max = 247o. Average wind speed = 1.3 m/s Recovery Stack: Av. RBCAA monitoring stations CBD Average wind direction = 284o Min = 205o. Max = 316o. Average wind speed = 2.8 m/s. Arboretum Average wind direction = 283o Min = 219o. Max = 319o. Average wind speed = 2.9 m/s. Brackenham Average wind direction = 284o Min = 203o. Max = 315o. Average wind speed = 1.5 m/s. Harbour West Average wind direction = 247o Min = 189o. Max = 284o. Average wind speed = 2.4 m/s. Ambient Air Monitoring Stations Mondi Monitoring Stations Exceedances of WHO 30 minute limit of 5ppb at Alton monitoring station between 4:00am to 5:00am and 8:30am to 9:40am. Exceedances of WHO 30 minute limit of 5ppb at Hytec monitoring station between 7:40am to 8:50am. RBCAA Monitoring Stations No exceedances of the WHO limit but TRS had increased between 9:20am to 9:30am. Compliance against Permits Gases were diverted to the Flare from the Lime Kiln between 6:14am to 6:57am. All stacks were compliant against AEL limits. 9. Root Cause of Incident Mondi identified a leaking flange in the evaporation plant. This contributed to nuisance odour complaints. Corrective Actions 1. The leak was repaired within an hour 2. Mondi continued to track other possible odour sources overnight with no deviations recorded. | | | | | |
| 56 | Mondi 26/06/2019 Brendan Crawford responded: Source of Odour Evaps Plant, vapour leaks from tank 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 204o Min = 150o. Max = 247o. Average wind speed = 1.3 m/s Recovery Stack: Average wind direction = 263o Min = 172o. Max = 318o. RBCAA monitoring stations CBD Average wind direction = 263o Min = 116o. Max = 353o. Average wind speed = 1.8 m/s Arboretum Average wind direction = 262o Min = 150o. Max = 328o. Average wind speed = 1.8 m/s Brackenham Average wind direction = 270o Min = 149o. Max = 334o. Average wind speed = 1.3 m/s Harbour West Average wind direction = 240o Min = 144o. Max = 348o. Average wind speed = 1.9 m/s Ambient Air Monitoring Stations Mondi Monitoring Stations Exceedances of WHO 30 minute limit of 5ppb at Alton monitoring station between 6:00am to 6:30am. Exceedances of WHO 30 minute limit of 5ppb at Hytec monitoring station between 6:20am to 7:20am. The spike on the Landfill monitoring station recorded at 9:51 am to 11:00 was the result of an instrument check and is not a true reflection of ambient air quality at that time. RBCAA Monitoring Stations Exceedance of the WHO 30-minute limit of 5ppb between 9:30am to 10:10am. Compliance against Permits No exceedances against AEL limits. 9. Root Cause of Incident Mondi identified a leak on a Tank Degassing Line. | | | | | |
| 57 | Mondi 30/07/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) NCG from Flare (481) 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 98o Min = 90o. Max = 102o. Average wind speed = 1.9 m/s Recovery Stack: Average wind direction = 73o Min = 62o. Max = 83o. RBCAA monitoring stations Average wind direction = 56o Min = 20o. Max = 98o. Calculation of Impacts Mondi Monitoring Stations No exceedances of TRS recorded. RBCAA Monitoring Stations No exceedances of TRS recorded. Root Cause of Incident on Friday 26th July 2019 Mondi Richards Bay experienced a loss in incoming municipal power supply. This resulted in the mill implementing load shedding protocols which included shut down of the paper machines. Although power was restored on the same day, Paper Machine 41 had issues on starting up which eventually resulted in the mill process becoming unbalanced. This in turn necessitated the shutdown of most of the mill including Recovery Boiler 1 and the Lime Kiln to preserve the Black Liquor | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| | balance. This status continued the 27th, 28th and 29th July 2019. The abovementioned condition required the diversion of Non-condensable gases to the Flare. With the Digester and Evaps plants offline, the volume of gases decreased thus reducing the energy (fuel) to the flare. With the supply of fuel lower, the flare could not reach the desired set point temperature in the combustion chamber. The air dampers therefore reacted by closing to maintain the temperature and resulted in high TRS emissions. 10. Corrective Actions the Flare temperature was brought back under control by manually increasing the damper opening. 11. Preventative Measures Actions Due Date Operating procedure for actions to take during a shut scenario on the Digester and Evaps to be developed and circulated. 2nd August 2019. | | | | | |
| 58 | Mondi 31/07/2019 Brendan Crawford responded: Source of Odour (AEL source code where applicable) Recovery Boiler 1 stack (461) 6. Meteorological Conditions Mondi monitoring stations Average wind direction = 127o Min = 105o. Max = 140o. Average wind speed = 1.3 m/s Recovery Stack: Average wind direction = 36o Min = 30o. Max = 43o. RBCAA monitoring stations Average wind direction = 192o Min = 2o. Max = 351o. Average wind speed = 2.6 m/s. Calculation of Impacts RBCAA Monitoring Stations No exceedances of PM10 recorded. Root Cause of Incident on Friday 26th July 2019 Mondi Richards Bay experienced a loss in incoming municipal power supply due to the municipality's substation batteries failing to charge. This resulted in the mill implementing load shedding protocols which included shut down of the paper machines. Although power was restored on the same day, Paper Machine 41 had issues on starting up which eventually resulted in the mill process becoming unbalanced. This in turn necessitated the shutdown of most of the mill including Recovery Boiler 1 and the Lime Kiln to preserve the Black Liquor balance. This status continued the 27th, 28th and 29th July 2019. The abovementioned condition required Recovery Boiler 1 to burn Heavy Fuel Oil which results in the emission of a dark plume from the stack. | | | | | |
| 59 | Mondi 31/10/2019 Candice Webb responded: Meteorological Conditions: Mondi monitoring stations: Wind direction Min = 277o. Max = 324o. Average wind speed = 1.0 m/s. RBCAA monitoring stations: Wind direction Min = 271o. Max = 312o. RBCAA Wind speed = 0.6 m/s. Calculation of Impacts: Mondi Monitoring Stations: No TRS exceedances recorded: RBCAA Monitoring Stations: No TRS exceedances recorded. Root Cause of Incident: After an investigation, Mondi found all point source emissions to be within specification and low ambient TRS levels at both Mondi and RBCAA monitoring stations. The Mondi mill was stable with no abnormal operating conditions experience at the time of the complaint. Based on wind direction it is possible that Mondi was the source, however after considering the above, Mondi kindly requests other industry to investigate prior to attributing the complaint to a source.<br>Corrective Actions: Preventative Measures Actions. Date | | | | | |
| 60 | Mondi 5/06/2019 Brendan Crawford responded: Source of Odour Effluent Plant, pH shock. Meteorological Conditions Mondi monitoring stations Average wind direction = 229o Min = 201o. Max = 244o. Average wind speed = 2.2 m/s. RBCAA monitoring stations Average wind direction = 264o Min = 201o. Max = 301o. Average wind speed = 3.3 m/s. Ambient Air Monitoring Stations Mondi Monitoring Stations Exceedances at Alton and monitoring stations starting from 7:50am and continued through to 9:00am. RBCAA Monitoring Stations No exceedances recorded at CBD station. Compliance against Permits All point sources were within AEL limits. Flare was not in use. Root Cause of Incident The overflow of regen effluent to drain has been previously identified as an odour source due to the pH shock the acidic effluent creates in the alkaline drain. In preparation for a cationic Demin regen the buffer tank was slowly drained to effluent to create capacity for the Demin regen effluent to not create an overflow. During the draining activity it seems that a pH shock might have unintentionally been created as the ambient TRS at Alton station, which is closest to Effluent Plant, started to increase with draining activity. Once this had been noted the draining activity was ceased, however TRS emissions continued to be given off from the Effluent Plant up until at least 9:20am as seen at the Alton station. Corrective Actions 1. Draining of the Demin buffer tank was stopped when exceedances at Alton were noted. 2. The buffer tank capacity is a known contributor to odour emissions and CAPEX has been set aside to increase the capacity of the tank. Due to the increased storage of hazardous goods the increased tank capacity will require an environmental authorisation for which Mondi is preparing an application. | | | | | |
| 61 | Mpact 20/05/2019 Yolande Schoeman responded: Nature of Complaint/Incident: –A complaint was lodged with RBCAA regarding an odour in Felixton Village during last week 13 -19 May, which was particularly strong on the 16thMay.<br>Source and Nature of Emissions: –South and South Easterly winds are required for Felixton industrial area to impact air quality at Felixton. –Mpact Felixton had no upset process conditions that time that could have impacted ambient air quality during the indicated periods. –There was no pond and clarifier cleaning activities occurring at Mpact WWTP that could have impacted the air quality. –The prevailing wind directions for 14 -17 May recorded at Felixton Station were •14 | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| | May –North Westerly •15 May -North Easterly •16 May –South Westerly •17 May –North Easterly. Compliance with Permit\s: None identified<br>Findings & Recommendations: Based on the wind direction recorded at Felixton Station, Felixton Industrial Area is unlikely to be source of the odour last week in Felixton Village. THS 20/05/2019 Nicolas Govender responded: Nature of Complaint:<br>Anonymous, Felixton Village, 17th May 2019, Complainant claims that there was an odour present in Felixton for the better part of last week, very strong on the 16th. Findings on complaint: There were not any abnormal conditions noted with regards to operations around the periods as stipulated in complaint. Further to this, the wind directions during these periods were predominately SW, NW and NE and this direction does not affect the village which is situated north / north west of the mill. Compliance with Permit\s: There was no noncompliance with the AEL. Root Cause of Incident and Corrective Action N/A. | | | | | |
| 62 | RBCAA 05/03/2019: Sandy Camminga Noted: In discussions with the complainant he indicated that the salt ( MacDonald's Transport Warehousing) and coal storage (Grindrod Terminals) facilities do not appear to be the primary source of emissions, and that the major source of emissions appears to be the crushing facility (The Reclamation Group). | | | | | |
| 63 | RBCAA allocation based on wind direction | | | | | |
| 64 | RBCAA has directed the complaint to the CoU for investigation. Awaiting response from CoU. | | | | | |
| 65 | RBCT 06/05/2019 Sihle Shezi responded: 1. Nature of Complaint: Anonymous, vicinity of RBCT, 6 May, 07h30, Emissions from burning coal stockpiles at RBCT. 2 Source and Nature of Emissions: There are two back to back stockpiles on B and C line that are heating. Smoke with PM10 and PM 2.5 emission and unpleasant odour.3. Average Ambient Concentrations of Emissions and Met Conditions: 4 There was no exceedance of daily average PM10 and PM2.5. Dust fallout report will be available end of May 2019. 5.Root Cause of Incident: Oxidization leading to spontaneous combustion.<br>Stockpiles were restricted for stacking when heating was detected however, we did not have many shipments to clear out this product. With the adverse weather conditions (Wind and Rain) experienced over the past 2 months, the condition of these stockpiles deteriorated. 6.Immediate Corrective Actions<br>Leomat (Contractor) onsite and is preparing (cooling) the Hot Stockpiles: Stockpile on B line will be cleared on Sunday<br>Operations Planning department is in constant liaison with Shareholder to arrange shipments to clear out these stockpiles.<br>Preventative Actions: Temperature monitoring on Stacking and Reclaim batches and Isolation of heating stockpiles.<br>Stockpiles that exceed the age of 210 days are locked out for stacking. We are exploring the use of drones for identifying heating within a stockpile. | | | | | |
| 66 | RBCT 10/07/209 Tyneal Jhugroo responded: Source and nature of emissions: Coal Stockpile, Coal dust when handled. Geographical location of emissions: Richards Bay Coal Terminal. Root cause of incident: Due to stockpile previously heating, all the moisture had been driven out. Immediate Corrective Actions: Stopped the loading operation of coal from stockpile Water sprinkler system engaged to suppress dust. Water tanker deployed to assist with reducing dust on stockpile. Operations Continuous emphasis on managing / extinguishing Hot Stockpiles. Environmental • Risk Register reviewed to include volatile emissions • Procurement of new monitoring equipment. Compliance with Permit\s: There was no exceedance of daily average PM10 and PM2.5. Dust fallout report will be available end of July 2019. Based on our current operational issues around handling hot coal and RBCT geographical location, RBCT is responsible for the visible emissions noted on the 6th of July 2019. | | | | | |
| 67 | RBCT 21/06/2019 Sihle Shezi responded: Source and nature of emissions: Cooling off and preparation of heating stockpile. Geographical location of stockpile: North East of RBCT fence line. Root cause of incident: Oxidization leading to spontaneous combustion. Stockpiles were restricted for stacking when heating was detected however, we did not have many shipments to clear out this product, resulting in the stockpile being on site for a longer period compared to other stockpiles. With the adverse weather conditions (Wind) experienced, the condition of the stockpile deteriorated. Immediate Corrective Actions: Leomat (Contractor) onsite and preparing (cooling) the Hot Stockpiles. Stockpile on C line should be cleared by the 01.07.2019. Operations Planning department is in constant liaison with Shareholder to arrange shipments to clear out these stockpiles. Preventative measures: Operations: Temperature monitoring on Stacking and Reclaiming. Batching and Isolation of heating stockpiles.<br>Stockpiles that exceed the age of 210 days are locked out for stacking. We are exploring the use of drones for identifying heating within a stockpile.<br>Environmental: Volatile emissions identified as a major aspect from burning stockpiles.<br>Risk register updated to include Volatile emissions from burning stockpiles. E-nose gas monitoring stations will now be installed plant-wide so that Sulphur | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| | dioxide being released from burning coal can be easily picked up. Reporting process for odour complaints from employees and neighbours is being drawn up and once approved will be circulated to all interested and affected parties. Compliance with Permit\s: There was no exceedance of daily average PM10 and PM2.5. Dust fallout report will be available end of June 2019. Shortfall: Because we do not monitor Sulphur dioxide emissions, we are unable to establish the intensity of the odour or measure whether the emissions could have caused an exceedance in terms of the National Environmental Management: Air Quality Act, 2004. However now that this has been identified as a major aspect, going forward we will be improving our air quality monitoring to include Sulphur Dioxide. Conclusion: Based on our current operational issues around burning stockpiles, and the geographical location of the burning stockpile in question, RBCT is responsible for the odour. | | | | | |
| 68 | RBCT 26/06/2019 Tyneal Jhugroo Sihle Shezi responded: Source and nature of emissions: Cooling off and preparation of heating stockpile. Root cause of incident: incident<br>Oxidization leading to spontaneous combustion. Stockpiles were restricted for stacking when heating was detected however we did not have many shipments to clear out this product, resulting in the stockpile being on site for a longer period of time compared to other stockpiles With the adverse weather conditions (Wind) experienced, the condition of the stockpile deteriorated. Immediate Corrective Actions: • Leomat (Contractor) onsite and preparing (cooling) the Hot Stockpiles. • Stockpile on C line should be cleared by the 01.07.2019 • Operations Planning department is in constant liaison with Shareholder to arrange shipments to clear out these stockpiles. Operations • Temperature monitoring on Stacking and Reclaiming • Batching and Isolation of heating stockpiles. • Stockpiles that exceed the age of 210 days are locked out for stacking. • We are exploring the use of drones for identifying heating within a stockpile. Environmental • Volatile emissions identified as a major aspect from burning stockpiles. • Risk register updated to include Volatile emissions from burning stockpiles. • E-nose gas monitoring stations will now be installed plant-wide so that Sulphur dioxide being released from burning coal can be easily picked up. • Reporting process for odour complaints from employees and neighbours is being drawn up and once approved will be circulated to all interested and affected parties. Legal: Compliance with Permit\s: There was no exceedance of daily average PM10 and PM2.5. Dust fallout report will be available end of June 2019.Shortfall: Because we do not monitor Sulphur dioxide emissions, we are unable to establish the intensity of the odour or measure whether the emissions could have caused an exceedance in terms of the National Environmental Management: Air Quality Act, 2004. However now that this has been identified as a major aspect, going forward we will be improving our air quality monitoring to include Sulphur Dioxide. BTT Environmental Compliance officer contacted RBCT on the morning of this particular incident and upon inspection of the particular stockpile we concluded that the odour was in fact coming from the same stockpile that was investigated on Monday.<br>Based on our current operational issues around burning stockpiles, and the geographical location of the burning stockpile in question, RBCT is responsible for the odour. | | | | | |
| 69 | South32 2019-09-03 Alison Gerber responded:<br>Source and Nature of Emissions<br>Spillage of approximately three tons of alumina on top of the 55kt alumina silo at Hillside.<br>Root Cause of Incident<br>On investigation it was identified that the skirting was not in position at the head of NCV010 as per the attached photo. The root cause of why the skirting was out of position is still under investigation. | | | | | |
| 70 | The RBCAA contacted the City's Fire & Rescue services to see if they had received any notifications of an incident, which they had not. Based on the description of the odour, and wind direction, the RBCAA contacted Bidvest Tank Terminals (BTT).<br>The supervisor confirmed that BTT had depressurised a Mercaptan Drum. 26/3/2019 Nicolette Govender responded: In responding to the recent odour complaints, BTT would like to advise that we have established that we had a release of Mercaptan this morning (26 March 2019) that led to this situation. Mercaptan is a product that is used to odorize LPG to detect leaks. This system is normally a closed system. The preliminary details are as follows: - The PSV on the pressurized container containing Mercaptan malfunctioned and lifted, it is unknown at this point what caused this. PSVs (Pressure Safety Valves) are installed on tanks to prevent the tank from exploding and causing a major incident if there is a pressure increases in the tank. - The BTT team noticed the lifted PSV at 12:00 this morning and immediately depressurized the system<br>- The pressurized container containing Mercaptan does not belong to BTT as it is supplied by an external service provider. | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| | We have called the supplier to uplift the container, conduct their inspections and advise on the reason for the PSV malfunctioning and provide calibration records for the PSV. | | | | | |
| 71 | The RBCAA contacted the City's Fire & Rescue services to see if they had received any notifications of an incident, which they had not. Based on the description of the odour, and wind direction, the RBCAA contacted Bidvest Tank Terminals (BTT).<br>The supervisor confirmed that BTT had depressurised a Mercaptan Drum. BTT 26/3/2019 Nicolette Govender responded: In responding to the recent odour complaints, BTT would like to advise that we have established that we had a release of Mercaptan this morning (26 March 2019) that led to this situation. Mercaptan is a product that is used to odorize LPG to detect leaks. This system is normally a closed system. The preliminary details are as follows: - The PSV on the pressurized container containing Mercaptan malfunctioned and lifted, it is unknown at this point what caused this. PSVs (Pressure Safety Valves) are installed on tanks to prevent the tank from exploding and causing a major incident if there is a pressure increases in the tank. - The BTT team noticed the lifted PSV at 12:00 this morning and immediately depressurized the system<br>- The pressurized container containing Mercaptan does not belong to BTT as it is supplied by an external service provider.<br>We have called the supplier to uplift the container, conduct their inspections and advise on the reason for the PSV malfunctioning and provide calibration records for the PSV. | | | | | |
| 72 | THS 29/05/2019 Nicolas Govender responded: Nature of Complaint: Anonymous, Felixton, 24 May, 07h05, Pungent odour causing "stinging on the nose & throat", and thick cloud of smoke hanging over Tongaat-Hulett. Findings on complaint:<br>There were not any abnormal conditions noted with regards to operations around the periods as stipulated in complaint. At the time of the compliant there was a cloud hanging over Felixton, this cloud is a result of burning of cane and not a result of our operations. There was no odour whilst I was at the Golf Course during investigation. We did have an issue of low anaerobic dam pH averaging 6.8 units on Thursday the 23rd May. We generally try and maintain the dam pH at 7 to 7.5 units as anything lower than 7 could result in abnormal odour levels.<br>Compliance with Permit\s: There was no non-compliance with the AEL. Root Cause of Incident and Corrective Action<br>The pH levels were normalised by adding lime to raw effluent. Mpact 29/05/2019 Yolande Schoeman responded: Source and Nature of Emissions: Mpact Felixton Mills' boiler stacks opacities were below permit requirements between 06h00 -07h30 and could not have impacted ambient air quality. –There was no pond and clarifier cleaning activities occurring at Mpact WWTP that could have impacted the air quality. –There was however a small sugar cane fire on the south side of the Mpact Mill perimeter which started at ±07h08.<br>3)Compliance with Permit\s: No non-compliances identified<br>4)Findings & Recommendations: Mpact is unlikely to be the source of the pungent odour detected in Felixton Village on the morning of 24 May 2019. | | | | | |
| 73 | THS 4/06/2019 Yolandie Schoeman responded: Source and Nature of Emissions: Mpact Felixton Mills' boiler stacks opacities were below permit requirements between 07h00 -08h00 and could not have impacted ambient air quality. – The Effluent treatment plant clarifier cleaning activities commenced at 10h00 and could not have impacted the air quality at the time of the incident. – Westerly winds are required for Mpact to affect the N2 adjacent to the Mpact property. – Upon investigation after receiving the complaint on the 3rd of June 2019, there were no rotten egg smells on the east-side and south-side perimeter of the Wastewater Treatment Plant. – The prevailing winds at eSikhaleni station were North Easterly at very low wind speeds. Compliance with Permit\s: No non-compliances identified. Findings & Recommendations: § Mpact is unlikely to be the source of the rotten egg odour detected on the N2 on the 3rd of June 2019 at 07h36. Mpact 5/06/2019 Samantha Theron responded: Findings on complaint: There were no anomalies at the effluent plant at the time of the complaint. All parameters were within specification. The Mill was on normal maintenance (Mondays) and only started up at approximately 10h30am therefore it would not be possible that operations could contribute to the source of the odour. here was no non-compliance with the AEL. Root Cause of Incident and Corrective Action: None required. | | | | | |
| 74 | Tongaat Hulett 2/11/2019 Ernest Mabaso responded: Findings on Complaint: Monday is a stop day for routine maintenance. The boilers were shut at around 2am and scheduled to start slow fires around 07h00 and bring up steam on range at 11h00. The wind conditions were predominately South. This is likely to carry emissions into the village.<br>The normal start up procedures uses more bagasse than coal, this generates a bit more emissions due to the main Induced Air Fan only starting up after the Turbine Alternators are on range. Compliance with Permits: None. Root Cause & Corrective Action: Immediate actions taken was to stop one boiler and only | | | | | |

| Source | No | Complainant | Date | Location | Description | Response # |
|---|---|---|---|---|---|---|
| | start up one boiler to reduce emissions. Bagasse feed was stopped and only coal was used for starting up. Attention to get the turbine alternators on range was escalated. Start-up procedures will be amended to accommodate surrounding receptors and consider wind conditions. If wind conditions are not favourable to a normal start up, then only coal will be used to start up. | | | | | |

# APPENDIX E
# $PM_{10}$ EXCEEDANCES

*Table: E1: NEMAQA Daily Standard (75 µg/m³)*

| Station | Date | Value (µg/m3) | Wind Direction (°) | Wind Speed (m/s) | Response # |
|---|---|---|---|---|---|
| eNseleni | 2019/07/19 | 100 | 155 | 2.0 | 4 |
| eSikhaleni | 2019/07/18 | 77 | 55 | 1.3 | 3 |
| eSikhaleni | 2019/07/19 | 82 | 269 | 1.9 | 4 |

| Response # | Comment |
|---|---|
| *3* | *Veld fires* |
| *4* | *Veld fires - dusty dry, windy conditions* |

*Table: E2: WHO Daily Guideline (50 µg/m³)*

| Station | Date | Value (µg/m3) | Wind Direction (°) | Wind Speed (m/s) | Response # |
|---|---|---|---|---|---|
| Brackenham | 2019/01/12 | 73 | 203 | 4.9 | 1 |
| Brackenham | 2019/05/21 | 61 | 214 | 5.3 | 2 |
| Brackenham | 2019/07/19 | 65 | 333 | 2.4 | 4 |
| Brackenham | 2019/07/24 | 63 | 165 | 3.1 | 4 |
| Brackenham | 2019/07/25 | 52 | 357 | 2.9 | 4 |
| Brackenham | 2019/08/08 | 52 | 216 | 4.5 | 4 |
| Brackenham | 2019/08/26 | 54 | 219 | 2.5 | 5 |
| CBD | 2019/05/21 | 53 | 214 | 6.7 | 2 |
| CBD | 2019/07/19 | 68 | 49 | 2.1 | 4 |
| CBD | 2019/07/23 | 56 | 359 | 3.5 | 4 |
| CBD | 2019/07/24 | 51 | 167 | 3.4 | 4 |
| CBD | 2019/07/25 | 60 | 1 | 3.4 | 4 |

| Station | Date | Value (µg/m3) | Wind Direction (°) | Wind Speed (m/s) | Response # |
|---|---|---|---|---|---|
| CBD | 2019/07/26 | 64 | 227 | 3.2 | 4 |
| CBD | 2019/07/31 | 69 | 215 | 5.2 | 4 |
| CBD | 2019/08/26 | 52 | 230 | 3.7 | 5 |
| eNseleni | 2019/07/18 | 51 | 36 | 1.5 | 3 |
| eNseleni | 2019/07/19 | 100 | 155 | 2.0 | 4 |
| eNseleni | 2019/07/24 | 68 | 211 | 3.0 | 4 |
| eNseleni | 2019/07/25 | 63 | 18 | 3.4 | 4 |
| eNseleni | 2019/08/25 | 56 | 49 | 2.3 | 4 |
| eNseleni | 2019/08/26 | 61 | 242 | 2.8 | 5 |
| eSikhaleni | 2019/07/18 | 77 | 55 | 1.3 | 3 |
| eSikhaleni | 2019/07/19 | 82 | 269 | 1.9 | 4 |
| eSikhaleni | 2019/07/23 | 69 | 48 | 2.3 | 4 |
| eSikhaleni | 2019/07/24 | 63 | 235 | 2.5 | 4 |
| eSikhaleni | 2019/07/25 | 64 | 45 | 3.2 | 4 |
| eSikhaleni | 2019/07/26 | 51 | 250 | 2.5 | 4 |
| eSikhaleni | 2019/08/08 | 54 | 237 | 4.3 | 4 |
| eSikhaleni | 2019/08/16 | 71 | 64 | 2.3 | 4 |
| eSikhaleni | 2019/08/23 | 62 | 55 | 1.8 | 4 |
| Felixton | 2019/07/19 | 70 | 269 | 1.9 | 4 |
| Felixton | 2019/07/24 | 62 | 235 | 2.5 | 4 |
| Felixton | 2019/07/26 | 54 | 250 | 2.5 | 4 |
| Felixton | 2019/07/31 | 59 | 235 | 4.5 | 4 |
| Felixton | 2019/08/08 | 57 | 237 | 4.3 | 4 |
| Felixton | 2019/08/25 | 63 | 55 | 2.0 | 4 |
| Felixton | 2019/08/26 | 61 | 241 | 3.1 | 5 |

| Response # | Comment |
|---|---|
| *1* | *Construction next to monitoring station plus high wind speed* |

| Station | Date | Value (µg/m3) | Wind Direction (°) | Wind Speed (m/s) | Response # |
|---|---|---|---|---|---|
| *2* | *High wind speed* | | | | |
| *3* | *Veld fires* | | | | |
| *4* | *Veld fires - dusty dry, windy conditions* | | | | |
| *5* | *Veld fires - smoky haze* | | | | |

# APPENDIX F
# $SO_2$ EXCEEDANCES

*Table: F1: NEMAQA Daily Standard & WHO Daily Interim Target 1 (48 ppb)*

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Harbour West | 2019/07/22 00:00 | 53 | 349 | 5.6 | Foskor & South32 | Unknown | 26 |
| ***Response #*** | ***Response*** | | | | | | |
| *26* | *"South 32: 23 July 2019: Alison Gerber responded: There were no abnormal occurrence reported during this time. Unfortunately, we have an issue with the SO2 analyser on FTC1 and it is currently being investigated. SO2 emissions on GTC2 and GTC4 were within our licenced limits. Due to the prevailing northerly wind direction Hillside may have contributed to the RBCAA interim daily guideline exceedances as well as the NEMAQA daily exceedance at Harbour West.* | | | | | | |

*Table: F2: WHO Daily Interim Target 2 (19 ppb)*

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/04/06 | 24 | 237 | 5.7 | Foskor & South32 | Fugitive Emission | 18 |
| Harbour West | 2019/05/08 | 24 | 356 | 5.8 | Foskor & South32 | Fugitive Emission | 17 |
| Harbour West | 2019/05/15 | 23 | 359 | 4.9 | Foskor & South32 | Fugitive Emission | 4 |
| Harbour West | 2019/05/27 | 22 | 3 | 3.4 | Foskor & South32 | Fugitive Emission | 34 |
| Harbour West | 2019/06/21 | 30 | 356 | 5.3 | Foskor & South32 | Based on wind direction | 29 |
| Harbour West | 2019/06/28 | 39 | 0 | 4.2 | Foskor & South32 | Fugitive Emission | 32 |
| Harbour West | 2019/06/30 | 30 | 8 | 3.1 | Foskor & South32 | Fugitive Emission | 33 |
| Harbour West | 2019/07/01 | 34 | 323 | 5.3 | Foskor & South32 | Unknown | 23 |
| Harbour West | 2019/07/14 | 20 | 6 | 4.6 | Foskor & South32 | Unknown | 21 |
| Harbour West | 2019/07/22 | 53 | 349 | 5.6 | Foskor & South32 | Unknown | 26 |
| Harbour West | 2019/07/23 | 21 | 329 | 3.6 | Foskor & South32 | Unknown | 6 |
| Harbour West | 2019/09/08 | 22 | 360 | 5.1 | Foskor & South32 | Unknown Source | 10 |
| Harbour West | 2019/09/29 | 24 | 7 | 5.8 | Foskor & South32 | Unknown Source | 8 |
| Harbour West | 2019/10/03 | 26 | 3 | 5.9 | Foskor & South32 | Fugitive Emission | 37 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Harbour West | 2019/10/06 | 26 | 10 | 5.8 | Foskor & South32 | Fugitive Emission | 40 |
| Harbour West | 2019/10/17 | 28 | 331 | 3.8 | Foskor & South32 | Unknown Source | 28 |
| Harbour West | 2019/10/18 | 21 | 355 | 3.5 | Foskor | Unknown Source | 27 |
| Harbour West | 2019/10/23 | 25 | 13 | 5.8 | Foskor | Unknown Source | 30 |
| Harbour West | 2019/11/02 | 24 | 21 | 5.2 | Foskor & South32 | Based on wind direction | 36 |
| Harbour West | 2019/12/06 14:50 | 23 | 165 | 4.0 | Foskor & South32 | Based on wind direction | 16 |
| Scorpio | 2019/01/20 | 26 | 150 | 4.9 | Unknown Source | None | 25 |
| Scorpio | 2019/04/08 | 20 | 4 | 2.8 | Foskor & South32 | Fugitive Emission | 19 |
| Scorpio | 2019/04/13 | 20 | 16 | 3.2 | Foskor & South32 | Fugitive Emission | 20 |
| Scorpio | 2019/05/02 | 20 | 12 | 3.5 | Foskor & South32 | Fugitive Emission | 9 |
| Scorpio | 2019/06/10 | 25 | 5 | 3.7 | Foskor & South32 | Fugitive Emission | 3 |
| Scorpio | 2019/06/15 | 25 | 10 | 2.9 | South32 | South32 responded | 24 |
| Scorpio | 2019/06/21 | 20 | 14 | 4.1 | South32 | South32 responded | 29 |
| Scorpio | 2019/06/28 | 33 | 17 | 3.7 | Foskor & South32 | Fugitive Emission | 32 |
| Scorpio | 2019/07/01 | 34 | 344 | 4.5 | Foskor & South32 | Unknown | 23 |
| Scorpio | 2019/07/04 | 26 | 13 | 2.2 | Foskor & South32 | Unknown | 39 |
| Scorpio | 2019/07/06 | 25 | 347 | 3.1 | Foskor & South32 | Unknown | 38 |
| Scorpio | 2019/07/22 | 36 | 7 | 4.9 | Foskor & South32 | Unknown | 26 |
| Scorpio | 2019/07/23 | 41 | 0 | 3.4 | Foskor & South32 | Unknown | 6 |
| Scorpio | 2019/07/24 | 34 | 187 | 3.4 | Foskor & South32 | Based on wind direction | 2 |
| Scorpio | 2019/08/16 | 29 | 19 | 3.0 | Foskor & South32 | Unknown | 22 |
| Scorpio | 2019/09/27 | 20 | 30 | 3.5 | Foskor & South32 | Unknown Source | 7 |
| Scorpio | 2019/10/29 | 21 | 180 | 2.5 | Foskor | Unknown Source | 35 |
| Scorpio | 2019/12/08 | 41 | 188 | 3.7 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/11 | 23 | 95 | 5.7 | Foskor | Based on wind direction | 13 |
| Scorpio | 2019/12/12 | 24 | 135 | 3.7 | Foskor | Based on wind direction | 2 |
| **Response #** | **Response** | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| *2* | *No response* | | | | | | |
| *3* | *Foskor: 11 June 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 430,25 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Note!!! that the sulphuric (C) is still currently on shut dates for start-up to be confirmed. Root Cause/Correct Actions: There were no start-ups conducted on this day. There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1), However, based on wind of direction Foskor could have contributed to the reported WHO - SO2 exceedance at Scorpio station monitoring station.*<br>*South 32: 28 June 2019: Alison Gerber responded: Please see the attached graph from GTC2 and GTC4 as well as FTC1, there were no increased emissions, and all emissions were well within our permitted levels. Due to the northerly wind direction, Hillside may have contributed to the cumulative effect which resulted in the exceedance at Scorpio of the interim daily average.* | | | | | | |
| *4* | *Foskor: 17 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 935,05 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were also no start-ups conducted on that day. All plants were operating under normal conditions and "B" plant is still currently on shut. Based on predominant wind of direction averaging about 3500 it is most likely that Foskor could have contributed to the reported WHO - SO2 exceedance at Harbour West.*<br>*South 32: 23 May 2019: Alison Gerber responded: There were no abnormal occurrences on the 15 May. The SO2 were being calibrated during the period of 14 – 16 May as you can see below where there are zero readings. There were no recorded exceedances of Hillside's permitted limits; however, due to the northerly wind direction Hillside may have contributed to the cumulative emissions which caused an exceedance of the interim daily average.* | | | | | | |
| *6* | *Foskor: 24 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 1280,54 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: Sulphuric plants was inspected and checked for any possible fugitive emissions none were found. There were no gas leaks reported. There were no sulphuric plant start-ups on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1), Based on wind of direction the wind direction that was predominantly North, averaging 359o Foskor could have contributed to the reported WHO - SO2 exceedance at Harbour West and Scorpio Monitoring Station.*<br>*South 32: 23 July 2019: Alison Gerber responded: There were no abnormal occurrences reported for the abatement equipment on 23 July. There was one fresh feed stoppage on GTC5 for 20 min 08:05 – 08:25am. SO2 emissions were within the permitted levels of our AEL. Due to the northern/north westerly wind direction Hillside may have contributed to the exceedance of the interim daily average at Scorpio and Harbour West stations.* | | | | | | |
| *7* | *South 32: 1 October 2019: Alison Gerber responded: Please be advised that the SO2 analyser on FTC1 was down at the time of the interim exceedance. No abnormal occurrences were reported on any of the FTCs or GTCs on the 27 Sept. All emissions were within our legislated limits. Due to the N to NW wind direction at the time of the exceedance Hillside may have contributed to the exceedance of the RBCAA interim daily guideline of 19pbb.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 850,44 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There were no Sulphuric Acid Plant start-ups during this period. There were no fugitive gas leaks reported on the day. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. Looking at the wind direction and low wind speeds at the time, Foskor could have contributed to the exceedances reported at Scorpio.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| 8 | *South 32: 1 October 2019: Alison Gerber responded: Please be advised that the SO2 analyser was down on FTC1 at the time of the interim exceedance. GTC4 had a fresh feed stoppage at 12:51 – 13:40 and GTC2 had a fresh feed stoppage a 13:52 – 14:22 for distribution box cleaning. However, these hourly peaks do not correspond to high values observed at Harbour West. Scorpio station did not experience an exceedance on the 29 September, due to this it is unlikely that Hillside was responsible for the exceedance at Harbour West. However, due to the northerly wind direction Hillside may have contributed to the cumulative effect resulting in the exceedance.*<br>*Foskor: 19 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 634,96 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There were no plant stoppages on that day. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. Due to wind direction, Foskor could have contributed to the overall SO2 exceedances experienced at Harbour West.* | | | | | | |
| 9 | *South 32: 10 May 2019: Alison Gerber responded: Please see below the SO2 emissions from FTC1, GTC2 and GTC4 for the 2 May vs the concentrations recorded at Scorpio station. There was a fresh feed stoppage on GTC4 from 14:47 – 15:19 (27 min) which resulted in the small peak below, however, all stacks were within their permitted levels. Due to the Northerly wind direction, Hillside may have contributed to exceedance of the interim daily average.*<br>*Foskor: 15 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 822,88 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no plant start-ups conducted on this day. There were no sulphur fire incident/s reported on the day. All plant operations were found to normal; however, it is quite possible that Foskor could contributed to exceedances at Scorpio monitoring based on wind direction.* | | | | | | |
| 10 | *South 32: 10 September 2019: Alison Gerber responded: There was one hourly exceedance on GTC2 at 9am of 259mg/Nm3 when the fresh alumina feed was stopped for distribution box cleaning, however this spike is after the high values recorded at Harbour West. There were no other abnormal occurrences. Due to the northerly wind direction Hillside may have contributed to the interim daily average exceedance at Harbour West.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions. The highest SO2 emissions of 917,45 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There was a plant start- up at Sulphuric Acid Plant round about 11: 50 that day. There were no fugitive gas leaks reported on the day. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. Sulphuric (A) plant was stopped due to shortage of water in the plant and was restarted at about 13h:21 this could have contributed to the exceedances at Scorpio monitoring station also considering the wind direction.* | | | | | | |
| 13 | *South 32: 13 December 2019: Alison Gerber responded: No abnormal occurrences were recorded for the 11 December. All monitors indicate that Hillside's emissions were within permitted levels. Due to the Southernly wind direction Hillside could not have contributed to the NEMAQA exceedance at Scorpio station.* | | | | | | |
| 14 | *South 32: 13 December 2019: Alison Gerber responded: On the 8th December we had the following fresh feed stoppages due to distribution box cleaning: GTC 1: 10:43 – 11:04am (21min), GTC 2: 12:30 – 12:57pm (27min), GTC 3: 10:18 – 10:37am (19min), GTC 4: 08:20 – 08:34am (14min), GTC 5: 09:24 – 10:06am (41min). These were all well before the exceedances noted at Scorpio. Due to the Southernly wind direction Hillside could not have contributed to the exceedance NEMAQA exceedances at Scorpio station.* | | | | | | |
| 16 | *South 32: 13 December 2019: Alison Gerber responded: There were no abnormal occurrences, however, the following fresh feed stoppages occurred on the 6 Dec.*<br>*GTC 2: 09:17 – 10:42am (1h25min) Planned air lift cleaning. GTC 4: 11:16am – 12:57pm (1h41min) Planned air lift cleaning. GTC 5: 09:03 – 09:12am (9min) Bellow change out. All SO2 emissions were within Hillside's permitted limits. Due to the NNE wind direction Hillside may have contributed to the cumulative exceedance at Harbour West.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| *17* | *South 32: 14 May 2019: Alison Gerber responded: Please see the SO2 trends below. On the 8 May GTC2 had a fresh feed stoppage from 15:12 – 15:33 and GTC4 had a fresh feed stoppage from 22:41 – 23:12 for a purge of the fresh feed system. GTC5 had a stoppage from 20:9 – 20:42 for the fluorinated system to be purged. These stoppages do not correlate to the increased levels seen at Scorpio station. All SO2 levels were below the permitted limits, however, due to the wind direction Hillside may have contributed to the cumulative effect resulting in the exceedance of the interim daily guideline.*<br>*Foskor: 15 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 1027,92 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were also no start-ups conducted on that day. All plants were operating under normal conditions and "B" plant is still currently on shut. Based on wind of direction of 3300 to 3510 it is most likely that Foskor could have contributed to the reported WHO - SO2 exceedance at Harbour West.* | | | | | | |
| *18* | *South 32: 15 April 2019: Alison Gerber responded: Hillside has investigated the below exceedance of the interim daily average. All three stacks' SO2 emissions were below the permitted SO2 levels. However, due to wind direction Hillside may have contributed to the cumulative effect which resulted in the exceedance.*<br>*Foskor: 2 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 878,56 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1),*<br>*Based on wind of direction Foskor could have contributed to the reported WHO - SO2 exceedance at CBD station.* | | | | | | |
| *19* | *South 32: 15 April 2019: Alison Gerber responded: Hillside has investigated the below exceedance. Hillside did not exceed the permitted daily average of 250mg/Nm3 for the GTCs or 500mg/Nm3 for the FTCs. There is however a spike over a three-hour period on GTC4 when the fresh alumina feed was stopped for welding on the air slide. The timing, however, does not coincide with the spikes at Scorpio station. There were no other abnormal occurrences on the 8th April. Due to the wind direction (North) Hillside may have contributed to the cumulative effect at Scorpio station resulting in the exceedance of the interim daily guideline.*<br>*Foskor: 2 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 980,16 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions. There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1), and it should be noted that due to the strike the plant rates have been kept at a minimum. Based on wind of direction it is most likely that Foskor could have contributed to the reported WHO - SO2 exceedance at Scorpio station.* | | | | | | |
| *20* | *South 32: 16 April 2019: Alison Gerber responded: Hillside has investigated the below exceedance of the interim daily average. Hillside experienced no abnormal occurrences on the 13 April. The below graphs show the SO2 emissions on FTC1, GTC2 and GTC4. The emissions did not exceed the permitted SO2 limits during the exceedance of the interim daily limit. There was an increase on GTC2, but this does not coincide with the peaks shown by the RBCAA monitoring. Due to the northerly wind direction on the 13 April, Hillside may have contributed to the cumulative effect which resulted in the exceedance of the interim daily guideline.*<br>*Foskor: 2 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 985,14 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1),*<br>*Based on wind of direction Foskor could have contributed to the reported WHO - SO2 exceedance at Scorpio station.* | | | | | | |
| *21* | *South 32: 16 July 2019: Alison Gerber responded: There were no abnormal occurrences on our abatement equipment on the 14 July. There were fresh feed stops on GTC2 and 4 between 13:00 – 14:00 for planned distribution box cleaning. Due to the northerly wind direction Hillside may have contributed to the interim daily exceedance at Harbour West.*<br>*Foskor: 17 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 903,19 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: There was no Fugitive emissions or gas leaks that were detected in all Three plants. There were no sulphur fire incident/s reported on the day. There were no plant start-ups conducted on that day. Judging from the wind direction predominantly towards the harbour, Foskor could have contributed to the exceedances at Harbour West monitoring station.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
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| *22* | *South 32: 19 August 2019: Alison Gerber responded: There were no abnormal occurrences reported for the period. Hillside SO2 emissions were within the permitted levels with no peaks corresponding to those at Scorpio. The wind direction at Harbour West Station was Northernly to North West in the morning until 10 and then switched to a South East to Easterly wind direction. Hillside may have contributed to the cumulative effect at Scorpio station due to the wind direction.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 1499,35 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There was a plant start-up round about 04h:00 in the morning. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. The plant tripped early hours of the morning at about 04h:00 and this was due to high so2 that was detected by our interlock. Looking at the wind direction and average wind speeds at the time the Foskor could have contributed to the exceedances reported at Scorpio station.* | | | | | | |
| *23* | *South 32: 2 July 2019: Alison Gerber responded: Please see the below trends from the SO2 analysers. There was a fresh feed stoppage on GTC2 from 12:01 – 12:30pm, however, no abnormal occurrences on any of the abatement equipment. All emissions were within our legislated emission limits. Due to the northerly wind direction Hillside may have contributed to the exceedance of the interim daily guideline of 19ppb at Scorpio and Harbour West stations.*<br>*Foskor: 3 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 556,7 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: As part of investigations the plant (all three sulphuric plants) was inspected and checked for any possible fugitive emissions. There was no Fugitive emissions or gas leaks that were detected in Three plants. There were no sulphur fire incident/s reported on the day. There was no plant start conducted on that day. to note, is that sulphuric plants are currently running at low rates due to an abundance of acid stocks. Judging from the wind direction predominantly towards the harbour, Foskor could have contributed to the exceedances at Harbour west and Scorpio monitoring station.* | | | | | | |
| *24* | *South 32: 20 June 2019: Alison Gerber responded: On 15 June there were two fresh alumina feed stoppages on GTC3: 10:07 – 10:29 for purging of the 328 system and 11:32 – 11:59 for a breakdown to replace the clamp on the expansion bin. These two stoppages do not align with the peaks shown at Scorpio station. FTC1 SO2 analyser was down on the 15 June and I am unable to provide this data for this period. Due to the northerly wind direction, Hillside may have contributed to the cumulative SO2 recorded at Scorpio station.* | | | | | | |
| *25* | *South 32: 22 January 2019: Alison Gerber responded: Hillside experienced no abnormal occurrences on 20 January and all SO2 results were within the legislated limit. Based on wind direction of 175(S) Hillside could not have contributed to the increased levels at Scorpio.*<br>*Foskor: 6 March 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 747,79 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1),*<br>*Based on wind of direction Foskor could not have contributed to the reported WHO - SO2 exceedance at Harbour West. Other sources need to be investigated.* | | | | | | |
| *26* | *South 32: 23 July 2019: Alison Gerber responded: There were no abnormal occurrence reported during this time. Unfortunately, we have an issue with the SO2 analyser on FTC1 and it is currently being investigated. SO2 emissions on GTC2 and GTC4 were within our licenced limits. Due to the prevailing northerly wind direction Hillside may have contributed to the RBCAA interim daily guideline exceedances as well as the NEMAQA daily exceedance at Harbour West.*<br>*Foskor: 24 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 875,11 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: As part of investigations a sulphuric plant wide inspection was conducted to check for any possible fugitive emissions none were found to problematic at the time. There were no gas leaks reported. There were no sulphuric plant start-ups on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1),*<br>*Based on wind of direction Foskor could have contributed to the reported WHO - SO2 exceedance at Harbour West and Scorpio Monitoring Station averaging at 3490 and also NEMAQA daily exceedance at harbour west station.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
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| *27* | *South 32: 23 October 2019: Alison Gerber responded: On the 18 October there were no abnormal occurrences, and all emissions were within our permitted limits. The trends start increasing at Harbour West at 8pm on the 17th and carry on until 11am on the 18th. The wind direction for that time was WNW – W, Hillside could not have contributed to the exceedance of the interim daily average.*<br>*Foskor: 19 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 1005,05 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There were no plant stoppages on that day. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. Due to the predominant wind direction, Foskor could have contributed to the exceedances experienced at Harbour West.* | | | | | | |
| *28* | *South 32: 23 October 2019: Alison Gerber responded: Please see the below hourly trends from our SO2 analysers. GTC4 had filter 2 down for 6 monthly maintenance from 07:58 – 13:18, Filter 11 tripped on high differential pressure alarm due to poppet A that was malfunctioning. This resulted in the increased emission on GTC4 during that 8am – 2pm, with one hourly exceedance of 273mg/Nm3 at 10am. At the times of high SO2 readings in the early hours of 17th and into the evening of the 17th all stacks were within their permitted levels.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 1240,35 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There was a plant stoppage on sulphuric "A" Plant. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. The plant was stopped for cleaning of the spouts as it was detected that there are a lot of moisture particles in the towers. The formation of these sub- micron mist particles has an affinity for SO2 this could have contributed to the exceedances at Harbour west.* | | | | | | |
| *29* | *South 32: 26 June 2019: Alison Gerber responded: Please see below the graph of Hillside's SO2 emissions, all stacks were within our AEL limit and no abnormal occurrences or stoppages were noted. However, due to the Northerly wind direction Hillside may have contributed to the interim daily average exceedances at Scorpio and Harbour West.* | | | | | | |
| *30* | *South 32: 28 October 2019: Alison Gerber responded: There were no abnormal occurrences reported on any of Hillside's stacks on the 23 October. All SO2 emissions were within Hillside's legislated limits. Due to the anemometer being faulty at the Harbour West station the Arboretum station's wind direction was used. During the period of high emissions at Harbour West, the Arboretum's wind direction was NNE – NE, at this wind direction Hillside would not impact the Harbour West station.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 1116,39 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Please note I could not retrieve data for wind direction and wind speed from the RBCAA and had to used rely on other sources for wind direction. Root Cause/Correct Actions: There were no plant start-ups currently. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. Sulphuric "C" plant was of line due to an unplanned maintenance shut and only A and B were online. Looking at the wind direction and average wind speeds at the time the Foskor could have contributed to the exceedances reported at Harbour west station.* | | | | | | |
| *32* | *South 32: 3 July 2019: Alison Gerber responded: Please see the below emissions from our SO2 analysers. All emissions were within our legislated limits. Due to the northerly wind direction Hillside may have contributed to the exceedance of the daily interim guideline at Scorpio and Harbour West.*<br>*Foskor: 3 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions The highest SO2 emissions of 385,58 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: As part of investigations the plant was inspected and checked for any possible fugitive emissions. There were no sulphur fire incident/s reported on the day. There were plant start-ups on the day as all plants were currently running. Also, to note, is that sulphuric plants are currently running at low rates due to an abundance of acid stocks. Drawing the conclusion from the predominant wind direction it is quite possible that Foskor could have contributed to the exceedance at Scorpio and Harbour west monitoring station taking into consideration the change in wind direction around 12H:00 to 17H:00.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| 33 | *South 32: 3 July 2019: Alison Gerber responded: Please see the below trends from our SO2 analysers. All emissions were within legislated limits. Due to the northerly wind direction Hillside may have contributed to the exceedance of the interim guidelines at Harbour West on the 30 June. Foskor: 3 July 2019: Sandile Mdamba responded: v Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 760,89 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: As part of investigations the plant was inspected and checked for any possible fugitive emissions none were found. There were no gas leaks reported. There were no sulphur fire incident/s reported on the day. There was a plant start-up on the day round about 10:30 "B" plant had been stopped in the early hours of that day for the cleaning and unblocking of Sulphur guns. To note, is that sulphuric plants are currently running at low rates due to an abundance of acid stocks. It is to the conclusion that based on wind direction averaging 3400 and predominantly towards the harbour Foskor could have contributed to the exceedance at Harbour west.* | | | | | | | |
| 34 | *South 32: 3 June 2019: Alison Gerber responded: There was one fresh alumina feed stoppage on GTC1 from 11:33 – 11:57 for equipment change over. There were no other fresh feed stoppages and no abnormal occurrences. All SO2 emissions were within Hillside's licensed point source emission limits. Due to the northerly wind direction, Hillside may have contributed to the exceedance at Harbour West. Foskor: 3 June 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 995,64 mg/Nm3 were recorded for the sulphuric 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1), To note: On the 24 of May 2019 the sulphuric 'C' plant was stopped for its annual shut also to note, is that the sulphuric 'B' plant was started on the 26th of May 2019 (cold start-up) this could have contributed to the exceedance at Harbour west. 11 June 2019 Sandile reported: v Background: On the 27th of May 2019 – Sulphuric (B) Plant was stopped at 10h38 this was due to a faulty coupling on the drying tower pump. Root cause: Failure of the drying tower pump results in less moisture removal in the system and hence, more moisture molecules exiting through the stack. The formation of these sub- micron mist particles has an affinity for SO2 this could have contributed to the exceedances at Harbour west. Corrective Action: The plant was stopped to repair the drying tower pump and to replace the faulty coupling. As per table 1 below, The highest SO2 emissions of 995,64 mg/Nm3 were recorded for the sulphuric 'AB' Stack these were however within our AEL limits and there were no point source exceedances.* | | | | | | | |
| 35 | *South 32: 30 October 2019: Alison Gerber responded: With a Southerly wind direction Hillside could not have impacted Scorpio station. Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions. The highest SO2 emissions of 688,36 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Please note I could not retrieve data for wind direction and wind speed from the RBCAA and had to used rely on other sources for wind direction. Root Cause/Correct Actions: There was a plant start on the day and the plant had stopped due to repair of turbine exhaust steam leak. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1) There were no sulphur fire incidents. Sulphuric "C" plant was still of line however the plant was now undergoing heat up for the start-up which was planned for 1st of November 2019. Looking at the wind direction and average wind speeds at the time the Foskor could have contributed to the exceedances reported at Harbour west station.* | | | | | | | |
| 36 | *South 32: 5 November 2019: Alison Gerber responded: The fresh alumina feed was stopped on GTC2 for troubleshooting at 10:04 – 10:39 and 17:14-17:48, due to fresh alumina screens that were getting blocked. No other abnormal occurrences were reported on the other stacks. These two stoppages did impact the SO2 emissions at GTC2, however the increasing trend for the morning started before the stoppage at GTC2 and in the evening the increasing trend was also several hours after the peak of GTC2. As the wind direction moves more towards NE in the afternoon this would fall outside of Hillsides impact on Harbour West Station. However, Hillside may have contributed to the cumulative affect earlier in the day.* | | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| *37* | *South 32: 7 October 2019: Alison Gerber responded: Hillside had no abnormal occurrences on Thursday 3 October and all emissions were within our legislated limits. Scorpio station did not experience the continuous high SO2 measurements throughout the day, so it is unlikely that Hillside is the source of the exceedance. Due to the northerly wind direction Hillside may have contributed to the cumulative effect resulting in the interim exceedance at Harbour West station.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 1251,36 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There were no Sulphuric Acid Plant start-ups during this period. There were no fugitive gas leaks reported on the day. There were no point source exceedances (SO2 data provided in Table 1. There were no sulphur fire incidents. A leak was detected on the waste heat recovery boiler at sulphuric "C" plant and as a result the plant had to be stopped for an emergency shut the accumulative impacts of these could have contributed to exceedances of So2 exceedances at the time., Foskor could have contributed to the exceedances reported at Harbour west.* | | | | | | |
| *38* | *South 32: 8 July 2019: Alison Gerber responded: Please see the below SO2 emission trends. All emissions were within Hillside's legislated limits. There were no abnormal occurrences on the 6 July, however, there were two fresh feed stoppages: GTC 1 09:06 – 09:50 Fresh feed stoppage. GTC 2 13:45 – 14:16 Fresh feed stoppage. Due to the northerly wind direction Hillside may have contributed to the exceedance of the RBCAA interim daily guideline at Scorpio.*<br>*Foskor: 9 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 543,27 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: There was no Fugitive emissions or gas leaks that were detected in all Three plants. There were no sulphur fire incident/s reported on the day. There were no plant start-ups conducted on that day. Looking at the wind direction predominantly towards the harbour, Foskor could have had an accumulative impact on the exceedances at Scorpio monitoring station.* | | | | | | |
| *39* | *South 32: 8 July 2019: Alison Gerber responded: Please see the SO2 emission trends below. All emissions were within the legislated limits and there were no abnormal occurrences report. There were two fresh feed stoppages: GTC5 07:44 – 08:08 and GTC1 13:27 – 13:44. Due to the northerly wind direction Hillside may have contributed to the exceedance of the RBCAA interim guideline at Scorpio.*<br>*Foskor: 9 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 800,85 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: There was no Fugitive emissions or gas leaks that were detected in all Three plants. There were no sulphur fire incident/s reported on the day. There were no plant start-ups conducted on that day. Judging from the wind direction predominantly towards the harbour, Foskor could have contributed to the exceedances at Scorpio monitoring station.* | | | | | | |
| *40* | *South 32: 9 October 2019: Alison Gerber responded: Hillside did not experience any abnormal occurrences on its stacks on the 6th October. There was a fresh feed stoppage of 50min on GTC2 for distribution box cleaning between 7am – 8am. Due to the Northerly wind direction Hillside may have contributed to the cumulative impact which resulted in an exceedance of the interim daily average.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 12c45,45 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There were no Sulphuric Acid Plant start-ups during this period. Part of the investigation was to conduct fugitive gas leaks inspections, and none were detected. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents: Sulphuric "C" plant was offline as of the 5th of October due to leaks on the waste heat recovery boiler. Looking at the wind trends, Foskor could have had an impact on the exceedances. reported at Harbour West.* | | | | | | |

*Table: F3: WHO Daily Guideline (8 ppb)*

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/01/02 | 14 | 213 | 6.3 | * | * | 1 |
| CBD | 2019/01/05 | 11 | 166 | 4.2 | * | * | 1 |
| CBD | 2019/01/16 | 16 | 207 | 5.6 | * | * | 1 |
| CBD | 2019/02/22 | 14 | 210 | 3.6 | * | * | 1 |
| CBD | 2019/02/27 | 11 | 220 | 4.7 | * | * | 1 |
| CBD | 2019/03/21 | 11 | 214 | 4.8 | * | * | 1 |
| CBD | 2019/03/29 | 12 | 228 | 4.2 | * | * | 1 |
| CBD | 2019/04/02 | 13 | 241 | 3.7 | * | * | 1 |
| CBD | 2019/04/05 | 15 | 223 | 6.4 | * | * | 1 |
| CBD | 2019/04/06 | 24 | 237 | 5.7 | Foskor & South32 | Fugitive Emission | 17 |
| CBD | 2019/04/15 | 10 | 232 | 4.0 | * | * | 1 |
| CBD | 2019/04/21 | 17 | 225 | 4.6 | * | * | 1 |
| CBD | 2019/05/21 | 12 | 224 | 6.7 | * | * | 1 |
| CBD | 2019/05/29 | 11 | 235 | 4.9 | * | * | 1 |
| CBD | 2019/06/10 | 9 | 1 | 3.9 | * | * | 1 |
| CBD | 2019/07/01 | 11 | 344 | 4.8 | * | * | 1 |
| CBD | 2019/07/31 | 14 | 215 | 5.2 | * | * | 1 |
| CBD | 2019/08/12 | 10 | 206 | 4.2 | * | * | 1 |
| CBD | 2019/08/25 | 10 | 229 | 4.6 | * | * | 1 |
| CBD | 2019/09/23 | 13 | 205 | 6.3 | * | * | 1 |
| CBD | 2019/09/30 | 14 | 218 | 7.1 | * | * | 1 |
| CBD | 2019/10/08 | 11 | 226 | 5.7 | * | * | 1 |
| CBD | 2019/10/10 | 9 | 227 | 6.2 | * | * | 1 |
| CBD | 2019/10/13 | 12 | 223 | 6.5 | * | * | 1 |
| CBD | 2019/10/15 | 14 | 290 | 5.5 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/10/16 | 10 | 10 | 3.5 | * | * | 1 |
| CBD | 2019/10/24 | 8 | 134 | 3.6 | * | * | 1 |
| CBD | 2019/11/14 | 18 | 233 | 3.9 | * | * | 1 |
| CBD | 2019/11/15 | 13 | 236 | 5.3 | * | * | 1 |
| CBD | 2019/11/18 | 11 | 319 | 2.9 | * | * | 1 |
| CBD | 2019/12/04 | 9 | 244 | 3.8 | * | * | 1 |
| Harbour West | 2019/01/01 | 15 | 1 | 5.9 | * | * | 1 |
| Harbour West | 2019/01/10 | 12 | 324 | 5.7 | * | * | 1 |
| Harbour West | 2019/01/20 | 13 | 150 | 4.9 | * | * | 1 |
| Harbour West | 2019/01/22 | 9 | 150 | 4.9 | * | * | 1 |
| Harbour West | 2019/01/29 | 15 | 18 | 4.8 | * | * | 1 |
| Harbour West | 2019/01/30 | 13 | 9 | 5.4 | * | * | 1 |
| Harbour West | 2019/01/31 | 10 | 13 | 5.1 | * | * | 1 |
| Harbour West | 2019/02/03 | 10 | 13 | 4.3 | * | * | 1 |
| Harbour West | 2019/02/08 | 15 | 4 | 5.6 | * | * | 1 |
| Harbour West | 2019/02/20 | 16 | 3 | 5.1 | * | * | 1 |
| Harbour West | 2019/02/26 | 17 | 353 | 5.9 | * | * | 1 |
| Harbour West | 2019/03/13 | 14 | 9 | 4.8 | * | * | 1 |
| Harbour West | 2019/03/17 | 12 | 7 | 4.6 | * | * | 1 |
| Harbour West | 2019/03/24 | 13 | 8 | 4.7 | * | * | 1 |
| Harbour West | 2019/03/28 | 10 | 352 | 5.2 | * | * | 1 |
| Harbour West | 2019/04/04 | 16 | 360 | 5.6 | * | * | 1 |
| Harbour West | 2019/04/14 | 14 | 318 | 4.7 | * | * | 1 |
| Harbour West | 2019/04/20 | 12 | 321 | 5.8 | * | * | 1 |
| Harbour West | 2019/04/29 | 12 | 1 | 4.1 | * | * | 1 |
| Harbour West | 2019/04/30 | 16 | 356 | 5.9 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Harbour West | 2019/05/02 | 13 | 348 | 4.0 | * | * | 1 |
| Harbour West | 2019/05/03 | 18 | 298 | 3.0 | * | * | 1 |
| Harbour West | 2019/05/06 | 8 | 207 | 3.9 | * | * | 1 |
| Harbour West | 2019/05/08 | 24 | 356 | 5.8 | Foskor & South32 | Unknown Source | 8 |
| Harbour West | 2019/05/15 | 23 | 359 | 4.9 | Foskor & South32 | Fugitive Emission | 4 |
| Harbour West | 2019/05/18 | 12 | 358 | 3.0 | * | * | 1 |
| Harbour West | 2019/05/19 | 17 | 8 | 4.3 | * | * | 1 |
| Harbour West | 2019/05/20 | 16 | 11 | 4.2 | * | * | 1 |
| Harbour West | 2019/05/26 | 19 | 6 | 3.8 | * | * | 1 |
| Harbour West | 2019/05/27 | 22 | 3 | 3.4 | Foskor & South32 | Fugitive Emission | 34 |
| Harbour West | 2019/06/04 | 11 | 351 | 3.3 | * | * | 1 |
| Harbour West | 2019/06/05 | 19 | 331 | 4.1 | * | * | 1 |
| Harbour West | 2019/06/10 | 16 | 340 | 3.9 | * | * | 1 |
| Harbour West | 2019/06/12 | 15 | 297 | 3.3 | * | * | 1 |
| Harbour West | 2019/06/15 | 11 | 351 | 3.6 | * | * | 1 |
| Harbour West | 2019/06/17 | 17 | 356 | 2.8 | * | * | 1 |
| Harbour West | 2019/06/21 | 30 | 356 | 5.3 | Foskor & South32 | Based on wind direction | 29 |
| Harbour West | 2019/06/22 | 15 | 340 | 3.6 | * | * | 1 |
| Harbour West | 2019/06/27 | 17 | 11 | 4.3 | * | * | 1 |
| Harbour West | 2019/06/28 | 39 | 0 | 4.2 | Foskor & South32 | Fugitive Emission | 32 |
| Harbour West | 2019/06/30 | 30 | 8 | 3.1 | Foskor & South32 | Fugitive Emission | 33 |
| Harbour West | 2019/07/01 | 34 | 323 | 5.3 | Foskor & South32 | Unknown | 23 |
| Harbour West | 2019/07/04 | 10 | 345 | 2.1 | * | * | 1 |
| Harbour West | 2019/07/06 | 12 | 315 | 3.5 | * | * | 1 |
| Harbour West | 2019/07/14 | 20 | 6 | 4.6 | Foskor & South32 | Unknown | 21 |
| Harbour West | 2019/07/15 | 11 | 350 | 3.1 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Harbour West | 2019/07/16 | 10 | 346 | 2.7 | * | * | 1 |
| Harbour West | 2019/07/17 | 15 | 352 | 2.7 | * | * | 1 |
| Harbour West | 2019/07/19 | 8 | 207 | 1.9 | * | * | 1 |
| Harbour West | 2019/07/22 | 53 | 349 | 5.6 | Foskor & South32 | Unknown | 26 |
| Harbour West | 2019/07/23 | 21 | 329 | 3.6 | Foskor & South32 | Unknown | 6 |
| Harbour West | 2019/07/24 | 15 | 168 | 3.3 | * | * | 1 |
| Harbour West | 2019/07/25 | 15 | 346 | 3.6 | * | * | 1 |
| Harbour West | 2019/07/28 | 16 | 7 | 4.0 | * | * | 1 |
| Harbour West | 2019/07/29 | 17 | 3 | 4.9 | * | * | 1 |
| Harbour West | 2019/07/30 | 14 | 3 | 4.7 | * | * | 1 |
| Harbour West | 2019/08/02 | 9 | 357 | 5.2 | * | * | 1 |
| Harbour West | 2019/08/03 | 12 | 213 | 4.7 | * | * | 1 |
| Harbour West | 2019/08/07 | 17 | 359 | 5.1 | * | * | 1 |
| Harbour West | 2019/08/11 | 9 | 354 | 4.8 | * | * | 1 |
| Harbour West | 2019/08/16 | 14 | 360 | 3.3 | * | * | 1 |
| Harbour West | 2019/08/22 | 12 | 358 | 4.4 | * | * | 1 |
| Harbour West | 2019/08/23 | 11 | 325 | 2.4 | * | * | 1 |
| Harbour West | 2019/08/25 | 11 | 19 | 3.1 | * | * | 1 |
| Harbour West | 2019/08/30 | 9 | 182 | 3.5 | * | * | 1 |
| Harbour West | 2019/09/03 | 12 | 333 | 3.4 | * | * | 1 |
| Harbour West | 2019/09/08 | 22 | 360 | 5.1 | Foskor & South32 | Unknown Source | 10 |
| Harbour West | 2019/09/09 | 12 | 11 | 4.6 | * | * | 1 |
| Harbour West | 2019/09/11 | 11 | 18 | 4.0 | * | * | 1 |
| Harbour West | 2019/09/12 | 18 | 6 | 4.7 | * | * | 1 |
| Harbour West | 2019/09/16 | 14 | 10 | 5.2 | * | * | 1 |
| Harbour West | 2019/09/17 | 15 | 10 | 4.0 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Harbour West | 2019/09/20 | 13 | 6 | 6.4 | * | * | 1 |
| Harbour West | 2019/09/21 | 12 | 44 | 3.9 | * | * | 1 |
| Harbour West | 2019/09/27 | 11 | 7 | 3.8 | * | * | 1 |
| Harbour West | 2019/09/28 | 10 | 20 | 4.0 | * | * | 1 |
| Harbour West | 2019/09/29 | 24 | 7 | 5.8 | Foskor & South32 | Based on wind direction | 36 |
| Harbour West | 2019/10/03 | 26 | 3 | 5.9 | Foskor & South32 | Fugitive Emission | 37 |
| Harbour West | 2019/10/04 | 11 | 345 | 3.8 | * | * | 1 |
| Harbour West | 2019/10/06 | 26 | 10 | 5.8 | Foskor & South32 | Fugitive Emission | 40 |
| Harbour West | 2019/10/07 | 16 | 14 | 5.1 | * | * | 1 |
| Harbour West | 2019/10/09 | 9 | 24 | 4.5 | * | * | 1 |
| Harbour West | 2019/10/12 | 17 | 6 | 3.7 | * | * | 1 |
| Harbour West | 2019/10/15 | 11 | 138 | 5.4 | * | * | 1 |
| Harbour West | 2019/10/16 | 9 | 43 | 3.4 | * | * | 1 |
| Harbour West | 2019/10/17 | 28 | 331 | 3.8 | Foskor & South32 | Unknown Source | 28 |
| Harbour West | 2019/10/18 | 21 | 355 | 3.5 | Foskor | Unknown Source | 27 |
| Harbour West | 2019/10/19 | 9 | 61 | 3.0 | * | * | 1 |
| Harbour West | 2019/10/20 | 9 | 59 | 3.8 | * | * | 1 |
| Harbour West | 2019/10/23 | 25 | 13 | 5.8 | Foskor | Unknown Source | 30 |
| Harbour West | 2019/10/25 | 10 | 30 | 3.9 | * | * | 1 |
| Harbour West | 2019/11/02 | 24 | 21 | 5.2 | Foskor & South32 | Fugitive Emission | 18 |
| Harbour West | 2019/11/06 | 16 | 31 | 4.6 | * | * | 1 |
| Harbour West | 2019/11/12 | 14 | 40 | 4.9 | * | * | 1 |
| Harbour West | 2019/11/13 | 15 | 33 | 4.6 | * | * | 1 |
| Harbour West | 2019/12/02 | 8 | 23 | 4.3 | * | * | 1 |
| Harbour West | 2019/12/06 | 23 | 22 | 2.9 | Foskor & South32 | Based on wind direction | 16 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Harbour West | 2019/12/12 | 10 | 135 | 3.7 | * | * | 1 |
| Harbour West | 2019/12/14 | 12 | 34 | 4.6 | * | * | 1 |
| Harbour West | 2019/12/15 | 11 | 216 | 6.0 | * | * | 1 |
| Harbour West | 2019/12/17 | 15 | 16 | 4.3 | * | * | 1 |
| Harbour West | 2019/12/18 | 19 | 9 | 5.5 | * | * | 1 |
| Harbour West | 2019/12/21 | 9 | 27 | 4.9 | * | * | 1 |
| Harbour West | 2019/12/24 | 10 | 36 | 4.5 | * | * | 1 |
| Harbour West | 2019/12/29 | 12 | 41 | 3.3 | * | * | 1 |
| Scorpio | 2019/01/10 | 9 | 20 | 4.2 | * | * | 1 |
| Scorpio | 2019/01/12 | 12 | 344 | 5.0 | * | * | 1 |
| Scorpio | 2019/01/15 | 10 | 208 | 4.4 | * | * | 1 |
| Scorpio | 2019/01/20 | 26 | 104 | 2.9 | Unknown Source | None | 25 |
| Scorpio | 2019/02/02 | 10 | 148 | 2.9 | * | * | 1 |
| Scorpio | 2019/02/06 | 18 | 199 | 2.5 | * | * | 1 |
| Scorpio | 2019/02/14 | 13 | 192 | 2.7 | * | * | 1 |
| Scorpio | 2019/02/26 | 10 | 9 | 4.9 | * | * | 1 |
| Scorpio | 2019/03/03 | 18 | 149 | 3.6 | * | * | 1 |
| Scorpio | 2019/03/16 | 16 | 21 | 3.2 | * | * | 1 |
| Scorpio | 2019/03/17 | 9 | 30 | 4.0 | * | * | 1 |
| Scorpio | 2019/03/18 | 13 | 231 | 2.2 | * | * | 1 |
| Scorpio | 2019/04/08 | 20 | 4 | 2.8 | Foskor & South32 | Fugitive Emission | 19 |
| Scorpio | 2019/04/09 | 17 | 195 | 2.7 | * | * | 1 |
| Scorpio | 2019/04/13 | 20 | 16 | 3.2 | Foskor & South32 | Fugitive Emission | 20 |
| Scorpio | 2019/04/14 | 12 | 332 | 4.0 | * | * | 1 |
| Scorpio | 2019/04/16 | 12 | 213 | 2.7 | * | * | 1 |
| Scorpio | 2019/04/18 | 9 | 29 | 3.8 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Scorpio | 2019/04/24 | 12 | 32 | 2.4 | * | * | 1 |
| Scorpio | 2019/04/26 | 12 | 223 | 2.4 | * | * | 1 |
| Scorpio | 2019/04/30 | 10 | 15 | 4.7 | * | * | 1 |
| Scorpio | 2019/05/01 | 16 | 255 | 3.4 | * | * | 1 |
| Scorpio | 2019/05/02 | 20 | 12 | 3.5 | Foskor & South32 | Fugitive Emission | 9 |
| Scorpio | 2019/05/03 | 10 | 321 | 2.9 | * | * | 1 |
| Scorpio | 2019/05/06 | 10 | 227 | 3.8 | * | * | 1 |
| Scorpio | 2019/05/08 | 14 | 17 | 4.8 | * | * | 1 |
| Scorpio | 2019/05/15 | 9 | 17 | 3.5 | * | * | 1 |
| Scorpio | 2019/05/18 | 9 | 14 | 2.9 | * | * | 1 |
| Scorpio | 2019/05/26 | 11 | 23 | 3.1 | * | * | 1 |
| Scorpio | 2019/05/27 | 11 | 21 | 3.0 | * | * | 1 |
| Scorpio | 2019/06/03 | 9 | 275 | 2.3 | * | * | 1 |
| Scorpio | 2019/06/04 | 17 | 14 | 3.1 | * | * | 1 |
| Scorpio | 2019/06/05 | 15 | 349 | 3.8 | * | * | 1 |
| Scorpio | 2019/06/08 | 10 | 227 | 3.4 | * | * | 1 |
| Scorpio | 2019/06/10 | 25 | 5 | 3.7 | Foskor & South32 | Fugitive Emission | 3 |
| Scorpio | 2019/06/12 | 18 | 320 | 3.1 | * | * | 1 |
| Scorpio | 2019/06/15 | 25 | 10 | 2.9 | South32 | South32 responded | 24 |
| Scorpio | 2019/06/16 | 18 | 315 | 2.4 | * | * | 1 |
| Scorpio | 2019/06/17 | 15 | 18 | 2.6 | * | * | 1 |
| Scorpio | 2019/06/20 | 13 | 10 | 3.1 | * | * | 1 |
| Scorpio | 2019/06/21 | 20 | 14 | 4.1 | South32 | South32 responded | 29 |
| Scorpio | 2019/06/22 | 17 | 5 | 2.7 | * | * | 1 |
| Scorpio | 2019/06/27 | 11 | 28 | 4.0 | * | * | 1 |
| Scorpio | 2019/06/28 | 33 | 17 | 3.7 | Foskor & South32 | Fugitive Emission | 32 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Scorpio | 2019/06/29 | 15 | 285 | 2.7 | * | * | 1 |
| Scorpio | 2019/06/30 | 15 | 24 | 2.6 | * | * | 1 |
| Scorpio | 2019/07/01 | 34 | 344 | 4.5 | Foskor & South32 | Unknown | 23 |
| Scorpio | 2019/07/02 | 13 | 310 | 2.5 | * | * | 1 |
| Scorpio | 2019/07/03 | 10 | 283 | 2.0 | * | * | 1 |
| Scorpio | 2019/07/04 | 26 | 13 | 2.2 | Foskor & South32 | Unknown | 39 |
| Scorpio | 2019/07/06 | 25 | 347 | 3.1 | Foskor & South32 | Unknown | 38 |
| Scorpio | 2019/07/07 | 14 | 202 | 2.6 | * | * | 1 |
| Scorpio | 2019/07/10 | 10 | 355 | 2.2 | * | * | 1 |
| Scorpio | 2019/07/15 | 10 | 11 | 2.6 | * | * | 1 |
| Scorpio | 2019/07/16 | 11 | 10 | 2.6 | * | * | 1 |
| Scorpio | 2019/07/17 | 12 | 21 | 2.6 | * | * | 1 |
| Scorpio | 2019/07/18 | 14 | 13 | 1.9 | * | * | 1 |
| Scorpio | 2019/07/19 | 14 | 37 | 2.2 | * | * | 1 |
| Scorpio | 2019/07/22 | 36 | 7 | 4.9 | Foskor & South32 | Unknown | 26 |
| Scorpio | 2019/07/23 | 41 | 0 | 3.4 | Foskor & South32 | Unknown | 6 |
| Scorpio | 2019/07/24 | 34 | 187 | 3.4 | Foskor & South32 | Based on wind direction | 2 |
| Scorpio | 2019/07/25 | 18 | 4 | 3.3 | * | * | 1 |
| Scorpio | 2019/07/29 | 9 | 20 | 3.8 | * | * | 1 |
| Scorpio | 2019/08/03 | 16 | 243 | 4.4 | * | * | 1 |
| Scorpio | 2019/08/07 | 8 | 15 | 4.2 | * | * | 1 |
| Scorpio | 2019/08/16 | 29 | 19 | 3.0 | Foskor & South32 | Unknown | 22 |
| Scorpio | 2019/08/23 | 18 | 360 | 2.2 | * | * | 1 |
| Scorpio | 2019/08/24 | 15 | 8 | 3.0 | * | * | 1 |
| Scorpio | 2019/08/30 | 12 | 201 | 3.2 | * | * | 1 |
| Scorpio | 2019/09/05 | 16 | 193 | 2.8 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Scorpio | 2019/09/07 | 15 | 25 | 2.9 | * | * | 1 |
| Scorpio | 2019/09/08 | 15 | 22 | 4.3 | * | * | 1 |
| Scorpio | 2019/09/10 | 15 | 20 | 3.1 | * | * | 1 |
| Scorpio | 2019/09/13 | 8 | 203 | 5.4 | * | * | 1 |
| Scorpio | 2019/09/26 | 15 | 119 | 2.9 | * | * | 1 |
| Scorpio | 2019/09/27 | 20 | 30 | 3.5 | Foskor & South32 | Unknown Source | 7 |
| Scorpio | 2019/10/09 | 11 | 45 | 3.5 | * | * | 1 |
| Scorpio | 2019/10/19 | 10 | 56 | 2.8 | * | * | 1 |
| Scorpio | 2019/10/21 | 14 | 197 | 4.3 | * | * | 1 |
| Scorpio | 2019/10/22 | 10 | 120 | 3.1 | * | * | 1 |
| Scorpio | 2019/10/23 | 10 | 13 | 5.8 | * | * | 1 |
| Scorpio | 2019/10/24 | 10 | 137 | 3.5 | * | * | 1 |
| Scorpio | 2019/10/28 | 14 | 197 | 5.3 | * | * | 1 |
| Scorpio | 2019/10/29 | 21 | 180 | 2.5 | Foskor | Unknown Source | 35 |
| Scorpio | 2019/11/02 | 9 | 21 | 5.2 | * | * | 1 |
| Scorpio | 2019/11/04 | 9 | 126 | 2.3 | * | * | 1 |
| Scorpio | 2019/11/06 | 8 | 31 | 4.6 | * | * | 1 |
| Scorpio | 2019/11/07 | 18 | 219 | 4.1 | * | * | 1 |
| Scorpio | 2019/11/21 | 9 | 35 | 2.9 | * | * | 1 |
| Scorpio | 2019/11/22 | 12 | 171 | 3.0 | * | * | 1 |
| Scorpio | 2019/11/24 | 13 | 210 | 4.5 | * | * | 1 |
| Scorpio | 2019/11/30 | 13 | 180 | 4.1 | * | * | 1 |
| Scorpio | 2019/12/01 | 13 | 162 | 3.6 | * | * | 1 |
| Scorpio | 2019/12/07 | 10 | 244 | 4.2 | * | * | 1 |
| Scorpio | 2019/12/08 | 41 | 188 | 3.7 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/09 | 18 | 198 | 2.1 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Scorpio | 2019/12/11 | 23 | 95 | 5.7 | Foskor | Based on wind direction | 13 |
| Scorpio | 2019/12/12 | 24 | 135 | 3.7 | Foskor | Based on wind direction | 2 |
| Scorpio | 2019/12/16 | 11 | 208 | 3.6 | * | * | 1 |
| Scorpio | 2019/12/26 | 13 | 179 | 2.8 | * | * | 1 |

| # | Response |
|---|---|
| *1* | *Not required at this time* |
| *2* | *No response* |
| *3* | *Foskor: 11 June 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 430,25 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Note!!! that the sulphuric (C) is still currently on shut dates for start-up to be confirmed. Root Cause/Correct Actions: There were no start-ups conducted on this day. There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1), However, based on wind of direction Foskor could have contributed to the reported WHO - SO2 exceedance at Scorpio station monitoring station.*<br>*South 32: 28 June 2019: Alison Gerber responded: Please see the attached graph from GTC2 and GTC4 as well as FTC1, there were no increased emissions, and all emissions were well within our permitted levels. Due to the northerly wind direction, Hillside may have contributed to the cumulative effect which resulted in the exceedance at Scorpio of the interim daily average.* |
| *4* | *Foskor: 17 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 935,05 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were also no start-ups conducted on that day. All plants were operating under normal conditions and "B" plant is still currently on shut. Based on predominant wind of direction averaging about 3500 it is most likely that Foskor could have contributed to the reported WHO - SO2 exceedance at Harbour West.*<br>*South 32: 23 May 2019: Alison Gerber responded: There were no abnormal occurrences on the 15 May. The SO2 were being calibrated during the period of 14 – 16 May as you can see below where there are zero readings. There were no recorded exceedances of Hillside's permitted limits; however, due to the northerly wind direction Hillside may have contributed to the cumulative emissions which caused an exceedance of the interim daily average.* |
| *6* | *Foskor: 24 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 1280,54 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: Sulphuric plants was inspected and checked for any possible fugitive emissions none were found. There were no gas leaks reported. There were no sulphuric plant start-ups on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1), Based on wind of direction the wind direction that was predominantly North, averaging 359o Foskor could have contributed to the reported WHO - SO2 exceedance at Harbour West and Scorpio Monitoring Station.*<br>*South 32: 23 July 2019: Alison Gerber responded: There were no abnormal occurrences reported for the abatement equipment on 23 July. There was one fresh feed stoppage on GTC5 for 20 min 08:05 – 08:25am. SO2 emissions were within the permitted levels of our AEL. Due to the northern/north westerly wind direction Hillside may have contributed to the exceedance of the interim daily average at Scorpio and Harbour West stations.* |
| *7* | *South 32: 1 October 2019: Alison Gerber responded: Please be advised that the SO2 analyser on FTC1 was down at the time of the interim exceedance. No abnormal occurrences were reported on any of the FTCs or GTCs on the 27 Sept. All emissions were within our legislated limits. Due to the N to NW wind direction at the time of the exceedance Hillside may have contributed to the exceedance of the RBCAA interim daily guideline of 19pbb.* |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| | *Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 850,44 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There were no Sulphuric Acid Plant start-ups during this period. There were no fugitive gas leaks reported on the day. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. Looking at the wind direction and low wind speeds at the time, Foskor could have contributed to the exceedances reported at Scorpio.* | | | | | | |
| *8* | *South 32: 1 October 2019: Alison Gerber responded: Please be advised that the SO2 analyser was down on FTC1 at the time of the interim exceedance. GTC4 had a fresh feed stoppage at 12:51 – 13:40 and GTC2 had a fresh feed stoppage a 13:52 – 14:22 for distribution box cleaning. However, these hourly peaks do not correspond to high values observed at Harbour West. Scorpio station did not experience an exceedance on the 29 September, due to this it is unlikely that Hillside was responsible for the exceedance at Harbour West. However, due to the northerly wind direction Hillside may have contributed to the cumulative effect resulting in the exceedance.*<br>*Foskor: 19 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 634,96 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There were no plant stoppages on that day. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. Due to wind direction, Foskor could have contributed to the overall SO2 exceedances experienced at Harbour West.* | | | | | | |
| *9* | *South 32: 10 May 2019: Alison Gerber responded: Please see below the SO2 emissions from FTC1, GTC2 and GTC4 for the 2 May vs the concentrations recorded at Scorpio station. There was a fresh feed stoppage on GTC4 from 14:47 – 15:19 (27 min) which resulted in the small peak below, however, all stacks were within their permitted levels. Due to the Northerly wind direction, Hillside may have contributed to exceedance of the interim daily average.*<br>*Foskor: 15 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 822,88 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no plant start-ups conducted on this day. There were no sulphur fire incident/s reported on the day. All plant operations were found to normal; however, it is quite possible that Foskor could contributed to exceedances at Scorpio monitoring based on wind direction.* | | | | | | |
| *10* | *South 32: 10 September 2019: Alison Gerber responded: There was one hourly exceedance on GTC2 at 9am of 259mg/Nm3 when the fresh alumina feed was stopped for distribution box cleaning, however this spike is after the high values recorded at Harbour West. There were no other abnormal occurrences. Due to the northerly wind direction Hillside may have contributed to the interim daily average exceedance at Harbour West.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions. The highest SO2 emissions of 917,45 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There was a plant start- up at Sulphuric Acid Plant round about 11: 50 that day. There were no fugitive gas leaks reported on the day. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. Sulphuric (A) plant was stopped due to shortage of water in the plant and was restarted at about 13h:21 this could have contributed to the exceedances at Scorpio monitoring station also considering the wind direction.* | | | | | | |
| *13* | *South 32: 13 December 2019: Alison Gerber responded: No abnormal occurrences were recorded for the 11 December. All monitors indicate that Hillside's emissions were within permitted levels. Due to the Southernly wind direction Hillside could not have contributed to the NEMAQA exceedance at Scorpio station.* | | | | | | |
| *14* | *South 32: 13 December 2019: Alison Gerber responded: On the 8th December we had the following fresh feed stoppages due to distribution box cleaning: GTC 1: 10:43 – 11:04am (21min), GTC 2: 12:30 – 12:57pm (27min), GTC 3: 10:18 – 10:37am (19min), GTC 4: 08:20 – 08:34am (14min), GTC 5: 09:24 – 10:06am (41min). These were all well before the exceedances noted at Scorpio. Due to the Southernly wind direction Hillside could not have contributed to the exceedance NEMAQA exceedances at Scorpio station.* | | | | | | |
| *16* | *South 32: 13 December 2019: Alison Gerber responded: There were no abnormal occurrences, however, the following fresh feed stoppages occurred on the 6 Dec.*<br>*GTC 2: 09:17 – 10:42am (1h25min) Planned air lift cleaning. GTC 4: 11:16am – 12:57pm (1h41min) Planned air lift cleaning. GTC 5: 09:03 – 09:12am (9min)* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| | *Bellow change out. All SO2 emissions were within Hillside's permitted limits. Due to the NNE wind direction Hillside may have contributed to the cumulative exceedance at Harbour West.* | | | | | | |
| *17* | *South 32: 14 May 2019: Alison Gerber responded: Please see the SO2 trends below. On the 8 May GTC2 had a fresh feed stoppage from 15:12 – 15:33 and GTC4 had a fresh feed stoppage from 22:41 – 23:12 for a purge of the fresh feed system. GTC5 had a stoppage from 20:9 – 20:42 for the fluorinated system to be purged. These stoppages do not correlate to the increased levels seen at Scorpio station. All SO2 levels were below the permitted limits, however, due to the wind direction Hillside may have contributed to the cumulative effect resulting in the exceedance of the interim daily guideline.*<br>*Foskor: 15 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 1027,92 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were also no start-ups conducted on that day. All plants were operating under normal conditions and "B" plant is still currently on shut. Based on wind of direction of 3300 to 3510 it is most likely that Foskor could have contributed to the reported WHO - SO2 exceedance at Harbour West.* | | | | | | |
| *18* | *South 32: 15 April 2019: Alison Gerber responded: Hillside has investigated the below exceedance of the interim daily average. All three stacks' SO2 emissions were below the permitted SO2 levels. However, due to wind direction Hillside may have contributed to the cumulative effect which resulted in the exceedance.*<br>*Foskor: 2 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 878,56 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1),*<br>*Based on wind of direction Foskor could have contributed to the reported WHO - SO2 exceedance at CBD station.* | | | | | | |
| *19* | *South 32: 15 April 2019: Alison Gerber responded: Hillside has investigated the below exceedance. Hillside did not exceed the permitted daily average of 250mg/Nm3 for the GTCs or 500mg/Nm3 for the FTCs. There is however a spike over a three-hour period on GTC4 when the fresh alumina feed was stopped for welding on the air slide. The timing, however, does not coincide with the spikes at Scorpio station. There were no other abnormal occurrences on the 8th April. Due to the wind direction (North) Hillside may have contributed to the cumulative effect at Scorpio station resulting in the exceedance of the interim daily guideline.*<br>*Foskor: 2 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 980,16 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions. There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1), and it should be noted that due to the strike the plant rates have been kept at a minimum. Based on wind of direction it is most likely that Foskor could have contributed to the reported WHO - SO2 exceedance at Scorpio station.* | | | | | | |
| *20* | *South 32: 16 April 2019: Alison Gerber responded: Hillside has investigated the below exceedance of the interim daily average. Hillside experienced no abnormal occurrences on the 13 April. The below graphs show the SO2 emissions on FTC1, GTC2 and GTC4. The emissions did not exceed the permitted SO2 limits during the exceedance of the interim daily limit. There was an increase on GTC2, but this does not coincide with the peaks shown by the RBCAA monitoring. Due to the northerly wind direction on the 13 April, Hillside may have contributed to the cumulative effect which resulted in the exceedance of the interim daily guideline.*<br>*Foskor: 2 May 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 985,14 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1),*<br>*Based on wind of direction Foskor could have contributed to the reported WHO - SO2 exceedance at Scorpio station.* | | | | | | |
| *21* | *South 32: 16 July 2019: Alison Gerber responded: There were no abnormal occurrences on our abatement equipment on the 14 July. There were fresh feed stops on GTC2 and 4 between 13:00 – 14:00 for planned distribution box cleaning. Due to the northerly wind direction Hillside may have contributed to the interim daily exceedance at Harbour West.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| | *Foskor: 17 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 903,19 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: There was no Fugitive emissions or gas leaks that were detected in all Three plants. There were no sulphur fire incident/s reported on the day. There were no plant start-ups conducted on that day. Judging from the wind direction predominantly towards the harbour, Foskor could have contributed to the exceedances at Harbour West monitoring station.* | | | | | | |
| *22* | *South 32: 19 August 2019: Alison Gerber responded: There were no abnormal occurrences reported for the period. Hillside SO2 emissions were within the permitted levels with no peaks corresponding to those at Scorpio. The wind direction at Harbour West Station was Northernly to North West in the morning until 10 and then switched to a South East to Easterly wind direction. Hillside may have contributed to the cumulative effect at Scorpio station due to the wind direction.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 1499,35 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There was a plant start-up round about 04h:00 in the morning. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. The plant tripped early hours of the morning at about 04h:00 and this was due to high so2 that was detected by our interlock. Looking at the wind direction and average wind speeds at the time the Foskor could have contributed to the exceedances reported at Scorpio station.* | | | | | | |
| *23* | *South 32: 2 July 2019: Alison Gerber responded: Please see the below trends from the SO2 analysers. There was a fresh feed stoppage on GTC2 from 12:01 – 12:30pm, however, no abnormal occurrences on any of the abatement equipment. All emissions were within our legislated emission limits. Due to the northerly wind direction Hillside may have contributed to the exceedance of the interim daily guideline of 19ppb at Scorpio and Harbour West stations.*<br>*Foskor: 3 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 556,7 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: As part of investigations the plant (all three sulphuric plants) was inspected and checked for any possible fugitive emissions. There was no Fugitive emissions or gas leaks that were detected in Three plants. There were no sulphur fire incident/s reported on the day. There was no plant start conducted on that day. to note, is that sulphuric plants are currently running at low rates due to an abundance of acid stocks. Judging from the wind direction predominantly towards the harbour, Foskor could have contributed to the exceedances at Harbour west and Scorpio monitoring station.* | | | | | | |
| *24* | *South 32: 20 June 2019: Alison Gerber responded: On 15 June there were two fresh alumina feed stoppages on GTC3: 10:07 – 10:29 for purging of the 328 system and 11:32 – 11:59 for a breakdown to replace the clamp on the expansion bin. These two stoppages do not align with the peaks shown at Scorpio station. FTC1 SO2 analyser was down on the 15 June and I am unable to provide this data for this period. Due to the northerly wind direction, Hillside may have contributed to the cumulative SO2 recorded at Scorpio station.* | | | | | | |
| *25* | *South 32: 22 January 2019: Alison Gerber responded: Hillside experienced no abnormal occurrences on 20 January and all SO2 results were within the legislated limit. Based on wind direction of 175(S) Hillside could not have contributed to the increased levels at Scorpio.*<br>*Foskor: 6 March 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 747,79 mg/Nm3 were recorded for the 'C' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1),*<br>*Based on wind of direction Foskor could not have contributed to the reported WHO - SO2 exceedance at Harbour West. Other sources need to be investigated.* | | | | | | |
| *26* | *South 32: 23 July 2019: Alison Gerber responded: There were no abnormal occurrence reported during this time. Unfortunately, we have an issue with the SO2 analyser on FTC1 and it is currently being investigated. SO2 emissions on GTC2 and GTC4 were within our licenced limits. Due to the prevailing northerly wind direction Hillside may have contributed to the RBCAA interim daily guideline exceedances as well as the NEMAQA daily exceedance at Harbour West.*<br>*Foskor: 24 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 875,11 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: As part of investigations a sulphuric plant wide inspection was conducted to check for any possible fugitive emissions none were found to problematic at the time. There were no gas leaks reported. There were no sulphuric plant start-ups on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1),* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| | *Based on wind of direction Foskor could have contributed to the reported WHO - SO2 exceedance at Harbour West and Scorpio Monitoring Station averaging at 3490 and also NEMAQA daily exceedance at harbour west station.* | | | | | | |
| *27* | *South 32: 23 October 2019: Alison Gerber responded: On the 18 October there were no abnormal occurrences, and all emissions were within our permitted limits. The trends start increasing at Harbour West at 8pm on the 17th and carry on until 11am on the 18th. The wind direction for that time was WNW – W, Hillside could not have contributed to the exceedance of the interim daily average.*<br>*Foskor: 19 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 1005,05 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There were no plant stoppages on that day. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. Due to the predominant wind direction, Foskor could have contributed to the exceedances experienced at Harbour West.* | | | | | | |
| *28* | *South 32: 23 October 2019: Alison Gerber responded: Please see the below hourly trends from our SO2 analysers. GTC4 had filter 2 down for 6 monthly maintenance from 07:58 – 13:18, Filter 11 tripped on high differential pressure alarm due to poppet A that was malfunctioning. This resulted in the increased emission on GTC4 during that 8am – 2pm, with one hourly exceedance of 273mg/Nm3 at 10am. At the times of high SO2 readings in the early hours of 17th and into the evening of the 17th all stacks were within their permitted levels.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 1240,35 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There was a plant stoppage on sulphuric "A" Plant. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. The plant was stopped for cleaning of the spouts as it was detected that there are a lot of moisture particles in the towers. The formation of these sub- micron mist particles has an affinity for SO2 this could have contributed to the exceedances at Harbour west.* | | | | | | |
| *29* | *South 32: 26 June 2019: Alison Gerber responded: Please see below the graph of Hillside's SO2 emissions, all stacks were within our AEL limit and no abnormal occurrences or stoppages were noted. However, due to the Northerly wind direction Hillside may have contributed to the interim daily average exceedances at Scorpio and Harbour West.* | | | | | | |
| *30* | *South 32: 28 October 2019: Alison Gerber responded: There were no abnormal occurrences reported on any of Hillside's stacks on the 23 October. All SO2 emissions were within Hillside's legislated limits. Due to the anemometer being faulty at the Harbour West station the Arboretum station's wind direction was used. During the period of high emissions at Harbour West, the Arboretum's wind direction was NNE – NE, at this wind direction Hillside would not impact the Harbour West station.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 1116,39 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Please note I could not retrieve data for wind direction and wind speed from the RBCAA and had to used rely on other sources for wind direction. Root Cause/Correct Actions: There were no plant start-ups currently. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents. Sulphuric "C" plant was of line due to an unplanned maintenance shut and only A and B were online. Looking at the wind direction and average wind speeds at the time the Foskor could have contributed to the exceedances reported at Harbour west station.* | | | | | | |
| *32* | *South 32: 3 July 2019: Alison Gerber responded: Please see the below emissions from our SO2 analysers. All emissions were within our legislated limits. Due to the northerly wind direction Hillside may have contributed to the exceedance of the daily interim guideline at Scorpio and Harbour West.*<br>*Foskor: 3 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions The highest SO2 emissions of 385,58 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: As part of investigations the plant was inspected and checked for any possible fugitive emissions. There were no sulphur fire incident/s reported on the day. There were plant start-ups on the day as all plants were currently running. Also, to note, is that sulphuric plants are currently running at low rates due to an abundance of acid stocks. Drawing the conclusion from the predominant wind direction it is quite possible that Foskor could have contributed to the exceedance at Scorpio and Harbour west monitoring station taking into consideration the change in wind direction around 12H:00 to 17H:00.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| 33 | *South 32: 3 July 2019: Alison Gerber responded: Please see the below trends from our SO2 analysers. All emissions were within legislated limits. Due to the northerly wind direction Hillside may have contributed to the exceedance of the interim guidelines at Harbour West on the 30 June. Foskor: 3 July 2019: Sandile Mdamba responded: v Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 760,89 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: As part of investigations the plant was inspected and checked for any possible fugitive emissions none were found. There were no gas leaks reported. There were no sulphur fire incident/s reported on the day. There was a plant start-up on the day round about 10:30 "B" plant had been stopped in the early hours of that day for the cleaning and unblocking of Sulphur guns. To note, is that sulphuric plants are currently running at low rates due to an abundance of acid stocks. It is to the conclusion that based on wind direction averaging 3400 and predominantly towards the harbour Foskor could have contributed to the exceedance at Harbour west.* | | | | | | | |
| 34 | *South 32: 3 June 2019: Alison Gerber responded: There was one fresh alumina feed stoppage on GTC1 from 11:33 – 11:57 for equipment change over. There were no other fresh feed stoppages and no abnormal occurrences. All SO2 emissions were within Hillside's licensed point source emission limits. Due to the northerly wind direction, Hillside may have contributed to the exceedance at Harbour West. Foskor: 3 June 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 995,64 mg/Nm3 were recorded for the sulphuric 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: There were no fugitive gas leaks reported on the day. There were no sulphur fire incident/s reported on the day. There were no point source exceedances (SO2 data provided in Table 1), To note: On the 24 of May 2019 the sulphuric 'C' plant was stopped for its annual shut also to note, is that the sulphuric 'B' plant was started on the 26th of May 2019 (cold start-up) this could have contributed to the exceedance at Harbour west. 11 June 2019 Sandile reported: v Background: On the 27th of May 2019 – Sulphuric (B) Plant was stopped at 10h38 this was due to a faulty coupling on the drying tower pump. Root cause: Failure of the drying tower pump results in less moisture removal in the system and hence, more moisture molecules exiting through the stack. The formation of these sub- micron mist particles has an affinity for SO2 this could have contributed to the exceedances at Harbour west. Corrective Action: The plant was stopped to repair the drying tower pump and to replace the faulty coupling. As per table 1 below, The highest SO2 emissions of 995,64 mg/Nm3 were recorded for the sulphuric 'AB' Stack these were however within our AEL limits and there were no point source exceedances.* | | | | | | | |
| 35 | *South 32: 30 October 2019: Alison Gerber responded: With a Southerly wind direction Hillside could not have impacted Scorpio station. Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions. The highest SO2 emissions of 688,36 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Please note I could not retrieve data for wind direction and wind speed from the RBCAA and had to used rely on other sources for wind direction. Root Cause/Correct Actions: There was a plant start on the day and the plant had stopped due to repair of turbine exhaust steam leak. There were no fugitive gas leaks reportable on the day as this formed part of the investigation. There were no point source exceedances (SO2 data provided in Table 1) There were no sulphur fire incidents. Sulphuric "C" plant was still of line however the plant was now undergoing heat up for the start-up which was planned for 1st of November 2019. Looking at the wind direction and average wind speeds at the time the Foskor could have contributed to the exceedances reported at Harbour west station.* | | | | | | | |
| 36 | *South 32: 5 November 2019: Alison Gerber responded: The fresh alumina feed was stopped on GTC2 for troubleshooting at 10:04 – 10:39 and 17:14-17:48, due to fresh alumina screens that were getting blocked. No other abnormal occurrences were reported on the other stacks. These two stoppages did impact the SO2 emissions at GTC2, however the increasing trend for the morning started before the stoppage at GTC2 and in the evening the increasing trend was also several hours after the peak of GTC2. As the wind direction moves more towards NE in the afternoon this would fall outside of Hillsides impact on Harbour West Station. However, Hillside may have contributed to the cumulative affect earlier in the day.* | | | | | | | |
| 37 | *South 32: 7 October 2019: Alison Gerber responded: Hillside had no abnormal occurrences on Thursday 3 October and all emissions were within our legislated limits. Scorpio station did not experience the continuous high SO2 measurements throughout the day, so it is unlikely that Hillside is the source of the exceedance. Due to the northerly wind direction Hillside may have contributed to the cumulative effect resulting in the interim exceedance at Harbour West station. Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 1251,36 mg/Nm3 were* | | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| | *recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There were no Sulphuric Acid Plant start-ups during this period. There were no fugitive gas leaks reported on the day. There were no point source exceedances (SO2 data provided in Table 1. There were no sulphur fire incidents. A leak was detected on the waste heat recovery boiler at sulphuric "C" plant and as a result the plant had to be stopped for an emergency shut the accumulative impacts of these could have contributed to exceedances of So2 exceedances at the time., Foskor could have contributed to the exceedances reported at Harbour west.* | | | | | | |
| *38* | *South 32: 8 July 2019: Alison Gerber responded: Please see the below SO2 emission trends. All emissions were within Hillside's legislated limits. There were no abnormal occurrences on the 6 July, however, there were two fresh feed stoppages: GTC 1 09:06 – 09:50 Fresh feed stoppage. GTC 2 13:45 – 14:16 Fresh feed stoppage. Due to the northerly wind direction Hillside may have contributed to the exceedance of the RBCAA interim daily guideline at Scorpio.*<br>*Foskor: 9 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 543,27 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: There was no Fugitive emissions or gas leaks that were detected in all Three plants. There were no sulphur fire incident/s reported on the day. There were no plant start-ups conducted on that day. Looking at the wind direction predominantly towards the harbour, Foskor could have had an accumulative impact on the exceedances at Scorpio monitoring station.* | | | | | | |
| *39* | *South 32: 8 July 2019: Alison Gerber responded: Please see the SO2 emission trends below. All emissions were within the legislated limits and there were no abnormal occurrences report. There were two fresh feed stoppages: GTC5 07:44 – 08:08 and GTC1 13:27 – 13:44. Due to the northerly wind direction Hillside may have contributed to the exceedance of the RBCAA interim guideline at Scorpio.*<br>*Foskor: 9 July 2019: Sandile Mdamba responded: Peak Concentrations of SO2 Emissions: The highest SO2 emissions of 800,85 mg/Nm3 were recorded for the 'AB' Stack these were however within our AEL limits. Root Cause/Correct Actions: There was no Fugitive emissions or gas leaks that were detected in all Three plants. There were no sulphur fire incident/s reported on the day. There were no plant start-ups conducted on that day. Judging from the wind direction predominantly towards the harbour, Foskor could have contributed to the exceedances at Scorpio monitoring station.* | | | | | | |
| *40* | *South 32: 9 October 2019: Alison Gerber responded: Hillside did not experience any abnormal occurrences on its stacks on the 6th October. There was a fresh feed stoppage of 50min on GTC2 for distribution box cleaning between 7am – 8am. Due to the Northerly wind direction Hillside may have contributed to the cumulative impact which resulted in an exceedance of the interim daily average.*<br>*Foskor: 15 November 2019: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 12c45,45 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits. Root Cause/Correct Actions: There were no Sulphuric Acid Plant start-ups during this period. Part of the investigation was to conduct fugitive gas leaks inspections, and none were detected. There were no point source exceedances (SO2 data provided in Table 1). There were no sulphur fire incidents: Sulphuric "C" plant was offline as of the 5th of October due to leaks on the waste heat recovery boiler. Looking at the wind trends, Foskor could have had an impact on the exceedances. reported at Harbour West.* | | | | | | |

*Table: F4: NEMAQA Hourly Standard (134 ppb)*

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Scorpio | 2019/11/24 14:00 | 180 | 187 | 4.2 | Foskor | Based on wind direction | 12 |
| Scorpio | 2019/12/08 20:00 | 147 | 164 | 3.6 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/08 21:00 | 198 | 162 | 3.6 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/09 02:00 | 135 | 172 | 2.3 | Foskor | Based on wind direction | 15 |
| Scorpio | 2019/12/11 22:00 | 137 | 152 | 3.5 | Foskor | Based on wind direction | 13 |

| # | ***Response*** |
|---|---|
| *12* | *South 32: 11 December 2019: Alison Gerber responded: All SO2 online monitors show that emissions were well within our permitted levels. No abnormal occurrences were noted on the 24 November. In terms of the southernly wind direction Hillside could not have contributed to the NEMAQA exceedance at Scorpio station.* |
| *13* | *South 32: 13 December 2019: Alison Gerber responded: No abnormal occurrences were recorded for the 11 December. All monitors indicate that Hillside's emissions were within permitted levels. Due to the Southernly wind direction Hillside could not have contributed to the NEMAQA exceedance at Scorpio station.* |
| *14* | *South 32: 13 December 2019: Alison Gerber responded: On the 8th December we had the following fresh feed stoppages due to distribution box cleaning: GTC 1: 10:43 – 11:04am (21min), GTC 2: 12:30 – 12:57pm (27min), GTC 3: 10:18 – 10:37am (19min), GTC 4: 08:20 – 08:34am (14min), GTC 5: 09:24 – 10:06am (41min). These were all well before the exceedances noted at Scorpio. Due to the Southernly wind direction Hillside could not have contributed to the exceedance NEMAQA exceedances at Scorpio station.* |
| *15* | *South 32: 13 December 2019: Alison Gerber responded: There were no abnormal occurrences reported on the 9 December. All monitors show that emissions were well within Hillside's permitted levels. Due to the Southernly wind direction Hillside could not have contributed to the NEMAQA exceedance at Scorpio station.* |

*Table: F5: NEMAQA 10-minute Standard & WHO 10-minute Guideline (191 ppb)*

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| Harbour West | 2019/06/28 22:00 | 457 | 12 | 2.2 | Foskor & South32 | Based on wind direction | 31 |
| Scorpio | 2019/11/22 13:00 | 195 | 160 | 4.2 | Foskor | Based on wind direction | 11 |
| Scorpio | 2019/11/24 14:10 | 312 | 192 | 3.9 | Foskor | Based on wind direction | 12 |
| Scorpio | 2019/11/24 14:50 | 242 | 165 | 4.0 | Foskor | Based on wind direction | 12 |
| Scorpio | 2019/12/08 15:40 | 208 | 168 | 3.6 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/08 16:10 | 222 | 161 | 3.2 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/08 20:30 | 194 | 158 | 3.4 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/08 20:50 | 201 | 161 | 3.5 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/08 21:20 | 240 | 162 | 3.7 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/08 21:30 | 231 | 160 | 3.1 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/08 21:50 | 201 | 175 | 3.8 | Foskor | Based on wind direction | 14 |
| Scorpio | 2019/12/12 04:40 | 210 | 156 | 3.1 | Foskor | Based on wind direction | 2 |
| Scorpio | 2019/12/27 15:50 | 267 | 179 | 6.2 | Foskor | Based on wind direction | 5 |
| Scorpio | 2019/12/27 16:00 | 336 | 178 | 5.3 | Foskor | Based on wind direction | 5 |

| *Response #* | *Response* |
|---|---|
| *2* | *No response* |
| *5* | *"Foskor: 24 January 2020: Sandile Mdamba responded: Peak Concentrations of SO 2 Emissions: The highest SO2 emissions of 892,45 mg/Nm3 were recorded for the AB Stack, these were however within our AEL limits.* |
| *11* | *South 32: 11 December 2019: Alison Gerber responded: All online monitors show that the SO2 emissions were well within out permitted levels. GTC3 had a fresh feed stoppage from 10:50 – 11:35, however with the southernly wind direction Hillside could not have contributed to the NEMAQA exceedance.* |
| *12* | *South 32: 11 December 2019: Alison Gerber responded: All SO2 online monitors show that emissions were well within our permitted levels. No abnormal occurrences were noted on the 24 November. In terms of the southernly wind direction Hillside could not have contributed to the NEMAQA exceedance at Scorpio station.* |
| *14* | *South 32: 13 December 2019: Alison Gerber responded: On the 8th December we had the following fresh feed stoppages due to distribution box cleaning: GTC 1: 10:43 – 11:04am (21min), GTC 2: 12:30 – 12:57pm (27min), GTC 3: 10:18 – 10:37am (19min), GTC 4: 08:20 – 08:34am (14min), GTC 5: 09:24 – 10:06am (41min). These were all well before the exceedances noted at Scorpio. Due to the Southernly wind direction Hillside could not have contributed to the exceedance NEMAQA exceedances at Scorpio station.* |

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| *31* | *South 32: 3 July 2019: Alison Gerber responded: Please see the 10min average emissions below for the period of the NEMAQA 10-minute exceedance at Harbour West on the 28 June at 22:00. Hillside SO2 emissions were within the legislated limits. Due to the Northerly wind direction Hillside may have contributed to cumulative impact at Harbour West resulting in the exceedance.* |

# APPENDIX G
# TRS EXCEEDANCES

*Table: G1: WHO 30-minute H2S Guideline (5.0 ppb)*

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/01/16 03:00 | 6 | 230 | 7.2 | Mondi | Effluent Plant | 12 |
| CBD | 2019/02/12 22:00 | 5 | 270 | 1.4 | Mondi | Mondi Flare | 78 |
| CBD | 2019/02/12 22:30 | 19 | 302 | 1.1 | Mondi | Mondi Flare | 78 |
| CBD | 2019/02/12 23:00 | 7 | 298 | 1.7 | Mondi | Mondi Flare | 78 |
| CBD | 2019/02/25 01:00 | 6 | 301 | 1.6 | Mondi | Effluent Plant | 79 |
| CBD | 2019/02/25 07:30 | 6 | 257 | 1.8 | Mondi | Effluent Plant | 79 |
| CBD | 2019/03/03 23:00 | 6 | 243 | 2.0 | Mondi | Fugitive emission | 65 |
| CBD | 2019/03/03 23:30 | 6 | 267 | 1.9 | Mondi | Fugitive emission | 65 |
| CBD | 2019/03/05 23:00 | 6 | 242 | 2.2 | Mondi | Steam diaphragm valve fault | 64 |
| CBD | 2019/03/05 23:30 | 5 | 256 | 2.5 | Mondi | Steam diaphragm valve fault | 64 |
| CBD | 2019/03/10 08:00 | 6 | 252 | 3.1 | Mondi | Demin buffer tank overflow | 66 |
| CBD | 2019/03/14 23:30 | 8 | 267 | 1.0 | Mondi | Biological treatment plant | 1 |
| CBD | 2019/03/15 00:00 | 63 | 272 | 1.1 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 00:30 | 46 | 260 | 1.4 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:00 | 20 | 248 | 1.4 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:30 | 36 | 242 | 1.6 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:00 | 24 | 254 | 0.9 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:30 | 25 | 259 | 1.1 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:00 | 20 | 240 | 1.8 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:30 | 19 | 271 | 1.3 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 04:00 | 10 | 302 | 1.1 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/18 20:40 | 6 | 264 | 3.3 | Mondi | Biological treatment plant | 72 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/03/19 01:00 | 11 | 273 | 1.5 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 01:30 | 8 | 303 | 1.3 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 07:00 | 30 | 240 | 2.0 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 07:30 | 14 | 256 | 3.0 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/04/01 23:00 | 5 | 230 | 4.9 | Mondi | Effluent Plant | 75 |
| CBD | 2019/04/05 00:30 | 5 | 228 | 7.3 | Mondi | Fugitive emission | 71 |
| CBD | 2019/04/05 20:00 | 5 | 238 | 4.6 | Mondi | Fugitive emission | 71 |
| CBD | 2019/04/05 20:30 | 7 | 232 | 5.4 | Mondi | Fugitive emission | 71 |
| CBD | 2019/04/05 21:00 | 5 | 241 | 5.6 | Mondi | Fugitive emission | 71 |
| CBD | 2019/04/06 02:00 | 7 | 232 | 7.0 | Mondi | Effluent Plant | 68 |
| CBD | 2019/04/06 03:30 | 5 | 238 | 5.9 | Mondi | Effluent Plant | 68 |
| CBD | 2019/04/06 06:30 | 5 | 233 | 5.3 | Mondi | Effluent Plant | 68 |
| CBD | 2019/04/09 23:30 | 6 | 264 | 2.3 | Mondi | Flare | 70 |
| CBD | 2019/04/10 02:30 | 6 | 263 | 2.5 | Mondi | Flare | 69 |
| CBD | 2019/04/10 03:00 | 7 | 269 | 2.5 | Mondi | Flare | 69 |
| CBD | 2019/04/10 04:00 | 7 | 274 | 1.8 | Mondi | Flare | 69 |
| CBD | 2019/04/10 07:30 | 13 | 273 | 2.3 | Mondi | Flare | 69 |
| CBD | 2019/04/10 08:00 | 12 | 239 | 3.2 | Mondi | Flare | 69 |
| CBD | 2019/05/01 20:30 | 6 | 246 | 2.5 | Mondi | Design flaw introduced during annual shut. | 43 |
| CBD | 2019/05/28 01:30 | 6 | 270 | 2.6 | Mondi | Biological Treatment Plant | 60 |
| CBD | 2019/06/03 01:00 | 6 | 241 | 3.2 | Mondi | Unknown source | 13 |
| CBD | 2019/06/03 01:30 | 6 | 260 | 3.2 | Mondi | Unknown source | 13 |
| CBD | 2019/06/06 05:00 | 6 | 248 | 2.6 | Mondi | Unknown source | 17 |
| CBD | 2019/06/06 06:00 | 7 | 255 | 3.2 | Mondi | Unknown source | 17 |
| CBD | 2019/06/06 06:30 | 6 | 259 | 2.7 | Mondi | Unknown source | 17 |
| CBD | 2019/06/06 07:00 | 5 | 267 | 2.6 | Mondi | Unknown source | 17 |
| CBD | 2019/06/12 19:30 | 5 | 241 | 2.5 | Mondi | Unknown source | 23 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/07/05 07:30 | 5 | 251 | 3.1 | Mondi | Effluent Plant | 10 |
| CBD | 2019/07/05 08:00 | 6 | 248 | 4.5 | Mondi | Effluent Plant | 7 |
| CBD | 2019/07/05 08:30 | 5 | 236 | 5.1 | Mondi | Effluent Plant | 7 |
| CBD | 2019/07/05 23:30 | 5 | 261 | 4.4 | Mondi | Effluent Plant | 90 |
| CBD | 2019/07/10 22:00 | 8 | 249 | 3.4 | Mondi | Effluent Plant | 19 |
| CBD | 2019/07/10 22:30 | 10 | 243 | 3.2 | Mondi | Effluent Plant | 19 |
| CBD | 2019/07/11 01:00 | 5 | 259 | 2.9 | Mondi | Effluent Plant | 20 |
| CBD | 2019/07/11 01:30 | 5 | 262 | 2.3 | Mondi | Effluent Plant | 20 |
| CBD | 2019/07/11 02:00 | 5 | 262 | 2.2 | Mondi | Effluent Plant | 20 |
| CBD | 2019/07/12 06:30 | 6 | 264 | 2.2 | Mondi | Lime Kiln | 22 |
| CBD | 2019/07/12 07:00 | 9 | 256 | 3.6 | Mondi | Lime Kiln | 22 |
| CBD | 2019/07/12 07:30 | 10 | 259 | 3.6 | Mondi | Lime Kiln | 22 |
| CBD | 2019/07/12 20:30 | 8 | 244 | 3.2 | Mondi | Lime Kiln | 21 |
| CBD | 2019/07/16 06:00 | 7 | 251 | 2.6 | Mondi | Effluent Plant | 37 |
| CBD | 2019/07/16 06:30 | 10 | 283 | 1.6 | Mondi | Effluent Plant | 37 |
| CBD | 2019/07/19 20:00 | 5 | 220 | 5.0 | Mondi | Effluent Plant | 38 |
| CBD | 2019/07/31 04:30 | 5 | 233 | 4.4 | Mondi | Fugitive emission | 4 |
| CBD | 2019/07/31 05:30 | 5 | 236 | 4.2 | Mondi | Fugitive emission | 4 |
| CBD | 2019/08/04 02:00 | 5 | 250 | 3.5 | Mondi | Effluent Plant | 2 |
| CBD | 2019/08/04 02:30 | 7 | 243 | 3.1 | Mondi | Effluent Plant | 2 |
| CBD | 2019/08/04 03:00 | 7 | 254 | 3.4 | Mondi | Effluent Plant | 2 |
| CBD | 2019/08/04 03:30 | 7 | 245 | 2.9 | Mondi | Effluent Plant | 2 |
| CBD | 2019/08/04 04:00 | 9 | 254 | 3.3 | Mondi | Effluent Plant | 2 |
| CBD | 2019/08/04 04:30 | 7 | 264 | 1.2 | Mondi | Effluent Plant | 2 |
| CBD | 2019/08/05 07:00 | 9 | 264 | 1.9 | Mondi | Effluent Plant | 48 |
| CBD | 2019/08/05 07:30 | 5 | 270 | 1.7 | Mondi | Effluent Plant | 48 |
| CBD | 2019/08/13 05:00 | 7 | 263 | 2.3 | Mondi | Effluent Plant | 46 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/08/15 00:00 | 7 | 252 | 4.7 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 00:30 | 10 | 255 | 3.8 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 01:00 | 5 | 264 | 3.3 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 01:30 | 7 | 245 | 2.5 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 02:00 | 7 | 275 | 2.4 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/25 19:30 | 6 | 264 | 2.1 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:00 | 11 | 280 | 1.1 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:30 | 14 | 23 | 0.4 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 21:00 | 7 | 37 | 1.0 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 23:00 | 6 | 306 | 1.1 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 23:30 | 7 | 276 | 1.3 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/26 00:00 | 6 | 254 | 2.7 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 00:30 | 11 | 258 | 3.7 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 01:00 | 6 | 254 | 3.7 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 03:00 | 5 | 261 | 4.8 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 03:30 | 7 | 259 | 4.6 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 22:30 | 7 | 257 | 3.2 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 23:00 | 6 | 260 | 3.0 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 23:30 | 7 | 269 | 2.5 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/27 00:00 | 7 | 255 | 2.6 | Mondi | Fugitive emission | 88 |
| CBD | 2019/08/27 00:30 | 5 | 234 | 2.9 | Mondi | Fugitive emission | 88 |
| CBD | 2019/08/27 02:00 | 7 | 248 | 3.1 | Mondi | Fugitive emission | 88 |
| CBD | 2019/09/05 02:30 | 13 | 269 | 1.5 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 03:00 | 8 | 287 | 1.4 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 04:30 | 10 | 245 | 1.6 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 05:00 | 8 | 254 | 1.6 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 05:30 | 12 | 288 | 1.2 | Mondi | Effluent Plant | 89 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/09/05 06:00 | 6 | 271 | 0.9 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 07:30 | 17 | 265 | 2.2 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/14 01:00 | 5 | 260 | 4.0 | Mondi | Flare | 29 |
| CBD | 2019/09/14 01:30 | 7 | 257 | 3.9 | Mondi | Flare | 29 |
| CBD | 2019/09/14 03:30 | 7 | 249 | 3.4 | Mondi | Flare | 29 |
| CBD | 2019/09/14 04:00 | 8 | 251 | 3.6 | Mondi | Flare | 29 |
| CBD | 2019/09/14 04:30 | 8 | 243 | 3.3 | Mondi | Flare | 29 |
| CBD | 2019/09/14 05:00 | 7 | 243 | 2.9 | Mondi | Flare | 29 |
| CBD | 2019/09/14 05:30 | 6 | 262 | 2.1 | Mondi | Flare | 29 |
| CBD | 2019/09/14 07:00 | 5 | 253 | 3.4 | Mondi | Flare | 29 |
| CBD | 2019/09/24 03:30 | 7 | 254 | 4.4 | Mondi | Effluent Plant | 30 |
| CBD | 2019/09/24 05:00 | 6 | 257 | 5.3 | Mondi | Effluent Plant | 30 |
| CBD | 2019/11/08 20:00 | 6 | 235 | 1.9 | Mondi | Effluent Plant | 33 |
| CBD | 2019/11/08 23:00 | 7 | 307 | 3.8 | Mondi | Effluent Plant | 33 |
| CBD | 2019/11/09 02:30 | 8 | 275 | 2.3 | Mondi | Effluent Plant | 32 |
| CBD | 2019/11/09 03:00 | 9 | 281 | 2.5 | Mondi | Effluent Plant | 32 |
| CBD | 2019/11/10 07:30 | 7 | 15 | 1.9 | Mondi | Fugitive emission | 85 |
| CBD | 2019/12/28 01:30 | 5 | 294 | 4.3 | Mondi | Effluent plant - poor quality condensate | 84 |
| CBD | 2019/12/28 03:30 | 12 | 293 | 4.7 | Mondi | Effluent plant - poor quality condensate | 84 |
| CBD | 2019/12/28 05:30 | 5 | 317 | 4.4 | Mondi | Effluent plant - poor quality condensate | 84 |
| CBD | 2019/12/28 06:00 | 5 | 318 | 4.7 | Mondi | Effluent plant - poor quality condensate | 84 |
| eSikhaleni | 2019/04/23 20:30 | 7 | 83 | 0.5 | Mondi | Design flaw introduced during annual shut. | 91 |
| eSikhaleni | 2019/04/23 21:00 | 6 | 33 | 1.1 | Mondi | Design flaw introduced during annual shut. | 91 |
| eSikhaleni | 2019/04/24 03:00 | 7 | 79 | 0.5 | Mondi | Design flaw introduced during annual shut. | 42 |
| eSikhaleni | 2019/04/24 03:30 | 9 | 51 | 0.7 | Mondi | Design flaw introduced during annual shut. | 42 |
| eSikhaleni | 2019/04/24 04:00 | 6 | 41 | 0.6 | Mondi | Design flaw introduced during annual shut. | 42 |
| eSikhaleni | 2019/05/03 04:30 | 8 | 55 | 1.7 | Mondi | Fugitive emission | 41 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/05/03 05:00 | 15 | 66 | 1.6 | Mondi | Fugitive emission | 41 |
| eSikhaleni | 2019/05/03 05:30 | 8 | 59 | 2.3 | Mondi | Fugitive emission | 41 |
| eSikhaleni | 2019/05/06 23:30 | 11 | 313 | 0.4 | Mondi | Effluent plant | 6 |
| eSikhaleni | 2019/05/07 00:00 | 8 | 312 | 0.1 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 00:30 | 10 | 314 | 0.2 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 02:30 | 5 | 325 | 0.0 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 05:30 | 5 | 79 | 1.0 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 06:00 | 11 | 57 | 0.8 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 06:30 | 20 | 59 | 0.9 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 07:00 | 6 | 60 | 1.1 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/12 04:30 | 6 | 74 | 0.5 | Mondi | Flare & effluent plant | 59 |
| eSikhaleni | 2019/05/12 05:00 | 5 | 35 | 0.4 | Mondi | Flare & effluent plant | 59 |
| eSikhaleni | 2019/05/13 05:30 | 6 | 20 | 1.6 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 07:00 | 17 | 53 | 2.0 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 07:30 | 14 | 32 | 1.4 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/14 20:00 | 5 | 269 | 0.1 | Mondi | Flare | 55 |
| eSikhaleni | 2019/05/14 20:30 | 5 | 1 | 0.3 | Mondi | Flare | 55 |
| eSikhaleni | 2019/05/15 16:00 | 7 | 71 | 3.4 | Mondi | Effluent plant | 56 |
| eSikhaleni | 2019/05/15 16:30 | 5 | 73 | 3.0 | Mondi | Effluent plant | 56 |
| eSikhaleni | 2019/05/15 17:00 | 7 | 74 | 2.6 | Mondi | Effluent plant | 56 |
| eSikhaleni | 2019/05/16 03:30 | 7 | 103 | 0.2 | Mondi | Effluent plant | 82 |
| eSikhaleni | 2019/05/16 04:00 | 5 | 74 | 0.4 | Mondi | Effluent plant | 82 |
| eSikhaleni | 2019/05/16 04:30 | 10 | 25 | 0.4 | Mondi | Effluent plant | 82 |
| eSikhaleni | 2019/05/17 05:00 | 8 | 16 | 0.2 | Mondi | Effluent plant | 80 |
| eSikhaleni | 2019/05/17 05:30 | 9 | 47 | 0.1 | Mondi | Effluent plant | 80 |
| eSikhaleni | 2019/05/17 06:00 | 9 | 6 | 0.1 | Mondi | Effluent plant | 80 |
| eSikhaleni | 2019/05/18 01:30 | 8 | 92 | 0.9 | Mondi | Fugitive emission | 81 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/05/18 02:00 | 5 | 48 | 1.3 | Mondi | Fugitive emission | 81 |
| eSikhaleni | 2019/05/20 04:00 | 10 | 73 | 1.7 | Mondi | Effluent plant | 57 |
| eSikhaleni | 2019/05/20 04:30 | 9 | 78 | 2.1 | Mondi | Effluent plant | 57 |
| eSikhaleni | 2019/05/25 02:30 | 9 | 63 | 0.7 | Mondi | Fugitive emission | 61 |
| eSikhaleni | 2019/06/01 19:00 | 6 | 264 | 0.6 | Mondi | Unknown source | 77 |
| eSikhaleni | 2019/06/03 20:30 | 6 | 31 | 0.6 | Mondi | Unknown source | 76 |
| eSikhaleni | 2019/06/03 21:00 | 12 | 46 | 0.8 | Mondi | Unknown source | 76 |
| eSikhaleni | 2019/06/03 21:30 | 11 | 36 | 1.1 | Mondi | Unknown source | 76 |
| eSikhaleni | 2019/06/04 03:40 | 12 | 37 | 1.1 | Mondi | Unknown source | 14 |
| eSikhaleni | 2019/06/04 03:50 | 12 | 82 | 1.2 | Mondi | Unknown source | 14 |
| eSikhaleni | 2019/06/10 07:30 | 7 | 77 | 1.3 | Mondi | Unknown source | 24 |
| eSikhaleni | 2019/06/12 09:00 | 5 | 22 | 1.8 | Mondi | Unknown source | 23 |
| eSikhaleni | 2019/06/19 17:00 | 5 | 37 | 1.0 | Mondi | Unknown source | 28 |
| eSikhaleni | 2019/06/19 19:00 | 5 | 12 | 0.5 | Mondi | Unknown source | 28 |
| eSikhaleni | 2019/06/28 17:30 | 6 | 60 | 1.1 | Mondi | Unknown source | 25 |
| eSikhaleni | 2019/06/28 18:00 | 6 | 61 | 0.8 | Mondi | Unknown source | 25 |
| eSikhaleni | 2019/06/28 18:30 | 6 | 54 | 1.0 | Mondi | Unknown source | 25 |
| eSikhaleni | 2019/06/28 19:00 | 6 | 68 | 1.5 | Mondi | Unknown source | 25 |
| eSikhaleni | 2019/06/28 19:30 | 6 | 78 | 1.7 | Mondi | Unknown source | 25 |
| eSikhaleni | 2019/06/28 20:00 | 10 | 73 | 1.7 | Mondi | Unknown source | 25 |
| eSikhaleni | 2019/06/29 03:00 | 6 | 99 | 1.3 | Mondi | Unknown source | 26 |
| eSikhaleni | 2019/06/29 21:30 | 41 | 41 | 1.2 | Mondi | Unknown source | 26 |
| eSikhaleni | 2019/06/29 22:00 | 32 | 47 | 0.4 | Mondi | Unknown source | 26 |
| eSikhaleni | 2019/06/30 04:30 | 10 | 21 | 3.6 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 05:00 | 10 | 25 | 2.0 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 05:30 | 11 | 34 | 2.3 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 06:00 | 8 | 35 | 2.0 | Mondi | Unknown source | 27 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/06/30 06:30 | 15 | 75 | 1.7 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:00 | 14 | 73 | 1.8 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:30 | 32 | 73 | 1.7 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 08:00 | 33 | 54 | 1.3 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 09:30 | 10 | 46 | 2.3 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 21:00 | 5 | 55 | 0.7 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/07/03 00:30 | 11 | 15 | 2.8 | Mondi | Lime Kiln | 11 |
| eSikhaleni | 2019/07/04 04:00 | 17 | 81 | 1.0 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:30 | 10 | 75 | 1.3 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 05:00 | 10 | 27 | 1.9 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/06 20:00 | 5 | 44 | 1.8 | Mondi | Fugitive emission | 9 |
| eSikhaleni | 2019/07/06 22:00 | 5 | 76 | 1.7 | Mondi | Fugitive emission | 9 |
| eSikhaleni | 2019/07/08 20:00 | 8 | 24 | 0.7 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 20:30 | 12 | 80 | 0.6 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 21:00 | 9 | 88 | 0.4 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 21:30 | 7 | 160 | 0.4 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 22:00 | 7 | 101 | 0.1 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 22:30 | 6 | 305 | 0.4 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/10 04:30 | 5 | 70 | 1.5 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/10 05:00 | 8 | 100 | 0.4 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/10 05:30 | 6 | 57 | 0.9 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/10 06:00 | 8 | 23 | 1.5 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/10 06:30 | 8 | 30 | 1.7 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/10 08:30 | 6 | 31 | 1.8 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/10 09:00 | 8 | 22 | 1.9 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/12 00:00 | 9 | 20 | 2.7 | Mondi | Lime Kiln | 22 |
| eSikhaleni | 2019/07/12 00:30 | 8 | 49 | 1.6 | Mondi | Lime Kiln | 22 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/12 01:00 | 6 | 103 | 1.2 | Mondi | Lime Kiln | 22 |
| eSikhaleni | 2019/07/12 02:00 | 5 | 80 | 1.3 | Mondi | Lime Kiln | 22 |
| eSikhaleni | 2019/07/12 05:30 | 7 | 80 | 1.5 | Mondi | Lime Kiln | 22 |
| eSikhaleni | 2019/07/16 02:30 | 12 | 47 | 1.8 | Mondi | Effluent Plant | 36 |
| eSikhaleni | 2019/07/16 03:00 | 8 | 48 | 2.3 | Mondi | Effluent Plant | 36 |
| eSikhaleni | 2019/07/16 03:30 | 6 | 52 | 1.9 | Mondi | Effluent Plant | 36 |
| eSikhaleni | 2019/07/16 04:00 | 6 | 30 | 1.1 | Mondi | Effluent Plant | 36 |
| eSikhaleni | 2019/07/18 02:00 | 9 | 75 | 1.2 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 06:30 | 6 | 77 | 0.7 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 07:00 | 9 | 66 | 0.2 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 18:30 | 7 | 46 | 0.7 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 19:00 | 5 | 72 | 1.2 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 20:30 | 9 | 49 | 1.0 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 21:30 | 7 | 57 | 1.6 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:00 | 19 | 66 | 1.3 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:30 | 9 | 78 | 1.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 23:00 | 5 | 79 | 1.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 23:30 | 14 | 51 | 1.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/19 00:00 | 6 | 6 | 2.7 | Mondi | Lime Kiln | 39 |
| eSikhaleni | 2019/07/19 01:30 | 9 | 20 | 2.3 | Mondi | Lime Kiln | 39 |
| eSikhaleni | 2019/07/21 22:00 | 5 | 0 | 1.6 | Mondi | Fugitive emission | 83 |
| eSikhaleni | 2019/07/21 22:30 | 7 | 11 | 2.4 | Mondi | Fugitive emission | 83 |
| eSikhaleni | 2019/07/22 22:30 | 6 | 28 | 2.3 | Mondi | Fugitive emission | 40 |
| eSikhaleni | 2019/07/22 23:00 | 8 | 26 | 3.2 | Mondi | Fugitive emission | 40 |
| eSikhaleni | 2019/07/23 01:30 | 5 | 73 | 1.0 | Mondi | Lime Kiln | 44 |
| eSikhaleni | 2019/07/23 05:30 | 5 | 96 | 1.0 | Mondi | Lime Kiln | 44 |
| eSikhaleni | 2019/07/24 04:00 | 5 | 350 | 2.2 | Mondi | Fugitive emission | 45 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/27 05:00 | 27 | 45 | 1.0 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 05:30 | 23 | 49 | 1.2 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 06:00 | 10 | 70 | 0.4 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 06:30 | 9 | 76 | 0.9 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 08:00 | 8 | 61 | 1.2 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/28 07:30 | 5 | 52 | 1.6 | Mondi | Flare | 64 |
| eSikhaleni | 2019/07/28 09:00 | 7 | 30 | 2.2 | Mondi | Flare | 64 |
| eSikhaleni | 2019/07/29 03:30 | 6 | 56 | 1.4 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 04:00 | 6 | 58 | 0.9 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 04:30 | 7 | 42 | 1.2 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 05:00 | 7 | 39 | 1.9 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 07:30 | 7 | 66 | 1.4 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 08:00 | 10 | 50 | 1.8 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 08:30 | 10 | 47 | 2.0 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/31 01:00 | 6 | 311 | 1.0 | Mondi | Effluent Plant | 3 |
| eSikhaleni | 2019/08/04 07:30 | 6 | 24 | 0.9 | Mondi | Effluent Plant | 5 |
| eSikhaleni | 2019/08/06 22:00 | 14 | 67 | 0.2 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 22:30 | 24 | 87 | 0.0 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 23:00 | 7 | 82 | 0.3 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 23:30 | 9 | 358 | 0.2 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/07 21:00 | 8 | 25 | 3.1 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/07 22:00 | 9 | 12 | 3.7 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/07 22:30 | 6 | 360 | 2.9 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/08 01:00 | 9 | 9 | 2.5 | Mondi | Effluent Plant | 50 |
| eSikhaleni | 2019/08/08 01:30 | 5 | 34 | 2.3 | Mondi | Effluent Plant | 50 |
| eSikhaleni | 2019/09/06 21:30 | 8 | 295 | 0.7 | Mondi | Fugitive emission | 16 |
| eSikhaleni | 2019/09/10 03:30 | 6 | 33 | 0.9 | Mondi | Fugitive emission | 15 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/09/18 04:00 | 6 | 41 | 0.2 | Mondi | Lime Kiln | 31 |
| eSikhaleni | 2019/11/01 06:00 | 5 | 14 | 0.4 | Mondi | Flare | 86 |
| eSikhaleni | 2019/11/17 05:00 | 17 | 324 | 0.3 | Mondi | Start-up fugitive | 34 |
| eSikhaleni | 2019/11/17 05:30 | 7 | 27 | 0.7 | Mondi | Start-up fugitive | 34 |
| eSikhaleni | 2019/11/27 01:00 | 7 | 42 | 0.5 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 01:30 | 14 | 35 | 0.9 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 02:30 | 7 | 94 | 0.5 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 03:00 | 6 | 47 | 0.1 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:00 | 28 | 61 | 1.3 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:30 | 13 | 45 | 1.4 | Mondi | Effluent plant | 84 |

| ***Response #*** | ***Response*** |
|---|---|
| *1* | *Not required at this time.* |
| *2* | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with all the exceedances recorded. There were TRS exceedances recorded at Mondi's: • Hytec monitoring station between 23:37pm and 1:30am. • Hytec monitoring station between 2:30am to 3:30am and 4:50am to 5:40am. Increased H2S emissions had been detected at the Effluent Plant stack at the time. Upon investigation now tank overflows had occurred and, although a Demin Regen had been conducted, Effluent pH was stable and does not correlate with the initial exceedances.* |
| *3* | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were TRS exceedances recorded at Mondi's Landfill monitoring stations between 21:20pm and 22:00pm. At 0:00am a Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack.*<br>*The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* |
| *4* | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. Wind speeds increased from 2 m/s to 7 m/s over this period. There were TRS exceedances recorded at Mondi's Hytec monitoring station between 4:50am and 7:00am. Odour checks were conducted, and a minor leak was detected on the NCG line. The leak was temporarily wrapped and planned for repair during the next opportunity shut.* |
| *5* | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with the last exceedance recorded. There were TRS exceedances recorded at Mondi's Alton monitoring station between 4:50am to 7:00am. Increased H2S emissions had been detected at the Effluent Plant stack at the time. Upon investigation no tank overflows had occurred and, although a Demin Regen had been conducted, Effluent pH was stable and does not correlate with the initial exceedances.* |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| 6 | *Mondi: 07 January 2020 Candice Webb responded. The wind direction measured at eSikhaleni station was 330 degrees with low wind speeds. This is favourable from Mondi. There were TRS exceedances from Mondi's Alton ambient monitoring station between 22:50pm and 00:40am which indicate that Mondi's effluent plant may have been a contributor to the odour.* | | | | | | |
| 7 | *Mondi: 10 July 2019: Brendan Crawford responded. Morning exceedances (7:40am to 8:40am). Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Alton monitoring station between 6:40am to 8:40am and at Hytec station between 6:30am to 8:50am. There were no upsets or abnormal activities taking place in the mill. All stack emissions were within AEL limits and the Flare was not in use. There were no increased emissions from the Effluent Plant. Based on favourable wind direction it is likely that an unidentified fugitive emission from the mill was the cause for the exceedances.* | | | | | | |
| 8 | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi which is just before the exceedances started to occur. There were TRS exceedances recorded at Mondi's Alton monitoring station between 20:50pm and 23:40pm. Alton station is near the Effluent Plant. In preparation for the Demin regen, the effluent buffer tank was drained to make space. The contents drained were mostly acidic and, when mixed with the alkaline contents of the sewer, created a pH shock, and increased the H2S emissions from the Effluent Plant.* | | | | | | |
| 9 | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of most of the exceedances. There were intermittent TRS exceedances recorded at any of Mondi's Hytec monitoring station, however this station was upwind of Mondi at the time. There was an increase noted at the portable station (UVS), which is between Mondi and eSikhaleni, between 19:10pm and 20:30pm. There were no upsets or abnormal activities taking place in the mill. All stack emissions were within AEL limits and the Flare was not in use. There were no increased emissions from the Effluent Plant. Based on favourable wind direction it is likely that an unidentified fugitive emission from the mill was the cause for the exceedances.* | | | | | | |
| 10 | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of most of the exceedances. There were intermittent TRS exceedances recorded at any of Mondi's Hytec monitoring stations, however this station was upwind of Mondi at the time. In preparation for the Demin regen, the effluent buffer tank was drained to make space. The contents drained were mostly acidic and, when mixed with the alkaline contents of the sewer, created a pH shock, and increased the H2S emissions from the Effluent Plant.* | | | | | | |
| 11 | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of the exceedances. There were no TRS exceedances recorded at any of Mondi's monitoring stations. On 2 July 2019, the Lime Kiln had been taken offline for cleaning of the LMCD nozzles which had become blocked. By 22:10pm the Kiln was back online and NCG gases had been diverted back into the Kiln. During start up the Kiln experienced some instability which resulted in increased TRS emissions above the AEL limit. This lasted for less than ten minutes and TRS emissions decreased once the Kiln became stable.* | | | | | | |
| 12 | *Mondi: 11 February 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedance and found the following: During the time of the exceedances the average wind direction measured at Mondi stations was 258 degrees with medium wind speeds (RBCAA web site currently not working). There were no exceedances recorded at any of Mondi's stations however an increase in TRS was noted at the Portable station between 0:20am and 0:40am. The entire mill was shut at this time to accommodate the Mhlathuze Water Effluent Line shut was which was occurring at this time. As such it is unlikely that the exceedances could be attributed to Mondi mill operations. There is a possibility that fugitive emissions could have arisen from the activities occurring at the Mhlathuze Water Effluent Line i.e. unblocking of the line at Air Chamber 1.* | | | | | | |
| 13 | *Mondi: 11 June 2019: Brendan Crawford responded. Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Alton monitoring station between 23:30pm and 0:40am and at Hytec station between 1:30am and 2:10am. All TRS stack emissions were well below the AEL limits and no other odorous events were recorded on the Mondi Odour Dashboard. Given the favourable wind conditions and the confirmation of high TRS from Mondi's own monitoring stations it can only be concluded that an unidentified fugitive emission emanating from Mondi was responsible.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| 14 | *Mondi: 11 June 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were no TRS exceedances recorded at any of Mondi's monitoring stations that are online. UVS had been disconnected at the time to allow Mhlathuze Water to conduct urgent pipework at the pump station. All TRS stack emissions were well below the AEL limits. From 1:50am to 2:25am increased H2S emissions were recorded from the Effluent stack resulting from an earlier Demin cation regen. Given that the exceedances started well before these increased emissions and their short duration it is unlikely that this could have been the sole contributor. Given the favourable wind conditions it can only be concluded that an unidentified fugitive emission emanating from Mondi combined with the momentary increased effluent emissions was responsible.* | | | | | | |
| 15 | *Mondi: 13 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. Intermittent TRS exceedances were recorded at all of Mondi's Landfill monitoring against wind direction. The TRS analyser was suspected to be faulty and has been replaced. There were no upset conditions or stack exceedances that may have contributed to an odour event. Mondi is currently updating its odour inventory to determine its current background odour.* | | | | | | |
| 16 | *Mondi: 13 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. Intermittent TRS exceedances were recorded at all of Mondi's Landfill monitoring station between 18:00pm and 22:00pm. Low Lime Mud levels required the unplanned shut down of the Lime Kiln and the diversion of NCG to the Flare and Incinerator at 16:00pm. Lime Kiln was back on line at 20:20pm. Mpact 16 September 2019: Yolande Schoeman responded: Source and Nature of Emissions: The distance from Mpact Felixton Mill to the eSikhaleni monitoring station is ±3.5km , the wind speed during the time of the exceedance was low averaging around 0.4 m/s. The wind direction at the time fluctuated from 257 -328°.North Westerly's winds, i.e. ±315°, are required from Mpact, to reach eSikhaleni station. Based on the wind speed and distance from Mpact to the monitoring station, the Mpact night shift reports were examined from 19H00 to 22h30 on the 6th September 2019. The areas investigated were the wastewater treatment ponds; wastewater treatment plant (WWTP) and the boiler house activities. There was no pond and clarifier cleaning activities occurring at Mpact WWTP that could have impacted the air quality. The boiler house reports, and opacity log sheets show that all the boilers were running steady, with no abnormal events. Compliance with Permit\s: No non-compliances identified. Findings & Recommendations: Mpact is unlikely to be the source of the TRS odour nuisance episodes detected at ESikhaleni the evening of 6 September 2019.* | | | | | | |
| 17 | *Mondi: 14 June 2019: Brendan Crawford responded. Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. It is worth noting that an odour complaint was also received from Veldenvlei during the noted timeframe. There were also TRS exceedances recorded at Mondi's portable monitoring station (Afrox) between 0:40am to 1:40am, 3:00am t0 3:40am and 4:20am to 6:00am. Recovery Boiler 2 had been taken offline for a planned shut. No non-compliances were recorded however TRS emissions from the Lime Kiln did intermittently spike above 10 mg/Nm3 between 6:15am and 7:03am. A density control issue on the WLCD (White Liquor Clari Disc) because of partially blocked chute shower nozzles affected the 1st stage washing and resulted in Soda carryover to the Lime Kiln. This in effect increased the TRS emissions from the Lime Kiln. The WLCD was taken offline and the chute shower nozzles washed. Once the WLCD was put back in service the Lime Kiln TRS emissions started to decrease.* | | | | | | |
| 18 | *Mondi: 15 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of most of the exceedances. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station from 00:30am to 9:40am. The exceedances corresponded with overflows of condensate to the effluent drains which occurred early that morning. Overflows stopped at 6:00am.* | | | | | | |
| 19 | *Mondi: 15 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of the exceedances. There were exceedances recorded at Mondi's Hytec monitoring station throughout. Based on the high TRS recorded at Hytec mill standby personnel were called in to conduct investigations. An overflow of filtrate from the LMCD (Lime Mud Clari Disc) increased the sulphur loading on the effluent. This coincided with a cation regen at the Demin plant which introduced acidic effluent into the system from the buffer tank overflow. The increased sulphur loading combined with the pH shock caused increased H2S emissions from the effluent plant.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| *20* | *Mondi: 15 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of the exceedances. There were exceedances recorded at Mondi's Hytec monitoring station until 1:10am and thereafter at the Alton station. The exceedances were caused by the same incident which caused the exceedances on the 10 July 2019, details of which are given below: Based on the high TRS recorded at Hytec mill standby personnel were called in to conduct investigations. An overflow of filtrate from the LMCD (Lime Mud Clari Disc) increased the sulphur loading on the effluent. This coincided with a cation regen at the Demin plant which introduced acidic effluent into the system from the buffer tank overflow. The increased sulphur loading combined with the pH shock caused increased H2S emissions from the effluent plant.* | | | | | | |
| *21* | *Mondi: 16 July 2019: Brendan Crawford responded. Night-time exceedances (20:30pm to 22:10pm): Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were TRS exceedances recorded at Mondi's Hytec monitoring station between 20:00pm to 22:10pm. Although the Lime Kiln stack TRS emissions were below the AEL limit, they were higher than average which may have contributed towards the exceedances.*<br>*Considering these events the Kiln operating temperature is being reviewed by the plant.* | | | | | | |
| *22* | *Mondi: 16 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of some of the exceedances. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station from 20:00pm to 23:10pm on 11 July. Although the Lime Kiln stack TRS emissions were below the AEL limit, they were higher than average which may have contributed towards the exceedances.* | | | | | | |
| *23* | *Mondi: 18 June 2019: Brendan Crawford responded. Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Alton monitoring station between 18:20pm to 20:20pm. At 17:40pm, in preparation for the Demin cation regen, the effluent buffer tank was drained intermittently to create space for the regen effluent. The intermittent draining created pH shocks in the alkaline sewer which started to liberate H2S. This was verified by the increased TRS recorded at Alton (which is close to the Effluent Plant) and the increased H2S emissions recorded at the Effluent Plant stack at the same time.* | | | | | | |
| *24* | *Mondi: 2 July 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: Wind conditions highlighted below were favourable from Mondi. There were no TRS exceedances recorded at any of Mondi's monitoring stations that are online. UVS had been disconnected at the time to allow Mhlathuze Water to conduct urgent pipework at the pump station. A Demin Regen resulted in acidic effluent overflowing from the buffer tank into the alkaline sewer at 5:15am. The pH shock resulted in increased H2S emissions from effluent. This was confirmed by the Effluent Stack analysers which recorded increased levels of H2S at this time.* | | | | | | |
| *25* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. Between 17:25pm and 18:45pm wind speed was too low for measured wind directions to be reliable. There were no TRS exceedances recorded at any of Mondi's monitoring stations that are online. UVS had been disconnected at the time to allow Mhlathuze Water to conduct urgent pipework at the pump station. A Demin Regen resulted in acidic effluent overflowing from the buffer tank into the alkaline sewer at 17:37pm. The pH shock resulted in increased H2S emissions from effluent. This was confirmed by the Effluent Stack analysers which recorded increased levels of H2S at this time.* | | | | | | |
| *26* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. There were exceedances of the WHO TRS limit of 5ppb recorded at Mondi's Alton monitoring station between 5:40am and 8:10am. It must be noted that the wind was blowing steadily towards the North East at this time and any odour emission from Mondi would have impacted on CBD monitoring station rather than eSikhaleni. A Demin Regen resulted in acidic effluent overflowing from the buffer tank into the alkaline sewer at 4:10am. The pH shock resulted in increased H2S emissions from effluent. This was confirmed by the Effluent Stack analysers which recorded increased levels of H2S at this time.* | | | | | | |
| *27* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. There were no TRS exceedances recorded at any of Mondi's monitoring stations. All stack emissions were below the AEL limits and there were no incidents or abnormal plant conditions that may have contributed toward odour exceedances. Due to an odour complaint that had been received on this day, in depth odour investigations were conducted in the mill and could not establish any odour source.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
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| 28 | *Mondi: 2 July 2019: Brendan Crawford responded. Wind direction before 17:00pm averaged 100 degrees which does not favour Mondi. After 17:00pm wind speeds dropped below 1 m/s which is not ideal for measuring wind direction. There were no TRS exceedances recorded at any of Mondi's monitoring stations. All stack emissions were below the AEL limits and there were no incidents or abnormal plant conditions that may have contributed toward odour exceedances.* | | | | | | |
| 29 | *Mondi: 2 October 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This correlates with all the exceedances recorded. Intermittent TRS exceedances were recorded at Mondi's Alton and Hytec monitoring stations from 1:00am to 6:40am. A breakdown on the Lime Kiln resulted in Non-condensable Gases being routed to the Flare. Even though all precautions were taken to minimise emissions from the Flare, it has been acknowledged that the Flare is not as efficient as the Lime Kiln and CAPEX projects are in place to resolve this.* | | | | | | |
| 30 | *Mondi: 2 October 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This correlates with most of the exceedances recorded. Intermittent TRS exceedances were recorded at Mondi's Alton and Hytec monitoring stations from 2:00am to 6:00am. Overflow of mill condensate into drains resulted in increased odour emissions from the Effluent Plant. Odour abatement technologies will be trialled at the Effluent Plant in October 2019.* | | | | | | |
| 31 | *Mondi: 2 October 2019: Brendan Crawford responded. Wind speeds were too low (< 1m/s) for wind direction to be considered reliable. TRS exceedances were recorded at Mondi's Alton monitoring station from 1:20am to 2:50am. The Lime Kiln experienced swings in TRS due to burner tip temperature loss. Methanol firing was taken offline and only reinstated once the density had been adjusted.* | | | | | | |
| 32 | *Mondi: 20 November 2019: Brendan Crawford responded. Wind direction was favourable from Mondi during the periods highlighted below. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station between 2:00 and 4:20. An odour was identified as originating from the Mondi Effluent Plant due to mill condensate overflowing into the effluent drainage system and then on to the effluent plant.* | | | | | | |
| 33 | *Mondi: 20 November 2019: Brendan Crawford responded. Wind direction was favourable from Mondi during the periods highlighted below. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station between 20:40 and 21:40. An odour was identified as originating from the Mondi Effluent Plant due to mill condensate overflowing into the effluent drainage system and then on to the effluent plant. A complaint was received from the RBCAA with regards to this which Mondi has responded to.* | | | | | | |
| 34 | *Mondi: 20 November 2019: Brendan Crawford responded. Wind speed measured was too low for wind direction to be considered a reliable indicator of odour source. There were no TRS exceedances recorded at Mondi's monitoring stations. A municipal power failure in Richards Bay on 15th November 2019 had impacted on mill utilities and resulted in most of the mill being shut down. This was communicated to external stakeholders. Sections of the mill were still in start-up during the period of the exceedances. Although no point sources were identified it is possible that fugitive emissions from start-up activities may have contributed to exceedances.* | | | | | | |
| 35 | *Mondi: 22 July 2019: Brendan Crawford responded. Night-time exceedances (18:20pm to 23:50pm): Wind conditions in the area shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station between 17:20pm to 21:00pm. In preparation for a cation regen acidic effluent from the Demin buffer tank was drained creating a pH shock in the effluent. This combined with the high sulphidity in the effluent resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |
| 36 | *Mondi: 22 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time of some of the exceedances. There were TRS exceedances recorded at Mondi's Alton monitoring station from 23:10pm to 23:50pm and at Portable (UVS) station from 2:20am to 3:00am. An overflow of filtrate occurred at the Liner plant. This increased the sulphidity in the mill effluent. A cation regeneration at 23:10pm resulted in acidic effluent overflowing into the drain and creating a pH shock. This combined with the high sulphidity in the effluent resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
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| 37 | *Mondi: 22 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time of some of the exceedances. There were TRS exceedances recorded at Mondi's Landfill monitoring station from 5:50am to 6:20am and at Alton station from 6:30am to 7:20am. An overflow of filtrate occurred at the Liner plant. This increased the sulphidity in the mill effluent. In preparation for a cation regen acidic effluent from the Demin buffer tank was drained creating a pH shock in the effluent. This combined with the high sulphidity in the effluent resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |
| 38 | *Mondi: 23 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time just before the exceedance. There were TRS exceedances recorded at Mondi's: Alton monitoring station from 19:20pm to 20:20pm. Portable (UVS) monitoring station from 19:40pm to 20:10pm. Hytec monitoring station from 20:00pm to 20:40pm. In preparation for a cation regen acidic effluent from the Demin buffer tank was drained creating a pH shock in the effluent. This resulted in increased H2S emissions from the Effluent Plant.*<br>*It is also worth noting that the Portable monitoring, located 5km upwind from Mondi at the time, also recorded exceedances which would suggest that a secondary odour source also contributed towards exceedances.* | | | | | | |
| 39 | *Mondi: 23 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time of some of the exceedances. There were TRS exceedances recorded at Mondi's: Hytec monitoring station from 20:20pm to 21:00pm. Alton monitoring station from 7:00am to 8:00am. Although all Stack emissions were within AEL limits, the Lime Kiln TRS emissions were close to the limit. Methanol firing rate in the Lime Kiln was reduced to reduce TRS emissions.* | | | | | | |
| 40 | *Mondi: 24 July 2019: Brendan Crawford responded. Wind conditions were favourable from Mondi throughout. There were no TRS exceedances recorded at Mondi's monitoring stations. All Stack emissions were within AEL limits and effluent pH was stable. There were no upset conditions that would have contributed towards odour emissions. Due to the favourable wind conditions it is possible that an unidentified fugitive emission from Mondi could have contributed to the exceedances.* | | | | | | |
| 41 | *Mondi: 24 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 53 degrees with moderate wind speeds. This is favourable from Mondi. Although Mondi has not been able to identify the root cause of the odour. It is most likely that fugitive emissions from Mondi contributed to the odour.* | | | | | | |
| 42 | *Mondi: 24 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 63 degrees with very low wind speeds. It must be noted that there was high degree of variability in the wind direction and there were times before the exceedances where the wind direction was favourable from Mondi. There were TRS exceedances Mondi's Landfill ambient monitoring station between 2:10am to 2:30am but this was upwind at the time. After start-up it was found that a design flaw introduced during the Annual Shut was resulting in the Evaps plant backing up and caused the venting of NCG gas to the atmosphere. The engineering contractor appointed by Mondi for the Annual Shut accepted responsibility for the design flaw. Venting from this plant started at 2:20am. A hot tap was conducted on the plant on the 2nd May 2019 which prevented the venting of NCG gas from the plant. The design flaw was corrected during a short shut on the 22nd May 2019.* | | | | | | |
| 43 | *Mondi: 24 May 2019: Brendan Crawford responded. Night-time exceedances: During the time of the exceedances the average wind direction measured at CBD station was 249 degrees with moderate wind speeds. This is favourable from Mondi. There were TRS exceedances recorded at Mondi's Landfill ambient monitoring station between 19:30pm and 20:00pm. Root cause is the same as above as the equipment was still venting at the time.* | | | | | | |
| 44 | *Mondi: 25 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. Lime Kiln TRS emissions had increased close to the limit and eventually exceeded the limit at 9:00am. The Lime Kiln was stopped and the LMCD was washed. When the Kiln was put back online the TRS emissions had reduced.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
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| 45 | *Mondi: 25 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This is just before the exceedances started to occur. Of note is the sudden shift in wind direction at the time of the exceedances which may have affected dispersion. There were TRS exceedances recorded at Mondi's Landfill monitoring stations from 2:10am to 2:30am. All stack emissions were well within effluent limits. Effluent pH was steady with no increased H2S emissions recorded at the Effluent Plant stack. Due to the exceedance at the Landfill station an investigation was conducted here, and everything was found to be in order i.e. the leachate dam aeration pump was online. It is likely that sudden change in the wind direction affected the ambient TRS as the exceedance was only registered during this short period of wind direction change.* | | | | | | |
| 46 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with all the exceedances recorded. There were TRS exceedances recorded at the following Mondi monitoring stations: Hytec between 1:30am and 1:50am, Alton between 3:50am and 4:10am. A Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack. The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* | | | | | | |
| 47 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were no TRS exceedances recorded at any of Mondi's monitoring stations. A Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack. The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* | | | | | | |
| 48 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were TRS exceedances recorded at Mondi's Alton monitoring station between 4:40am to 5:20am and again between 5:50am to 7:30am. Upon investigation the mill's effluent average pH was found to be lower than normal. Detailed inspections were conducted to determine the source of the low pH. During these investigations, a leak was found on the outlet line of the Sulphuric Acid holding tank. Sulphuric Acid migration into the sewer network would have lowered the pre-neutralised Effluent pH resulting in increased H2S emissions from the Effluent Plant. An odour complaint was received related to the above.* | | | | | | |
| 49 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were TRS exceedances recorded at the Mondi's Alton monitoring stations between from 23:30pm to 00:10 am and 2:30am to 3:00 am. There were no deviations or increases noted at any of the monitored odour sources. An intensive odour investigation was conducted by manually monitoring odour sources as per the odour emissions inventory. No source of concentrated odour could be found using this method. Mondi can only assume that an unidentified fugitive odour emission from the mill was responsible due to the favourable wind conditions measured.* | | | | | | |
| 50 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with the last exceedance recorded. There were no TRS exceedances recorded at any of Mondi's monitoring stations. A Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack. The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* | | | | | | |
| 51 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. Wind speeds were very low most of the time resulting in high variance in wind direction. Under conditions like these wind directions cannot reliably be used as an indicator of emission source. There were intermittent TRS exceedances recorded at Mondi's Alton, Hytec and Landfill monitoring stations throughout the timespan. The Effluent Plant was found to be the source of the odour. A combination of high effluent temperature and contamination resulted in increased H2S emissions. An action plan was developed to reduce temperature and contamination in effluent.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| 52 | *Mondi: 27 August 2019: Brendan Crawford responded. Wind speeds were very low throughout resulting in high variance in wind direction. Under conditions like these wind directions cannot reliably be used as an indicator of emission source. There were no TRS exceedances recorded at any of Mondi's monitoring stations. On 5th August 2019, the mill's effluent average pH was found to be lower than normal. This was caused by a leak was found on the outlet line of the Sulphuric Acid holding tank which lowered the pre-neutralised Effluent pH resulting in increased H2S emissions from the Effluent Plant. Although the leak was repaired on the day the Effluent pH took more than 24 hours to recover.* | | | | | | |
| 53 | *Mondi: 27 August 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: Morning (0:00am to 6:20am). Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with all the exceedances recorded. There were intermittent TRS exceedances recorded at Mondi's Alton, Hytec and Landfill monitoring stations throughout the timespan. The Effluent Plant was found to be the source of the odour. A combination of high effluent temperature and contamination resulted in increased H2S emissions. An action plan was developed to reduce temperature and contamination in effluent. Night (19:50pm to 23:50pm)*<br>*Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were intermittent TRS exceedances recorded at Mondi's Alton, Hytec and Landfill monitoring stations from 19:00pm. There were no deviations or increases noted at any of the monitored odour sources, however Mondi was preparing to shut down the mill for a planned Water Wash as communicated to the RBCAA. It is likely that a fugitive emission source related to shut down was responsible.* | | | | | | |
| 54 | *Mondi: 27 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 176 degrees with low wind speeds. It must be noted that the exceedances occurred over a large timespan during which average wind direction changed several times, namely:•0:00am to 3:22am – Average 293 degrees (not favourable from Mondi)• 3:23am to 3:37am – Average 180 degrees (not favourable from Mondi)•3:38am to 4:16am – Average 107 degrees (not favourable from Mondi)•4:17am to 4:48am – Average 126 degrees (not favourable from Mondi) •Mondi)There were no TRS exceedances from Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. At 2:00am Mondi mill suffered a ground fault on the main electrical incomer to the board feeding the boiler feedwater pumps. During this time, the NCG gases were switched from the Lime Kiln to the Flare. Initially the TRS emissions from the Flare were high due to the instability of the gases from a sudden loss of power. The TRS emissions did start decreasing when the gases stabilised. Mondi could not have been a contributor to the exceedances at eSikhaleni station from 0:00am to 4:48am due to the unfavourable wind directions. However, Mondi can take responsibility for the exceedances from 4:49am to 7:20am due to the favourable wind direction and the occurrence of an incident which led to the use of the Flare.* | | | | | | |
| 55 | *Mondi: 27 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 204 degrees with very low wind speeds. While there was some variation in wind direction, wind speeds were so low so that it would not have been possible for Mondi to be the sole contributor. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. The mill had been shut from the day before to rectify a design flaw on the Evaps plant. All units had been degassed which meant that the Flare was only operating on pilot flame. Due to unfavourable wind conditions and with the mill being completely shut Mondi could not have contributed to the exceedances.* | | | | | | |
| 56 | *Mondi: 27 May 2019: Brendan Crawford responded. Night-time exceedances: During the time of the exceedances the average wind direction measured at eSikhaleni station was 69 degrees with high wind speeds. This is not favourable from Mondi. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. The effluent stack analyser had started to register high H2S emission from 16:00pm. This may have been related to tank draining from start up.* | | | | | | |
| 57 | *Mondi: 27 May 2019: Brendan Crawford responded. The average wind direction measured at eSikhaleni station was 30 degrees with high wind speeds. This is favourable from Mondi. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station.*<br>*After a cationic regen on the Demin plant the effluent experienced a pH shock at 1:30am which increased TRS emissions from the Effluent Plant from 5:40am to 6:40am.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| 58 | *Mondi: 27 May 2019: Brendan Crawford responded. The average wind direction measured at eSikhaleni station was 44 degrees with low wind speeds. This is favourable from Mondi. There were no TRS exceedances recorded at Mondi's ambient monitoring however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. The Evaps plant embarked on a planned shut to rectify a design flaw introduced during the Annual Shut. While NCG gases had not yet been diverted to the Flare, instability from shutting down activities did result in some short, sporadic NCG venting from the Evaps and Fibre line Hardwood carbon filters. NCG gases were diverted to the Flare from 7:15am.* | | | | | | |
| 59 | *Mondi: 27 May 2019: Brendan Crawford responded. The average wind direction measured at eSikhaleni station was 62 degrees with very low wind speeds. While this is not favourable from Mondi there were significant variations during the timespan of the exceedances during which Mondi may have been a contributor. There were TRS exceedances recorded from Mondi's Portable ambient monitoring station between 5:00am and 5:20am. UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. After a cationic regen on the Demin plant the effluent experienced a pH shock at 0:30am which increased TRS emissions from the Effluent Plant. NCG gases had also been diverted to the Flare from 4:00am to 7:30am due to an issue with the Lime Mud density.* | | | | | | |
| 60 | *Mondi: 30 May 2019: Brendan Crawford responded. As per raw wind data from the CBD station the areas highlighted below would have been favourable from Mondi. Wind speeds were moderate at the time. There were TRS exceedances recorded at Mondi's Hytec station from 1:20am to 1:50am and at Alton Monitoring station from 1:50am to 2:50am. TRS exceedances were recorded from the Lime Kiln stack however these only started from 2:00am, after the recorded exceedances, with very little activity before then. It is suspected that the TRS emissions may have originated from the Biological Treatment Plant as an odour was observed from here later in the morning. The Biological Treatment Plant was bypassed for a few hours to allow the biological cultures to recuperate.* | | | | | | |
| 61 | *Mondi: 30 May 2019: Brendan Crawford responded. As per raw wind data from the eSikhaleni station the areas highlighted below would have been favourable from Mondi. Wind speeds were moderate with some areas of inactivity. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. There were no upset conditions at the time. Effluent pH was steady with very low H2S emissions being recorded at the Effluent Plant stack. The Flare was not in use. Wind conditions immediately prior to the exceedances were favourable from Mondi however there is no indication as to what the root cause of the odour may have been.* | | | | | | |
| 62 | *Mondi: 31 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. It must be noted that wind speeds were mostly low resulting high variability of wind direction. There were TRS exceedances recorded at Mondi's Portable (UVS) monitoring station between 3:50am and 4:10am. The mill experienced an external power outage on the 26th July 2019 which resulted in the shutdown of most of the plant. During start-up we encountered issues on Paper machine 41 throughout the weekend which created a process imbalance in the mill. As a result, most of the plant, including the Lime Kiln, was shut down. Diversion of NCG gases to the Flare was required during this time. With the Digester and Evaps plants offline, the volume of gases decreased thus reducing the energy (fuel) to the flare. With the supply of fuel lower, the flare could not reach the desired set point temperature in the combustion chamber. The air dampers therefore reacted by closing to maintain the temperature and resulted in high TRS emissions. An odour complaint was logged in relation to this on 28th July 2019 and feedback was given by Mondi.* | | | | | | |
| 63 | *Mondi: 31 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were no TRS exceedances recorded at Mondi's monitoring stations. The mill experienced an external power outage on the 26th July 2019 which resulted in the shutdown of most of the plant. During start-up we encountered issues on Paper machine 41 throughout the weekend which created a process imbalance in the mill. As a result, most of the plant, including the Lime Kiln, was shut down. Diversion of NCG gases to the Flare was required during this time. The mill was in start-up mode during this time with NCG gases still being burned in the Flare. While Flare TRS emissions had been brought under control, the Flare is not as efficient as the Lime Kiln at combustion of NCG and would have likely resulted in the exceedances.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| 64 | *Mondi: 5 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 246 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 22:20pm to 23:00pm. A fault with the steam diaphragm valve to the Lime Kiln necessitated the switching of Softwood NCG gases to the Flare. Just before the exceedance the SW gases tripped out of the Flare and switched to the Incinerator. This contributed towards the exceedances. The steam diaphragm valve was replaced the following morning when the part arrived from Durban and the SW NCG gases were switched back into the Lime Kiln.* | | | | | | |
| 64 | *Mondi: 31 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were no TRS exceedances recorded at Mondi's monitoring stations. The mill experienced an external power outage on the 26th July 2019 which resulted in the shutdown of most of the plant. During start-up we encountered issues on Paper machine 41 throughout the weekend which created a process imbalance in the mill. As a result, most of the plant, including the Lime Kiln, was shut down. Diversion of NCG gases to the Flare was required during this time. With the Digester and Evaps plants offline, the volume of gases decreased thus reducing the energy (fuel) to the flare. With the supply of fuel lower, the flare could not reach the desired set point temperature in the combustion chamber. The air dampers therefore reacted by closing to maintain the temperature and resulted in high TRS emissions. An odour complaint was logged in relation to this and feedback was given by Mondi.* | | | | | | |
| 65 | *Mondi: 5 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 247 degrees with low to moderate wind speeds. There were no TRS exceedances recorded at any of Mondi's ambient monitoring stations, however there were increases noted at Hytec station from 22:50pm to 23:20pm. There were no exceedances against the AEL limits, the Flare and Incinerator were not in use, Effluent pH was steady and very low H2S emissions were recorded on the Effluent stack analyser. In the absence of a clear source and with the wind direction favourable from Mondi it can only be assumed that one of Mondi's fugitive emissions was responsible for the exceedances.* | | | | | | |
| 66 | *Mondi: 5 April 2019: Brendan Crawford responded. For the exceedance at 02:30am: During the time of the exceedance the average wind direction measured at CBD station was 274 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 02:10am to 02:50am. During the exceedances, the Demin plant was undergoing an anion regen. The build-up in the Demin Buffer Tank resulted in the overflow of alkaline effluent into the sewer. The pH shock resulted in the increase in H2S emissions from effluent which was recorded on the Effluent Stack analyser. The low capacity of the Demin Buffer Tank has been identified as a bottleneck and CAPEX is being prepared to increase the capacity of this tank. For the exceedances from 08:00 to 08:10am: During the time of the exceedance the average wind direction measured at CBD station was 232 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 07:10am to 08:50am. During the exceedances it was noted that the Lime Kiln TRS emissions had started to increase. This was rectified by adjusting the operating conditions of the Lime Kiln.* | | | | | | |
| 67 | *Mondi: 5 April 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: During the time of the exceedances the average wind direction measured at CBD station was 270 degrees with low wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 14 March 2019 22:40pm to 15 March 2019 04:20am. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019.*<br>*Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |
| 68 | *Mondi: 5 May 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 241 degrees with low to medium wind speeds. There were no TRS exceedances recorded at Mondi's ambient monitoring stations before or after the exceedances. Shortly prior to the exceedances the Demin plant was undergoing a cation regen. The build-up in the Demin Buffer Tank resulted in the overflow of acidic effluent into the sewer. The pH shock resulted in the increase in H2S emissions from effluent which was recorded on the Effluent Stack analyser. The low capacity of the Demin Buffer Tank has been identified as a bottleneck and CAPEX is being prepared to increase the capacity of this tank.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| 69 | *Mondi: 5 May 2019: Brendan Crawford responded. During the time of the exceedances the wind direction measured at CBD station was 259 degrees with medium wind speeds. There were intermittent TRS exceedances recorded at Mondi's Alton monitoring stations between 00:00am and 5:00am and at Hytec station between 7:40am and 8:20am. The mill was in start-up condition following the Annual Shut. At the time CNCG gases were being generated and combusted in the Flare as the Lime Kiln was still shut. While the Flare burner temperature was being maintained automatically, the Flare stack temperature, which requires Operator intervention, was dipping below the optimum temperature range. This resulted in the increase in TRS emissions from the Flare and would result in odour complaints the same day. A checklist was developed for the rest of the start up to improve temperature monitoring in the Flare. Tie-ins were installed during the shut for the fitment of damper actuators in June 2019. The new actuators will improve temperature control in the Flare by making automatic adjustments to the damper.* | | | | | | |
| 70 | *Mondi: 5 May 2019: Brendan Crawford responded. During the time of the exceedances the wind direction measured at CBD station was 267 degrees with high wind speeds. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however there was a very slight increase noted at the Alton monitoring station between 22:00pm and 22:20pm. The mill was in start-up condition following the Annual Shut. At the time CNCG gases were being generated and combusted in the Flare as the Lime Kiln was still shut. While the Flare burner temperature was being maintained automatically, the Flare stack temperature, which requires Operator intervention, was dipping below the optimum temperature range. This resulted in the increase in TRS emissions from the Flare and would later result in odour complaints the following day. A checklist was developed for the rest of the start up to improve temperature monitoring in the Flare. Tie-ins were installed during the shut for the fitment of damper actuators in June 2019. The new actuators will improve temperature control in the Flare by making automatic adjustments to the damper.* | | | | | | |
| 71 | *Mondi: 5 May 2019: Brendan Crawford responded. Morning exceedances: During the time of the exceedances the average wind direction measured at CBD station was 227 degrees with mid to high wind speeds. There were no TRS exceedances or increases recorded at Mondi's ambient monitoring stations before or after the exceedances. At the time of the exceedances the mill was starting up from the Annual Shut which entailed some draining of equipment to effluent. The impact to the effluent was noticeable in the Sulphidity trend. The combination of high sulphidity and hot effluent would have increased H2S emissions.*<br>*Night-time exceedances: During the time of the exceedances the average wind direction measured at CBD station was 232 degrees with low to high wind speeds. There were no TRS exceedances recorded at Mondi's ambient monitoring stations, however there was a slight increase noted at the Landfill station at 13:00pm. Although equipment draining had impacted on the effluent sulphidity in the morning this had reduced to almost negligible by 8:00am. No other sources could be found however the increase noted at the Landfill station would suggest that Mondi was an odour source close to this time, most likely because of an unidentified fugitive emission.* | | | | | | |
| 72 | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 244 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 19:50pm to 20:40pm and 21:20pm to 21:50pm. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019.*<br>*Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |
| 73 | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 264 degrees with low wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 14 March 2019 22:40pm to 15 March 2019 04:20am. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019.*<br>*Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| 74 | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 271 degrees with low wind speeds. There were TRS exceedances recorded at Mondi's Alton ambient monitoring station periodically from 01:00am to 06:10am. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019. Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |
| 75 | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 239 degrees with high wind speeds. There were no TRS exceedances or increases recorded at any of Mondi's ambient monitoring stations. The mill at the time was in the middle of the planned annual shut which had been communicated to the authorities and stakeholders. The only plant still in operation at the time was the Effluent Plant. The flow from the Effluent Plant was at minimum however the emergency ponds were at maximum level coming out of a planned shut on the Mhalthuze Water Effluent to Sea line. The wind direction at the time of the exceedances carried several times between 213 and 265 degrees. It may be possible that Mondi's Effluent Plant contributed towards these exceedances but considering the varied wind conditions other contributors should be considered.* | | | | | | |
| 76 | *Mondi: 6 June 2019: Brendan Crawford responded. As per raw wind data from the eSikhaleni station the areas highlighted are times when wind direction and speed were favourable from Mondi. There were TRS exceedances recorded at Mondi's Alton monitoring station between 3:30am and 9:22am. One exceedance had been recorded at Hytec station although TRS had been on the increase from 9:25am. UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. With regards to the Alton exceedances in the morning; in preparation for a cationic Demin regen the buffer tank was slowly drained to effluent to create capacity for the Demin regen effluent to not create an overflow. During the draining activity it seems that a pH shock might have unintentionally been created as the ambient TRS at Alton station, which is closest to Effluent Plant, started to increase with draining activity. Once this had been noted the draining activity was ceased. Based on the prevalent wind conditions and its impact on Easterly and North-Easterly based monitoring stations at the time the Mondi incident could not have contributed to the exceedance at 7:10am at eSikhaleni. Between 14:00pm and 17:15pm the Lime Kiln was taken offline to repair a drive chain on the crusher which had slipped off. The NCG gases were diverted to the Flare during this time which is a less efficient burner of NCG.*<br>*Based on the switch to favourable wind conditions and a confirmed odour source Mondi was a contributor to the exceedances from 19:40pm onwards.* | | | | | | |
| 77 | *Mondi: 6 June 2019: Brendan Crawford responded. As per raw wind data from the eSikhaleni station the wind directions before, during and after the exceedances were not favourable from Mondi. At approximately 17:15pm there was a distinct drop in the wind speed to zero and thereafter wind speeds were almost negligible. This corresponds with the start of the exceedances. There was one exceedance of the RBCAA limit recorded at Mondi's Alton monitoring stations at 17:00pm, however Mondi was downwind at the time and could not have been the source. UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. Mondi had no upset conditions at the time. Effluent stack emissions were very low, and the Flare was not in use. Based on the prevalent wind conditions it is unlikely that Mondi would have been a contributor. With the drop in wind speed it is very likely that the exceedances were caused by a source close to the station.* | | | | | | |
| 78 | *Mondi: 6 March 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 269 degrees with low wind speeds. This is favourable for Mondi as a possible source. There were TRS exceedances recorded Mondi's Hytec ambient monitoring station between 22:20pm and 23:00pm. At the time of the exceedances the Lime Kiln was shut resulting in CNCG gases being diverted to the Flare and Incinerator. Both the Flare and Incinerator experienced several trips due to build-up of condensate in the CNCG system. Each time the Flare or Incinerator tripped the gases were vented through the carbon filters which resulted in odorous emissions. The condensate was eventually drained from the CNCG system resulting in improved stability on the Flare and Incinerator.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| 79 | *Mondi: 6 March 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 275 degrees with low wind speeds. This is favourable for Mondi as a possible source. There were TRS exceedances recorded Mondi's Hytec ambient monitoring station between 00:50am and 01:30am. During the exceedances, the Demin plant was undergoing a cation regen. The build-up in the Demin Buffer Tank resulted in the overflow of acidic effluent into the sewer. The pH shock resulted in the increase in H2S emissions from effluent which was recorded on the Effluent Stack analyser. The low capacity of the Demin Buffer Tank has been identified as a bottleneck and CAPEX is being prepared to increase the capacity of this tank.* | | | | | | |
| 80 | *Mondi: 7 January 2020: Candice Webb responded. During the time of the exceedances the average wind direction was 38 degrees with very low wind speeds. There were TRS exceedances recorded at Mondi's Alton ambient monitoring station between 4:10am and 4:30am. There were no mill upsets. The Flare was not in use. There was a very short increase in H2S emissions from the effluent stack at 3:30am due to a Demin regen. Based on the above it is possible that Mondi was the source of the odour.* | | | | | | |
| 81 | *Mondi: 7 January 2020: Candice Webb responded. During the time of the exceedances the wind direction was 84 degrees with very low wind speeds. There were no mill upsets. However, based on the above and fugitive emissions it is possible that Mondi was the source of the odour.* | | | | | | |
| 82 | *Mondi: 7 January 2020: Candice Webb responded. The average wind direction measured at eSikhaleni station was 132 degrees with very low wind speeds. However, at the time of the exceedance wind direction was 53 degrees which is favourable from Mondi. At 1:30am the Demin plant had just completed a cation regen. At the time, the buffer tank was full which resulted in acidic effluent entering the sewer, creating a pH shock, and increasing H2S emissions from effluent. It is possible that Mondi contributed to the exceedances.* | | | | | | |
| 83 | *Mondi: 7 January 2020: Candice Webb responded. Wind conditions highlighted below were favourable from Mondi. Mondi has been unable to identify root cause, however based on wind direction and fugitive emissions it is possible Mondi contributed to the odour.* | | | | | | |
| 84 | *Mondi: 7 January 2020: Candice Webb responded. Wind direction at the time of the exceedance was favourable from Mondi. Mondi identified odour at the effluent plant due to poor quality condensate as the root cause of the exceedance. A plan has been developed to address this source of odour.* | | | | | | |
| 85 | *Mondi: 7 January 2020: Candice Webb responded. Wind direction prior to the exceedance was favourable from Mondi during the period investigated. There were no TRS exceedances recorded at Mondi's monitoring stations. There were no upsets or abnormal conditions at the mill during the time of the exceedances. However, it is possible that fugitive emissions contributed to the odour.* | | | | | | |
| 86 | *Mondi: 8 November 2019: Brendan Crawford responded. Wind direction was not favourable from Mondi although it must be noted that wind speeds were very low. There were no TRS exceedances recorded at Mondi's monitoring stations. A maintenance issue on the Lime Kiln require Non-condensable gases to be switched to the Flare at 5:30am. It is possible that emissions from the Flare may have contributed toward the exceedances.* | | | | | | |
| 87 | *Mondi: 9 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This compares favourably with most of the exceedances. TRS exceedances were recorded at all of Mondi's monitoring stations throughout, Hytec and Alton. Mondi's effluent plant was identified as the source of the odorous emissions. Actions were taken to reduce the odorous impact of the Effluent Plant.* | | | | | | |
| 88 | *Mondi: 9 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This compares favourably with most of the exceedances. TRS exceedances were recorded at all of Mondi's monitoring stations throughout, Hytec and Alton. Mondi had commenced a planned shut down as communicated to relevant authorities and stakeholders. All point source emissions were within AEL limits and there were no upset conditions recorded. It can be assumed that background odour emissions may have increased due to shut down activities.* | | | | | | |
| 90 | *Mondi: Night-time exceedances (23:30pm to 23:50pm). Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Hytec monitoring station between 21:30pm to 22:40pm. Before the exceedances, a cation Demin regen had taken place. The volume of acidic effluent generated exceeded the capacity available in the buffer tank and overflowed into the alkaline sewer. The pH shock resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| 91 | *Mondi: Night-time exceedances. During the time of the exceedances the average wind direction measured at eSikhaleni station was 42 degrees with very low wind speeds. This is favourable from Mondi.<br>There were TRS exceedances recorded at Mondi's Portable ambient monitoring station between 6:00am and 7:10am. After start-up it was found that a design flaw introduced during the Annual Shut was resulting in the Evaps plant backing up and caused the venting of NCG gas to the atmosphere. The engineering contractor appointed by Mondi for the Annual Shut accepted responsibility for the design flaw. Venting from this plant started at 5:00am. A hot tap was conducted on the plant on the 2nd May 2019 which prevented the venting of NCG gas from the plant. The design flaw was corrected during a short shut on the 22nd May 2019.* | | | | | | |

*Table: G2: OME 10-minute TRS health standard (9.3 ppb)*

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/02/12 22:30 | 16 | 295 | 1.4 | Mondi | Mondi Flare | 78 |
| CBD | 2019/02/12 22:40 | 21 | 307 | 1.0 | Mondi | Mondi Flare | 78 |
| CBD | 2019/02/12 22:50 | 19 | 303 | 1.0 | Mondi | Mondi Flare | 78 |
| CBD | 2019/02/12 23:00 | 11 | 307 | 1.5 | Mondi | Mondi Flare | 78 |
| CBD | 2019/03/14 23:50 | 16 | 286 | 1.2 | Mondi | Biological treatment plant | 67 |
| CBD | 2019/03/15 00:00 | 34 | 263 | 1.4 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 00:10 | 67 | 256 | 1.0 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 00:20 | 89 | 297 | 1.0 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 00:30 | 85 | 279 | 1.5 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 00:40 | 37 | 259 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 00:50 | 17 | 242 | 1.7 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:00 | 15 | 240 | 1.3 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:10 | 23 | 249 | 1.5 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:20 | 22 | 256 | 1.4 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:30 | 37 | 244 | 1.8 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:40 | 41 | 241 | 1.6 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:50 | 31 | 242 | 1.3 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:00 | 20 | 250 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:10 | 27 | 274 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:20 | 25 | 239 | 0.5 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:30 | 22 | 273 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:40 | 22 | 260 | 0.7 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:50 | 32 | 245 | 1.5 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:00 | 29 | 240 | 2.2 | Mondi | Biological treatment plant | 73 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/03/15 03:10 | 15 | 245 | 1.9 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:20 | 15 | 237 | 1.1 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:30 | 14 | 249 | 2.0 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:40 | 22 | 293 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:50 | 21 | 273 | 0.8 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 04:00 | 20 | 302 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/18 20:40 | 14 | 269 | 3.2 | Mondi | Biological treatment plant | 72 |
| CBD | 2019/03/18 21:20 | 11 | 200 | 2.1 | Mondi | Biological treatment plant | 72 |
| CBD | 2019/03/19 01:10 | 15 | 255 | 1.6 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 01:20 | 10 | 299 | 1.2 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 01:30 | 14 | 289 | 1.3 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 07:10 | 20 | 243 | 2.5 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 07:20 | 65 | 242 | 2.7 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 07:30 | 33 | 253 | 3.0 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/04/10 07:40 | 13 | 277 | 2.8 | Mondi | Flare | 69 |
| CBD | 2019/04/10 07:50 | 21 | 278 | 2.0 | Mondi | Flare | 69 |
| CBD | 2019/04/10 08:00 | 26 | 261 | 2.5 | Mondi | Flare | 69 |
| CBD | 2019/07/10 22:20 | 12 | 249 | 3.5 | Mondi | Effluent Plant | 19 |
| CBD | 2019/07/10 22:30 | 13 | 246 | 3.3 | Mondi | Effluent Plant | 19 |
| CBD | 2019/07/10 22:40 | 12 | 245 | 3.1 | Mondi | Effluent Plant | 19 |
| CBD | 2019/07/12 07:20 | 12 | 260 | 3.5 | Mondi | Lime Kiln | 22 |
| CBD | 2019/07/12 07:30 | 16 | 261 | 3.6 | Mondi | Lime Kiln | 22 |
| CBD | 2019/07/12 07:40 | 11 | 260 | 3.5 | Mondi | Lime Kiln | 22 |
| CBD | 2019/07/12 20:40 | 11 | 250 | 3.5 | Mondi | Lime Kiln | 21 |
| CBD | 2019/07/12 20:50 | 10 | 243 | 3.5 | Mondi | Lime Kiln | 21 |
| CBD | 2019/07/16 06:20 | 12 | 256 | 2.3 | Mondi | Effluent Plant | 37 |
| CBD | 2019/07/16 06:30 | 14 | 271 | 1.6 | Mondi | Effluent Plant | 37 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/07/16 06:40 | 11 | 293 | 1.7 | Mondi | Effluent Plant | 37 |
| CBD | 2019/07/19 20:00 | 10 | 220 | 5.1 | Mondi | Effluent Plant | 38 |
| CBD | 2019/08/04 04:00 | 10 | 254 | 4.0 | Mondi | Effluent Plant | 2 |
| CBD | 2019/08/04 04:20 | 10 | 250 | 2.9 | Mondi | Effluent Plant | 2 |
| CBD | 2019/08/05 07:10 | 12 | 258 | 2.2 | Mondi | Effluent Plant | 48 |
| CBD | 2019/08/13 05:10 | 9 | 261 | 2.6 | Mondi | Effluent Plant | 46 |
| CBD | 2019/08/15 00:20 | 11 | 251 | 4.4 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 00:40 | 13 | 254 | 3.9 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 01:50 | 12 | 238 | 2.5 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 02:00 | 12 | 245 | 1.8 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/25 19:50 | 14 | 244 | 1.7 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:00 | 11 | 266 | 1.1 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:20 | 13 | 299 | 1.0 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:30 | 16 | 348 | 0.4 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:40 | 15 | 40 | 0.3 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:50 | 12 | 40 | 0.5 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/26 00:30 | 11 | 255 | 3.6 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 00:40 | 13 | 256 | 4.2 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 00:50 | 10 | 263 | 3.2 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 22:30 | 10 | 263 | 3.3 | Mondi | Fugitive emission | 53 |
| CBD | 2019/09/05 02:30 | 11 | 261 | 1.6 | Mondi | Effluent Plant | 87 |
| CBD | 2019/09/05 02:40 | 14 | 270 | 1.6 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 02:50 | 12 | 277 | 1.5 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 03:00 | 11 | 264 | 1.4 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 04:30 | 11 | 246 | 1.7 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 04:40 | 12 | 246 | 1.8 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 05:20 | 14 | 259 | 1.6 | Mondi | Effluent Plant | 89 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/09/05 05:30 | 15 | 278 | 1.1 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 05:40 | 10 | 302 | 1.1 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 07:30 | 16 | 277 | 1.5 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 07:40 | 24 | 265 | 2.5 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 07:50 | 11 | 252 | 2.7 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/14 03:50 | 10 | 247 | 3.1 | Mondi | Flare | 29 |
| CBD | 2019/09/14 04:00 | 10 | 241 | 3.0 | Mondi | Flare | 29 |
| CBD | 2019/11/09 03:00 | 13 | 290 | 2.7 | Mondi | Effluent Plant | 32 |
| CBD | 2019/11/10 07:40 | 12 | 12 | 2.0 | Mondi | Fugitive emission | 85 |
| CBD | 2019/12/28 03:30 | 10 | 294 | 4.2 | Mondi | Effluent plant - poor quality condensate | 84 |
| CBD | 2019/12/28 03:40 | 11 | 294 | 4.7 | Mondi | Effluent plant - poor quality condensate | 84 |
| CBD | 2019/12/28 03:50 | 15 | 292 | 5.2 | Mondi | Effluent plant - poor quality condensate | 84 |
| eSikhaleni | 2019/04/24 03:20 | 13 | 99 | 0.3 | Mondi | Design flaw introduced during annual shut. | 42 |
| eSikhaleni | 2019/04/24 03:30 | 12 | 67 | 0.2 | Mondi | Design flaw introduced during annual shut. | 42 |
| eSikhaleni | 2019/05/03 04:50 | 14 | 64 | 1.6 | Mondi | Fugitive emission | 41 |
| eSikhaleni | 2019/05/03 05:00 | 16 | 63 | 1.4 | Mondi | Fugitive emission | 41 |
| eSikhaleni | 2019/05/03 05:10 | 17 | 66 | 1.5 | Mondi | Fugitive emission | 41 |
| eSikhaleni | 2019/05/03 05:20 | 13 | 68 | 1.9 | Mondi | Fugitive emission | 41 |
| eSikhaleni | 2019/05/06 23:40 | 21 | 330 | 0.1 | Mondi | Effluent plant | 6 |
| eSikhaleni | 2019/05/06 23:50 | 11 | 330 | 0.0 | Mondi | Effluent plant | 6 |
| eSikhaleni | 2019/05/07 00:20 | 12 | 325 | 0.1 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 00:30 | 12 | 335 | 0.0 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 00:40 | 11 | 332 | 0.0 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 06:20 | 22 | 42 | 0.8 | Mondi | Flare | 54 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/05/07 06:30 | 35 | 43 | 1.0 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 06:40 | 15 | 69 | 0.8 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 06:50 | 10 | 65 | 0.8 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/13 05:20 | 10 | 48 | 1.5 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 07:00 | 20 | 65 | 2.0 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 07:10 | 11 | 49 | 2.0 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 07:20 | 19 | 46 | 1.9 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 07:30 | 31 | 34 | 1.4 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/16 04:20 | 11 | 44 | 0.3 | Mondi | Effluent plant | 82 |
| eSikhaleni | 2019/05/16 04:30 | 15 | 46 | 0.5 | Mondi | Effluent plant | 82 |
| eSikhaleni | 2019/05/16 04:40 | 10 | 49 | 0.2 | Mondi | Effluent plant | 82 |
| eSikhaleni | 2019/05/17 05:20 | 11 | 46 | 0.3 | Mondi | Effluent plant | 80 |
| eSikhaleni | 2019/05/17 05:30 | 10 | 52 | 0.0 | Mondi | Effluent plant | 80 |
| eSikhaleni | 2019/05/17 06:00 | 11 | 19 | 0.0 | Mondi | Effluent plant | 80 |
| eSikhaleni | 2019/05/18 01:40 | 11 | 87 | 1.1 | Mondi | Fugitive emission | 81 |
| eSikhaleni | 2019/05/20 04:10 | 14 | 80 | 1.6 | Mondi | Effluent plant | 57 |
| eSikhaleni | 2019/05/20 04:20 | 11 | 81 | 2.0 | Mondi | Effluent plant | 57 |
| eSikhaleni | 2019/05/20 04:30 | 12 | 78 | 2.2 | Mondi | Effluent plant | 57 |
| eSikhaleni | 2019/05/20 04:40 | 11 | 78 | 2.2 | Mondi | Effluent plant | 57 |
| eSikhaleni | 2019/05/25 02:40 | 10 | 54 | 0.8 | Mondi | Fugitive emission | 61 |
| eSikhaleni | 2019/06/03 21:00 | 11 | 39 | 0.8 | Mondi | Flare | 76 |
| eSikhaleni | 2019/06/03 21:10 | 13 | 52 | 0.7 | Mondi | Flare | 76 |
| eSikhaleni | 2019/06/03 21:20 | 13 | 48 | 1.0 | Mondi | Flare | 76 |
| eSikhaleni | 2019/06/03 21:30 | 14 | 41 | 0.9 | Mondi | Flare | 76 |
| eSikhaleni | 2019/06/03 21:40 | 13 | 21 | 1.0 | Mondi | Flare | 76 |
| eSikhaleni | 2019/06/04 00:50 | 11 | 28 | 1.8 | Mondi | Fugitive emission | 14 |
| eSikhaleni | 2019/06/04 03:40 | 12 | 37 | 1.1 | Mondi | Fugitive emission | 14 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/06/04 03:50 | 12 | 82 | 1.2 | Mondi | Fugitive emission | 14 |
| eSikhaleni | 2019/06/28 20:10 | 12 | 68 | 1.5 | Mondi | Effluent Plant | 25 |
| eSikhaleni | 2019/06/29 21:40 | 39 | 50 | 1.3 | Mondi | Effluent Plant | 26 |
| eSikhaleni | 2019/06/29 21:50 | 78 | 8 | 1.2 | Mondi | Effluent Plant | 26 |
| eSikhaleni | 2019/06/29 22:00 | 43 | 24 | 0.6 | Mondi | Effluent Plant | 26 |
| eSikhaleni | 2019/06/29 22:10 | 30 | 68 | 0.2 | Mondi | Effluent Plant | 26 |
| eSikhaleni | 2019/06/29 22:20 | 23 | 50 | 0.3 | Mondi | Effluent Plant | 26 |
| eSikhaleni | 2019/06/30 04:40 | 12 | 20 | 4.0 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 04:50 | 13 | 21 | 3.2 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 05:20 | 13 | 26 | 2.2 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 05:30 | 13 | 34 | 1.9 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 05:50 | 10 | 38 | 2.5 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 06:20 | 11 | 41 | 1.7 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 06:30 | 16 | 70 | 2.1 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 06:40 | 18 | 62 | 1.6 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 06:50 | 11 | 92 | 1.3 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:10 | 14 | 58 | 1.8 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:20 | 19 | 71 | 1.9 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:30 | 14 | 71 | 2.0 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:40 | 13 | 79 | 1.5 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:50 | 70 | 68 | 1.4 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 08:00 | 56 | 71 | 1.6 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 08:10 | 30 | 57 | 1.1 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 08:20 | 12 | 33 | 1.2 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 09:40 | 14 | 51 | 2.2 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/07/03 00:20 | 32 | 23 | 2.4 | Mondi | Lime Kiln | 11 |
| eSikhaleni | 2019/07/03 00:30 | 21 | 18 | 2.7 | Mondi | Lime Kiln | 11 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/04 04:00 | 19 | 83 | 0.9 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:10 | 18 | 75 | 1.0 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:20 | 12 | 86 | 1.0 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:30 | 10 | 95 | 1.1 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:40 | 10 | 76 | 1.4 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:50 | 10 | 53 | 1.5 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 05:00 | 10 | 31 | 2.1 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 05:10 | 10 | 25 | 2.2 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/08 20:20 | 13 | 41 | 0.6 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 20:30 | 13 | 81 | 0.5 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 20:40 | 12 | 81 | 0.5 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 20:50 | 12 | 79 | 0.8 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 21:00 | 12 | 74 | 0.6 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/10 05:00 | 9 | 60 | 0.9 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/10 09:00 | 10 | 17 | 1.6 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/12 00:20 | 11 | 23 | 2.6 | Mondi | Lime Kiln | 22 |
| eSikhaleni | 2019/07/12 00:50 | 10 | 205 | 1.1 | Mondi | Lime Kiln | 22 |
| eSikhaleni | 2019/07/16 02:40 | 17 | 63 | 1.8 | Mondi | Effluent Plant | 36 |
| eSikhaleni | 2019/07/16 02:50 | 14 | 16 | 1.7 | Mondi | Effluent Plant | 36 |
| eSikhaleni | 2019/07/18 02:10 | 10 | 97 | 0.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 02:20 | 13 | 48 | 1.3 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 02:30 | 10 | 9 | 1.3 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 07:10 | 10 | 70 | 0.4 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 20:30 | 12 | 66 | 1.2 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 21:50 | 11 | 36 | 1.8 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:00 | 15 | 68 | 0.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:10 | 20 | 45 | 1.4 | Mondi | Effluent Plant | 35 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/18 22:20 | 20 | 84 | 1.6 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:30 | 13 | 81 | 1.6 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:40 | 10 | 72 | 1.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 23:30 | 12 | 70 | 1.8 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 23:40 | 20 | 44 | 2.1 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 23:50 | 11 | 40 | 1.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/19 00:00 | 10 | 14 | 2.0 | Mondi | Lime Kiln | 39 |
| eSikhaleni | 2019/07/19 01:30 | 10 | 26 | 2.2 | Mondi | Lime Kiln | 39 |
| eSikhaleni | 2019/07/19 02:00 | 10 | 14 | 2.0 | Mondi | Lime Kiln | 39 |
| eSikhaleni | 2019/07/22 22:50 | 11 | 31 | 2.3 | Mondi | Fugitive emission | 40 |
| eSikhaleni | 2019/07/22 23:00 | 16 | 30 | 2.6 | Mondi | Fugitive emission | 40 |
| eSikhaleni | 2019/07/27 05:00 | 21 | 37 | 1.3 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 05:10 | 37 | 49 | 0.9 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 05:20 | 24 | 49 | 1.0 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 05:30 | 35 | 46 | 1.3 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 05:40 | 25 | 45 | 1.3 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 05:50 | 10 | 55 | 1.1 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 06:10 | 10 | 65 | 0.5 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 06:20 | 11 | 73 | 0.6 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 06:30 | 12 | 57 | 0.8 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 08:10 | 12 | 67 | 1.0 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/29 04:50 | 10 | 45 | 1.5 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 05:00 | 10 | 43 | 1.8 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 08:20 | 11 | 43 | 1.7 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 08:30 | 12 | 50 | 1.9 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 08:40 | 11 | 47 | 2.0 | Mondi | Flare | 63 |
| eSikhaleni | 2019/08/04 07:50 | 10 | 20 | 0.9 | Mondi | Effluent Plant | 5 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/08/06 22:20 | 31 | 89 | 0.1 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 22:30 | 27 | 119 | 0.0 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 22:40 | 24 | 73 | 0.0 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 22:50 | 20 | 69 | 0.1 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 23:30 | 10 | 12 | 0.2 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/07 21:20 | 11 | 23 | 3.2 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/07 22:10 | 10 | 16 | 3.9 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/07 22:20 | 10 | 4 | 3.2 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/07 22:30 | 10 | 356 | 2.5 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/08 01:10 | 13 | 12 | 2.4 | Mondi | Effluent Plant | 50 |
| eSikhaleni | 2019/08/08 01:20 | 12 | 7 | 2.1 | Mondi | Effluent Plant | 50 |
| eSikhaleni | 2019/08/08 01:30 | 11 | 18 | 1.6 | Mondi | Effluent Plant | 50 |
| eSikhaleni | 2019/11/17 05:00 | 16 | 323 | 0.2 | Mondi | Start-up fugitive | 34 |
| eSikhaleni | 2019/11/17 05:10 | 18 | 263 | 0.2 | Mondi | Start-up fugitive | 34 |
| eSikhaleni | 2019/11/17 05:20 | 18 | 23 | 0.6 | Mondi | Start-up fugitive | 34 |
| eSikhaleni | 2019/11/17 05:30 | 13 | 54 | 0.3 | Mondi | Start-up fugitive | 34 |
| eSikhaleni | 2019/11/27 01:30 | 13 | 34 | 0.7 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 01:40 | 15 | 24 | 0.9 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 01:50 | 13 | 46 | 1.0 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:00 | 19 | 70 | 1.2 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:10 | 37 | 67 | 1.2 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:20 | 27 | 47 | 1.3 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:30 | 19 | 42 | 1.4 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:40 | 12 | 47 | 1.5 | Mondi | Effluent plant | 84 |

| ***Response #*** | ***Response*** |
|---|---|
| *1* | *Not required at this time.* |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| 2 | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with all the exceedances recorded. There were TRS exceedances recorded at Mondi's: • Hytec monitoring station between 23:37pm and 1:30am. • Hytec monitoring station between 2:30am to 3:30am and 4:50am to 5:40am. Increased H2S emissions had been detected at the Effluent Plant stack at the time. Upon investigation now tank overflows had occurred and, although a Demin Regen had been conducted, Effluent pH was stable and does not correlate with the initial exceedances.* | | | | | | |
| 3 | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were TRS exceedances recorded at Mondi's Landfill monitoring stations between 21:20pm and 22:00pm. At 0:00am a Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack.*<br>*The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* | | | | | | |
| 4 | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. Wind speeds increased from 2 m/s to 7 m/s over this period. There were TRS exceedances recorded at Mondi's Hytec monitoring station between 4:50am and 7:00am. Odour checks were conducted, and a minor leak was detected on the NCG line. The leak was temporarily wrapped and planned for repair during the next opportunity shut.* | | | | | | |
| 5 | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with the last exceedance recorded. There were TRS exceedances recorded at Mondi's Alton monitoring station between 4:50am to 7:00am. Increased H2S emissions had been detected at the Effluent Plant stack at the time. Upon investigation no tank overflows had occurred and, although a Demin Regen had been conducted, Effluent pH was stable and does not correlate with the initial exceedances.* | | | | | | |
| 6 | *Mondi: 07 January 2020 Candice Webb responded. The wind direction measured at eSikhaleni station was 330 degrees with low wind speeds. This is favourable from Mondi. There were TRS exceedances from Mondi's Alton ambient monitoring station between 22:50pm and 00:40am which indicate that Mondi's effluent plant may have been a contributor to the odour.* | | | | | | |
| 7 | *Mondi: 10 July 2019: Brendan Crawford responded. Morning exceedances (7:40am to 8:40am). Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Alton monitoring station between 6:40am to 8:40am and at Hytec station between 6:30am to 8:50am. There were no upsets or abnormal activities taking place in the mill. All stack emissions were within AEL limits and the Flare was not in use. There were no increased emissions from the Effluent Plant. Based on favourable wind direction it is likely that an unidentified fugitive emission from the mill was the cause for the exceedances.* | | | | | | |
| 8 | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi which is just before the exceedances started to occur. There were TRS exceedances recorded at Mondi's Alton monitoring station between 20:50pm and 23:40pm. Alton station is near the Effluent Plant. In preparation for the Demin regen, the effluent buffer tank was drained to make space. The contents drained were mostly acidic and, when mixed with the alkaline contents of the sewer, created a pH shock, and increased the H2S emissions from the Effluent Plant.* | | | | | | |
| 9 | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of most of the exceedances. There were intermittent TRS exceedances recorded at any of Mondi's Hytec monitoring station, however this station was upwind of Mondi at the time. There was an increase noted at the portable station (UVS), which is between Mondi and eSikhaleni, between 19:10pm and 20:30pm. There were no upsets or abnormal activities taking place in the mill. All stack emissions were within AEL limits and the Flare was not in use. There were no increased emissions from the Effluent Plant. Based on favourable wind direction it is likely that an unidentified fugitive emission from the mill was the cause for the exceedances.* | | | | | | |
| 10 | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of most of the exceedances. There were intermittent TRS exceedances recorded at any of Mondi's Hytec monitoring stations, however this station was upwind of Mondi* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| | *at the time. In preparation for the Demin regen, the effluent buffer tank was drained to make space. The contents drained were mostly acidic and, when mixed with the alkaline contents of the sewer, created a pH shock, and increased the H2S emissions from the Effluent Plant.* | | | | | | |
| *11* | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of the exceedances. There were no TRS exceedances recorded at any of Mondi's monitoring stations. On 2 July 2019, the Lime Kiln had been taken offline for cleaning of the LMCD nozzles which had become blocked. By 22:10pm the Kiln was back online and NCG gases had been diverted back into the Kiln. During start up the Kiln experienced some instability which resulted in increased TRS emissions above the AEL limit. This lasted for less than ten minutes and TRS emissions decreased once the Kiln became stable.* | | | | | | |
| *12* | *Mondi: 11 February 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedance and found the following: During the time of the exceedances the average wind direction measured at Mondi stations was 258 degrees with medium wind speeds (RBCAA web site currently not working). There were no exceedances recorded at any of Mondi's stations however an increase in TRS was noted at the Portable station between 0:20am and 0:40am. The entire mill was shut at this time to accommodate the Mhlathuze Water Effluent Line shut was which was occurring at this time. As such it is unlikely that the exceedances could be attributed to Mondi mill operations. There is a possibility that fugitive emissions could have arisen from the activities occurring at the Mhlathuze Water Effluent Line i.e. unblocking of the line at Air Chamber 1.* | | | | | | |
| *13* | *Mondi: 11 June 2019: Brendan Crawford responded. Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Alton monitoring station between 23:30pm and 0:40am and at Hytec station between 1:30am and 2:10am. All TRS stack emissions were well below the AEL limits and no other odorous events were recorded on the Mondi Odour Dashboard. Given the favourable wind conditions and the confirmation of high TRS from Mondi's own monitoring stations it can only be concluded that an unidentified fugitive emission emanating from Mondi was responsible.* | | | | | | |
| *14* | *Mondi: 11 June 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were no TRS exceedances recorded at any of Mondi's monitoring stations that are online. UVS had been disconnected at the time to allow Mhlathuze Water to conduct urgent pipework at the pump station. All TRS stack emissions were well below the AEL limits. From 1:50am to 2:25am increased H2S emissions were recorded from the Effluent stack resulting from an earlier Demin cation regen. Given that the exceedances started well before these increased emissions and their short duration it is unlikely that this could have been the sole contributor. Given the favourable wind conditions it can only be concluded that an unidentified fugitive emission emanating from Mondi combined with the momentary increased effluent emissions was responsible.* | | | | | | |
| *15* | *Mondi: 13 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. Intermittent TRS exceedances were recorded at all of Mondi's Landfill monitoring against wind direction. The TRS analyser was suspected to be faulty and has been replaced. There were no upset conditions or stack exceedances that may have contributed to an odour event. Mondi is currently updating its odour inventory to determine its current background odour.* | | | | | | |
| *16* | *Mondi: 13 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. Intermittent TRS exceedances were recorded at all of Mondi's Landfill monitoring station between 18:00pm and 22:00pm. Low Lime Mud levels required the unplanned shut down of the Lime Kiln and the diversion of NCG to the Flare and Incinerator at 16:00pm. Lime Kiln was back on line at 20:20pm. Mpact 16 September 2019: Yolande Schoeman responded: Source and Nature of Emissions: The distance from Mpact Felixton Mill to the eSikhaleni monitoring station is ±3.5km , the wind speed during the time of the exceedance was low averaging around 0.4 m/s. The wind direction at the time fluctuated from 257 -328°.North Westerly's winds, i.e. ±315°, are required from Mpact, to reach eSikhaleni station. Based on the wind speed and distance from Mpact to the monitoring station, the Mpact night shift reports were examined from 19H00 to 22h30 on the 6th September 2019. The areas investigated were the wastewater treatment ponds; wastewater treatment plant (WWTP) and the boiler house activities. There was no pond and clarifier cleaning activities occurring at Mpact WWTP that could have impacted the air quality. The boiler house reports, and opacity log sheets show that all the boilers were running steady, with no abnormal events. Compliance with Permit\s: No non-compliances identified. Findings & Recommendations: Mpact is unlikely to be the source of the TRS odour nuisance episodes detected at ESikhaleni the evening of 6 September 2019.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
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| 17 | *Mondi: 14 June 2019: Brendan Crawford responded. Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. It is worth noting that an odour complaint was also received from Veldenvlei during the noted timeframe. There were also TRS exceedances recorded at Mondi's portable monitoring station (Afrox) between 0:40am to 1:40am, 3:00am t0 3:40am and 4:20am to 6:00am. Recovery Boiler 2 had been taken offline for a planned shut. No non-compliances were recorded however TRS emissions from the Lime Kiln did intermittently spike above 10 mg/Nm3 between 6:15am and 7:03am. A density control issue on the WLCD (White Liquor Clari Disc) because of partially blocked chute shower nozzles affected the 1st stage washing and resulted in Soda carryover to the Lime Kiln. This in effect increased the TRS emissions from the Lime Kiln. The WLCD was taken offline and the chute shower nozzles washed. Once the WLCD was put back in service the Lime Kiln TRS emissions started to decrease.* | | | | | | |
| 18 | *Mondi: 15 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of most of the exceedances. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station from 00:30am to 9:40am. The exceedances corresponded with overflows of condensate to the effluent drains which occurred early that morning. Overflows stopped at 6:00am.* | | | | | | |
| 19 | *Mondi: 15 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of the exceedances. There were exceedances recorded at Mondi's Hytec monitoring station throughout. Based on the high TRS recorded at Hytec mill standby personnel were called in to conduct investigations. An overflow of filtrate from the LMCD (Lime Mud Clari Disc) increased the sulphur loading on the effluent. This coincided with a cation regen at the Demin plant which introduced acidic effluent into the system from the buffer tank overflow. The increased sulphur loading combined with the pH shock caused increased H2S emissions from the effluent plant.* | | | | | | |
| 20 | *Mondi: 15 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of the exceedances. There were exceedances recorded at Mondi's Hytec monitoring station until 1:10am and thereafter at the Alton station. The exceedances were caused by the same incident which caused the exceedances on the 10 July 2019, details of which are given below: Based on the high TRS recorded at Hytec mill standby personnel were called in to conduct investigations. An overflow of filtrate from the LMCD (Lime Mud Clari Disc) increased the sulphur loading on the effluent. This coincided with a cation regen at the Demin plant which introduced acidic effluent into the system from the buffer tank overflow. The increased sulphur loading combined with the pH shock caused increased H2S emissions from the effluent plant.* | | | | | | |
| 21 | *Mondi: 16 July 2019: Brendan Crawford responded. Night-time exceedances (20:30pm to 22:10pm): Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were TRS exceedances recorded at Mondi's Hytec monitoring station between 20:00pm to 22:10pm. Although the Lime Kiln stack TRS emissions were below the AEL limit, they were higher than average which may have contributed towards the exceedances.*<br>*Considering these events the Kiln operating temperature is being reviewed by the plant.* | | | | | | |
| 22 | *Mondi: 16 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of some of the exceedances. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station from 20:00pm to 23:10pm on 11 July. Although the Lime Kiln stack TRS emissions were below the AEL limit, they were higher than average which may have contributed towards the exceedances.* | | | | | | |
| 23 | *Mondi: 18 June 2019: Brendan Crawford responded. Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Alton monitoring station between 18:20pm to 20:20pm. At 17:40pm, in preparation for the Demin cation regen, the effluent buffer tank was drained intermittently to create space for the regen effluent. The intermittent draining created pH shocks in the alkaline sewer which started to liberate H2S. This was verified by the increased TRS recorded at Alton (which is close to the Effluent Plant) and the increased H2S emissions recorded at the Effluent Plant stack at the same time.* | | | | | | |
| 24 | *Mondi: 2 July 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: Wind conditions highlighted below were favourable from Mondi. There were no TRS exceedances recorded at any of Mondi's monitoring stations that are online. UVS had been disconnected at the time to allow Mhlathuze Water to conduct urgent pipework at the pump station. A Demin Regen resulted in acidic effluent overflowing from the buffer tank into the* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
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| | *alkaline sewer at 5:15am. The pH shock resulted in increased H2S emissions from effluent. This was confirmed by the Effluent Stack analysers which recorded increased levels of H2S at this time.* | | | | | | |
| *25* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. Between 17:25pm and 18:45pm wind speed was too low for measured wind directions to be reliable. There were no TRS exceedances recorded at any of Mondi's monitoring stations that are online. UVS had been disconnected at the time to allow Mhlathuze Water to conduct urgent pipework at the pump station. A Demin Regen resulted in acidic effluent overflowing from the buffer tank into the alkaline sewer at 17:37pm. The pH shock resulted in increased H2S emissions from effluent. This was confirmed by the Effluent Stack analysers which recorded increased levels of H2S at this time.* | | | | | | |
| *26* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. There were exceedances of the WHO TRS limit of 5ppb recorded at Mondi's Alton monitoring station between 5:40am and 8:10am. It must be noted that the wind was blowing steadily towards the North East at this time and any odour emission from Mondi would have impacted on CBD monitoring station rather than eSikhaleni. A Demin Regen resulted in acidic effluent overflowing from the buffer tank into the alkaline sewer at 4:10am. The pH shock resulted in increased H2S emissions from effluent. This was confirmed by the Effluent Stack analysers which recorded increased levels of H2S at this time.* | | | | | | |
| *27* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. There were no TRS exceedances recorded at any of Mondi's monitoring stations. All stack emissions were below the AEL limits and there were no incidents or abnormal plant conditions that may have contributed toward odour exceedances. Due to an odour complaint that had been received on this day, in depth odour investigations were conducted in the mill and could not establish any odour source.* | | | | | | |
| *28* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind direction before 17:00pm averaged 100 degrees which does not favour Mondi. After 17:00pm wind speeds dropped below 1 m/s which is not ideal for measuring wind direction. There were no TRS exceedances recorded at any of Mondi's monitoring stations. All stack emissions were below the AEL limits and there were no incidents or abnormal plant conditions that may have contributed toward odour exceedances.* | | | | | | |
| *29* | *Mondi: 2 October 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This correlates with all the exceedances recorded. Intermittent TRS exceedances were recorded at Mondi's Alton and Hytec monitoring stations from 1:00am to 6:40am. A breakdown on the Lime Kiln resulted in Non-condensable Gases being routed to the Flare. Even though all precautions were taken to minimise emissions from the Flare, it has been acknowledged that the Flare is not as efficient as the Lime Kiln and CAPEX projects are in place to resolve this.* | | | | | | |
| *30* | *Mondi: 2 October 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This correlates with most of the exceedances recorded. Intermittent TRS exceedances were recorded at Mondi's Alton and Hytec monitoring stations from 2:00am to 6:00am. Overflow of mill condensate into drains resulted in increased odour emissions from the Effluent Plant. Odour abatement technologies will be trialled at the Effluent Plant in October 2019.* | | | | | | |
| *31* | *Mondi: 2 October 2019: Brendan Crawford responded. Wind speeds were too low (< 1m/s) for wind direction to be considered reliable. TRS exceedances were recorded at Mondi's Alton monitoring station from 1:20am to 2:50am. The Lime Kiln experienced swings in TRS due to burner tip temperature loss. Methanol firing was taken offline and only reinstated once the density had been adjusted.* | | | | | | |
| *32* | *Mondi: 20 November 2019: Brendan Crawford responded. Wind direction was favourable from Mondi during the periods highlighted below. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station between 2:00 and 4:20. An odour was identified as originating from the Mondi Effluent Plant due to mill condensate overflowing into the effluent drainage system and then on to the effluent plant.* | | | | | | |
| *33* | *Mondi: 20 November 2019: Brendan Crawford responded. Wind direction was favourable from Mondi during the periods highlighted below. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station between 20:40 and 21:40. An odour was identified as originating from the Mondi Effluent Plant due to mill condensate overflowing into the effluent drainage system and then on to the effluent plant. A complaint was received from the RBCAA with regards to this which Mondi has responded to.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
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| 34 | *Mondi: 20 November 2019: Brendan Crawford responded. Wind speed measured was too low for wind direction to be considered a reliable indicator of odour source. There were no TRS exceedances recorded at Mondi's monitoring stations. A municipal power failure in Richards Bay on 15th November 2019 had impacted on mill utilities and resulted in most of the mill being shut down. This was communicated to external stakeholders. Sections of the mill were still in start-up during the period of the exceedances. Although no point sources were identified it is possible that fugitive emissions from start-up activities may have contributed to exceedances.* | | | | | | |
| 35 | *Mondi: 22 July 2019: Brendan Crawford responded. Night-time exceedances (18:20pm to 23:50pm): Wind conditions in the area shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station between 17:20pm to 21:00pm. In preparation for a cation regen acidic effluent from the Demin buffer tank was drained creating a pH shock in the effluent. This combined with the high sulphidity in the effluent resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |
| 36 | *Mondi: 22 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time of some of the exceedances. There were TRS exceedances recorded at Mondi's Alton monitoring station from 23:10pm to 23:50pm and at Portable (UVS) station from 2:20am to 3:00am. An overflow of filtrate occurred at the Liner plant. This increased the sulphidity in the mill effluent. A cation regeneration at 23:10pm resulted in acidic effluent overflowing into the drain and creating a pH shock. This combined with the high sulphidity in the effluent resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |
| 37 | *Mondi: 22 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time of some of the exceedances. There were TRS exceedances recorded at Mondi's Landfill monitoring station from 5:50am to 6:20am and at Alton station from 6:30am to 7:20am. An overflow of filtrate occurred at the Liner plant. This increased the sulphidity in the mill effluent. In preparation for a cation regen acidic effluent from the Demin buffer tank was drained creating a pH shock in the effluent. This combined with the high sulphidity in the effluent resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |
| 38 | *Mondi: 23 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time just before the exceedance. There were TRS exceedances recorded at Mondi's: Alton monitoring station from 19:20pm to 20:20pm. Portable (UVS) monitoring station from 19:40pm to 20:10pm. Hytec monitoring station from 20:00pm to 20:40pm. In preparation for a cation regen acidic effluent from the Demin buffer tank was drained creating a pH shock in the effluent. This resulted in increased H2S emissions from the Effluent Plant.*<br>*It is also worth noting that the Portable monitoring, located 5km upwind from Mondi at the time, also recorded exceedances which would suggest that a secondary odour source also contributed towards exceedances.* | | | | | | |
| 39 | *Mondi: 23 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time of some of the exceedances. There were TRS exceedances recorded at Mondi's: Hytec monitoring station from 20:20pm to 21:00pm. Alton monitoring station from 7:00am to 8:00am. Although all Stack emissions were within AEL limits, the Lime Kiln TRS emissions were close to the limit. Methanol firing rate in the Lime Kiln was reduced to reduce TRS emissions.* | | | | | | |
| 40 | *Mondi: 24 July 2019: Brendan Crawford responded. Wind conditions were favourable from Mondi throughout. There were no TRS exceedances recorded at Mondi's monitoring stations. All Stack emissions were within AEL limits and effluent pH was stable. There were no upset conditions that would have contributed towards odour emissions. Due to the favourable wind conditions it is possible that an unidentified fugitive emission from Mondi could have contributed to the exceedances.* | | | | | | |
| 41 | *Mondi: 24 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 53 degrees with moderate wind speeds. This is favourable from Mondi. Although Mondi has not been able to identify the root cause of the odour. It is most likely that fugitive emissions from Mondi contributed to the odour.* | | | | | | |
| 42 | *Mondi: 24 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 63 degrees with very low wind speeds. It must be noted that there was high degree of variability in the wind direction and there were times before the exceedances where the wind direction was favourable from Mondi. There were TRS exceedances Mondi's Landfill ambient* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
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| | *monitoring station between 2:10am to 2:30am but this was upwind at the time. After start-up it was found that a design flaw introduced during the Annual Shut was resulting in the Evaps plant backing up and caused the venting of NCG gas to the atmosphere. The engineering contractor appointed by Mondi for the Annual Shut accepted responsibility for the design flaw. Venting from this plant started at 2:20am. A hot tap was conducted on the plant on the 2nd May 2019 which prevented the venting of NCG gas from the plant. The design flaw was corrected during a short shut on the 22nd May 2019.* | | | | | | |
| *43* | *Mondi: 24 May 2019: Brendan Crawford responded. Night-time exceedances: During the time of the exceedances the average wind direction measured at CBD station was 249 degrees with moderate wind speeds. This is favourable from Mondi. There were TRS exceedances recorded at Mondi's Landfill ambient monitoring station between 19:30pm and 20:00pm. Root cause is the same as above as the equipment was still venting at the time.* | | | | | | |
| *44* | *Mondi: 25 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. Lime Kiln TRS emissions had increased close to the limit and eventually exceeded the limit at 9:00am. The Lime Kiln was stopped and the LMCD was washed. When the Kiln was put back online the TRS emissions had reduced.* | | | | | | |
| *45* | *Mondi: 25 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This is just before the exceedances started to occur. Of note is the sudden shift in wind direction at the time of the exceedances which may have affected dispersion. There were TRS exceedances recorded at Mondi's Landfill monitoring stations from 2:10am to 2:30am. All stack emissions were well within effluent limits. Effluent pH was steady with no increased H2S emissions recorded at the Effluent Plant stack. Due to the exceedance at the Landfill station an investigation was conducted here, and everything was found to be in order i.e. the leachate dam aeration pump was online. It is likely that sudden change in the wind direction affected the ambient TRS as the exceedance was only registered during this short period of wind direction change.* | | | | | | |
| *46* | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with all the exceedances recorded. There were TRS exceedances recorded at the following Mondi monitoring stations: Hytec between 1:30am and 1:50am, Alton between 3:50am and 4:10am. A Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack. The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* | | | | | | |
| *47* | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were no TRS exceedances recorded at any of Mondi's monitoring stations. A Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack. The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* | | | | | | |
| *48* | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were TRS exceedances recorded at Mondi's Alton monitoring station between 4:40am to 5:20am and again between 5:50am to 7:30am. Upon investigation the mill's effluent average pH was found to be lower than normal. Detailed inspections were conducted to determine the source of the low pH. During these investigations, a leak was found on the outlet line of the Sulphuric Acid holding tank. Sulphuric Acid migration into the sewer network would have lowered the pre-neutralised Effluent pH resulting in increased H2S emissions from the Effluent Plant. An odour complaint was received related to the above.* | | | | | | |
| *49* | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were TRS exceedances recorded at the Mondi's Alton monitoring stations between from 23:30pm to 00:10 am and 2:30am to 3:00 am. There were no deviations or increases noted at any of the monitored odour sources. An intensive odour investigation was conducted by manually monitoring odour sources as per the odour emissions inventory. No source of concentrated odour could be found using this method. Mondi can only assume that an unidentified fugitive odour emission from the mill was responsible due to the favourable wind conditions measured.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
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| 50 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with the last exceedance recorded. There were no TRS exceedances recorded at any of Mondi's monitoring stations. A Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack. The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* | | | | | | |
| 51 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. Wind speeds were very low most of the time resulting in high variance in wind direction. Under conditions like these wind directions cannot reliably be used as an indicator of emission source. There were intermittent TRS exceedances recorded at Mondi's Alton, Hytec and Landfill monitoring stations throughout the timespan. The Effluent Plant was found to be the source of the odour. A combination of high effluent temperature and contamination resulted in increased H2S emissions. An action plan was developed to reduce temperature and contamination in effluent.* | | | | | | |
| 52 | *Mondi: 27 August 2019: Brendan Crawford responded. Wind speeds were very low throughout resulting in high variance in wind direction. Under conditions like these wind directions cannot reliably be used as an indicator of emission source. There were no TRS exceedances recorded at any of Mondi's monitoring stations. On 5th August 2019, the mill's effluent average pH was found to be lower than normal. This was caused by a leak was found on the outlet line of the Sulphuric Acid holding tank which lowered the pre-neutralised Effluent pH resulting in increased H2S emissions from the Effluent Plant. Although the leak was repaired on the day the Effluent pH took more than 24 hours to recover.* | | | | | | |
| 53 | *Mondi: 27 August 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: Morning (0:00am to 6:20am). Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with all the exceedances recorded. There were intermittent TRS exceedances recorded at Mondi's Alton, Hytec and Landfill monitoring stations throughout the timespan. The Effluent Plant was found to be the source of the odour. A combination of high effluent temperature and contamination resulted in increased H2S emissions. An action plan was developed to reduce temperature and contamination in effluent. Night (19:50pm to 23:50pm)*<br>*Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were intermittent TRS exceedances recorded at Mondi's Alton, Hytec and Landfill monitoring stations from 19:00pm. There were no deviations or increases noted at any of the monitored odour sources, however Mondi was preparing to shut down the mill for a planned Water Wash as communicated to the RBCAA. It is likely that a fugitive emission source related to shut down was responsible.* | | | | | | |
| 54 | *Mondi: 27 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 176 degrees with low wind speeds. It must be noted that the exceedances occurred over a large timespan during which average wind direction changed several times, namely:•0:00am to 3:22am – Average 293 degrees (not favourable from Mondi)• 3:23am to 3:37am – Average 180 degrees (not favourable from Mondi)•3:38am to 4:16am – Average 107 degrees (not favourable from Mondi)•4:17am to 4:48am – Average 126 degrees (not favourable from Mondi) •Mondi)There were no TRS exceedances from Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. At 2:00am Mondi mill suffered a ground fault on the main electrical incomer to the board feeding the boiler feedwater pumps. During this time, the NCG gases were switched from the Lime Kiln to the Flare. Initially the TRS emissions from the Flare were high due to the instability of the gases from a sudden loss of power. The TRS emissions did start decreasing when the gases stabilised. Mondi could not have been a contributor to the exceedances at eSikhaleni station from 0:00am to 4:48am due to the unfavourable wind directions. However, Mondi can take responsibility for the exceedances from 4:49am to 7:20am due to the favourable wind direction and the occurrence of an incident which led to the use of the Flare.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
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| 55 | *Mondi: 27 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 204 degrees with very low wind speeds. While there was some variation in wind direction, wind speeds were so low so that it would not have been possible for Mondi to be the sole contributor. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. The mill had been shut from the day before to rectify a design flaw on the Evaps plant. All units had been degassed which meant that the Flare was only operating on pilot flame. Due to unfavourable wind conditions and with the mill being completely shut Mondi could not have contributed to the exceedances.* | | | | | | |
| 56 | *Mondi: 27 May 2019: Brendan Crawford responded. Night-time exceedances: During the time of the exceedances the average wind direction measured at eSikhaleni station was 69 degrees with high wind speeds. This is not favourable from Mondi. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. The effluent stack analyser had started to register high H2S emission from 16:00pm. This may have been related to tank draining from start up.* | | | | | | |
| 57 | *Mondi: 27 May 2019: Brendan Crawford responded. The average wind direction measured at eSikhaleni station was 30 degrees with high wind speeds. This is favourable from Mondi. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station.*<br>*After a cationic regen on the Demin plant the effluent experienced a pH shock at 1:30am which increased TRS emissions from the Effluent Plant from 5:40am to 6:40am.* | | | | | | |
| 58 | *Mondi: 27 May 2019: Brendan Crawford responded. The average wind direction measured at eSikhaleni station was 44 degrees with low wind speeds. This is favourable from Mondi. There were no TRS exceedances recorded at Mondi's ambient monitoring however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. The Evaps plant embarked on a planned shut to rectify a design flaw introduced during the Annual Shut. While NCG gases had not yet been diverted to the Flare, instability from shutting down activities did result in some short, sporadic NCG venting from the Evaps and Fibre line Hardwood carbon filters. NCG gases were diverted to the Flare from 7:15am.* | | | | | | |
| 59 | *Mondi: 27 May 2019: Brendan Crawford responded. The average wind direction measured at eSikhaleni station was 62 degrees with very low wind speeds. While this is not favourable from Mondi there were significant variations during the timespan of the exceedances during which Mondi may have been a contributor. There were TRS exceedances recorded from Mondi's Portable ambient monitoring station between 5:00am and 5:20am. UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. After a cationic regen on the Demin plant the effluent experienced a pH shock at 0:30am which increased TRS emissions from the Effluent Plant. NCG gases had also been diverted to the Flare from 4:00am to 7:30am due to an issue with the Lime Mud density.* | | | | | | |
| 60 | *Mondi: 30 May 2019: Brendan Crawford responded. As per raw wind data from the CBD station the areas highlighted below would have been favourable from Mondi. Wind speeds were moderate at the time. There were TRS exceedances recorded at Mondi's Hytec station from 1:20am to 1:50am and at Alton Monitoring station from 1:50am to 2:50am. TRS exceedances were recorded from the Lime Kiln stack however these only started from 2:00am, after the recorded exceedances, with very little activity before then. It is suspected that the TRS emissions may have originated from the Biological Treatment Plant as an odour was observed from here later in the morning. The Biological Treatment Plant was bypassed for a few hours to allow the biological cultures to recuperate.* | | | | | | |
| 61 | *Mondi: 30 May 2019: Brendan Crawford responded. As per raw wind data from the eSikhaleni station the areas highlighted below would have been favourable from Mondi. Wind speeds were moderate with some areas of inactivity. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. There were no upset conditions at the time. Effluent pH was steady with very low H2S emissions being recorded at the Effluent Plant stack. The Flare was not in use. Wind conditions immediately prior to the exceedances were favourable from Mondi however there is no indication as to what the root cause of the odour may have been.* | | | | | | |
| 62 | *Mondi: 31 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. It must be noted that wind speeds were mostly low resulting high variability of wind direction. There were* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| | *TRS exceedances recorded at Mondi's Portable (UVS) monitoring station between 3:50am and 4:10am. The mill experienced an external power outage on the 26th July 2019 which resulted in the shutdown of most of the plant. During start-up we encountered issues on Paper machine 41 throughout the weekend which created a process imbalance in the mill. As a result, most of the plant, including the Lime Kiln, was shut down. Diversion of NCG gases to the Flare was required during this time. With the Digester and Evaps plants offline, the volume of gases decreased thus reducing the energy (fuel) to the flare. With the supply of fuel lower, the flare could not reach the desired set point temperature in the combustion chamber. The air dampers therefore reacted by closing to maintain the temperature and resulted in high TRS emissions. An odour complaint was logged in relation to this on 28th July 2019 and feedback was given by Mondi.* | | | | | | |
| *63* | *Mondi: 31 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were no TRS exceedances recorded at Mondi's monitoring stations. The mill experienced an external power outage on the 26th July 2019 which resulted in the shutdown of most of the plant. During start-up we encountered issues on Paper machine 41 throughout the weekend which created a process imbalance in the mill. As a result, most of the plant, including the Lime Kiln, was shut down. Diversion of NCG gases to the Flare was required during this time. The mill was in start-up mode during this time with NCG gases still being burned in the Flare. While Flare TRS emissions had been brought under control, the Flare is not as efficient as the Lime Kiln at combustion of NCG and would have likely resulted in the exceedances.* | | | | | | |
| *64* | *Mondi: 5 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 246 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 22:20pm to 23:00pm. A fault with the steam diaphragm valve to the Lime Kiln necessitated the switching of Softwood NCG gases to the Flare. Just before the exceedance the SW gases tripped out of the Flare and switched to the Incinerator. This contributed towards the exceedances. The steam diaphragm valve was replaced the following morning when the part arrived from Durban and the SW NCG gases were switched back into the Lime Kiln.* | | | | | | |
| *64* | *Mondi: 31 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were no TRS exceedances recorded at Mondi's monitoring stations. The mill experienced an external power outage on the 26th July 2019 which resulted in the shutdown of most of the plant. During start-up we encountered issues on Paper machine 41 throughout the weekend which created a process imbalance in the mill. As a result, most of the plant, including the Lime Kiln, was shut down. Diversion of NCG gases to the Flare was required during this time. With the Digester and Evaps plants offline, the volume of gases decreased thus reducing the energy (fuel) to the flare. With the supply of fuel lower, the flare could not reach the desired set point temperature in the combustion chamber. The air dampers therefore reacted by closing to maintain the temperature and resulted in high TRS emissions. An odour complaint was logged in relation to this and feedback was given by Mondi.* | | | | | | |
| *65* | *Mondi: 5 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 247 degrees with low to moderate wind speeds. There were no TRS exceedances recorded at any of Mondi's ambient monitoring stations, however there were increases noted at Hytec station from 22:50pm to 23:20pm. There were no exceedances against the AEL limits, the Flare and Incinerator were not in use, Effluent pH was steady and very low H2S emissions were recorded on the Effluent stack analyser. In the absence of a clear source and with the wind direction favourable from Mondi it can only be assumed that one of Mondi's fugitive emissions was responsible for the exceedances.* | | | | | | |
| *66* | *Mondi: 5 April 2019: Brendan Crawford responded. For the exceedance at 02:30am: During the time of the exceedance the average wind direction measured at CBD station was 274 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 02:10am to 02:50am. During the exceedances, the Demin plant was undergoing an anion regen. The build-up in the Demin Buffer Tank resulted in the overflow of alkaline effluent into the sewer. The pH shock resulted in the increase in H2S emissions from effluent which was recorded on the Effluent Stack analyser. The low capacity of the Demin Buffer Tank has been identified as a bottleneck and CAPEX is being prepared to increase the capacity of this tank. For the exceedances from 08:00 to 08:10am: During the time of the exceedance the average wind direction measured at CBD station was 232 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 07:10am to 08:50am. During the exceedances it was noted that the Lime Kiln TRS emissions had started to increase. This was rectified by adjusting the operating conditions of the Lime Kiln.* | | | | | | |
| *67* | *Mondi: 5 April 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: During the time of the exceedances the average wind direction measured at CBD station was 270 degrees with low wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 14 March 2019 22:40pm to 15 March 2019 04:20am. The source was confirmed as coming from the Third Chamber of the Biological* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| | *Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019.*<br>*Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |
| *68* | *Mondi: 5 May 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 241 degrees with low to medium wind speeds. There were no TRS exceedances recorded at Mondi's ambient monitoring stations before or after the exceedances. Shortly prior to the exceedances the Demin plant was undergoing a cation regen. The build-up in the Demin Buffer Tank resulted in the overflow of acidic effluent into the sewer. The pH shock resulted in the increase in H2S emissions from effluent which was recorded on the Effluent Stack analyser. The low capacity of the Demin Buffer Tank has been identified as a bottleneck and CAPEX is being prepared to increase the capacity of this tank.* | | | | | | |
| *69* | *Mondi: 5 May 2019: Brendan Crawford responded. During the time of the exceedances the wind direction measured at CBD station was 259 degrees with medium wind speeds. There were intermittent TRS exceedances recorded at Mondi's Alton monitoring stations between 00:00am and 5:00am and at Hytec station between 7:40am and 8:20am. The mill was in start-up condition following the Annual Shut. At the time CNCG gases were being generated and combusted in the Flare as the Lime Kiln was still shut. While the Flare burner temperature was being maintained automatically, the Flare stack temperature, which requires Operator intervention, was dipping below the optimum temperature range. This resulted in the increase in TRS emissions from the Flare and would result in odour complaints the same day. A checklist was developed for the rest of the start up to improve temperature monitoring in the Flare. Tie-ins were installed during the shut for the fitment of damper actuators in June 2019. The new actuators will improve temperature control in the Flare by making automatic adjustments to the damper.* | | | | | | |
| *70* | *Mondi: 5 May 2019: Brendan Crawford responded. During the time of the exceedances the wind direction measured at CBD station was 267 degrees with high wind speeds. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however there was a very slight increase noted at the Alton monitoring station between 22:00pm and 22:20pm. The mill was in start-up condition following the Annual Shut. At the time CNCG gases were being generated and combusted in the Flare as the Lime Kiln was still shut. While the Flare burner temperature was being maintained automatically, the Flare stack temperature, which requires Operator intervention, was dipping below the optimum temperature range. This resulted in the increase in TRS emissions from the Flare and would later result in odour complaints the following day. A checklist was developed for the rest of the start up to improve temperature monitoring in the Flare. Tie-ins were installed during the shut for the fitment of damper actuators in June 2019. The new actuators will improve temperature control in the Flare by making automatic adjustments to the damper.* | | | | | | |
| *71* | *Mondi: 5 May 2019: Brendan Crawford responded. Morning exceedances: During the time of the exceedances the average wind direction measured at CBD station was 227 degrees with mid to high wind speeds. There were no TRS exceedances or increases recorded at Mondi's ambient monitoring stations before or after the exceedances. At the time of the exceedances the mill was starting up from the Annual Shut which entailed some draining of equipment to effluent. The impact to the effluent was noticeable in the Sulphidity trend. The combination of high sulphidity and hot effluent would have increased H2S emissions.*<br>*Night-time exceedances: During the time of the exceedances the average wind direction measured at CBD station was 232 degrees with low to high wind speeds. There were no TRS exceedances recorded at Mondi's ambient monitoring stations, however there was a slight increase noted at the Landfill station at 13:00pm. Although equipment draining had impacted on the effluent sulphidity in the morning this had reduced to almost negligible by 8:00am. No other sources could be found however the increase noted at the Landfill station would suggest that Mondi was an odour source close to this time, most likely because of an unidentified fugitive emission.* | | | | | | |
| *72* | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 244 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 19:50pm to 20:40pm and 21:20pm to 21:50pm. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| | *Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |
| *73* | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 264 degrees with low wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 14 March 2019 22:40pm to 15 March 2019 04:20am. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019.*<br>*Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |
| *74* | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 271 degrees with low wind speeds. There were TRS exceedances recorded at Mondi's Alton ambient monitoring station periodically from 01:00am to 06:10am. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019. Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |
| *75* | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 239 degrees with high wind speeds. There were no TRS exceedances or increases recorded at any of Mondi's ambient monitoring stations. The mill at the time was in the middle of the planned annual shut which had been communicated to the authorities and stakeholders. The only plant still in operation at the time was the Effluent Plant. The flow from the Effluent Plant was at minimum however the emergency ponds were at maximum level coming out of a planned shut on the Mhalthuze Water Effluent to Sea line. The wind direction at the time of the exceedances carried several times between 213 and 265 degrees. It may be possible that Mondi's Effluent Plant contributed towards these exceedances but considering the varied wind conditions other contributors should be considered.* | | | | | | |
| *76* | *Mondi: 6 June 2019: Brendan Crawford responded. As per raw wind data from the eSikhaleni station the areas highlighted are times when wind direction and speed were favourable from Mondi. There were TRS exceedances recorded at Mondi's Alton monitoring station between 3:30am and 9:22am. One exceedance had been recorded at Hytec station although TRS had been on the increase from 9:25am. UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. With regards to the Alton exceedances in the morning; in preparation for a cationic Demin regen the buffer tank was slowly drained to effluent to create capacity for the Demin regen effluent to not create an overflow. During the draining activity it seems that a pH shock might have unintentionally been created as the ambient TRS at Alton station, which is closest to Effluent Plant, started to increase with draining activity. Once this had been noted the draining activity was ceased. Based on the prevalent wind conditions and its impact on Easterly and North-Easterly based monitoring stations at the time the Mondi incident could not have contributed to the exceedance at 7:10am at eSikhaleni. Between 14:00pm and 17:15pm the Lime Kiln was taken offline to repair a drive chain on the crusher which had slipped off. The NCG gases were diverted to the Flare during this time which is a less efficient burner of NCG.*<br>*Based on the switch to favourable wind conditions and a confirmed odour source Mondi was a contributor to the exceedances from 19:40pm onwards.* | | | | | | |
| *77* | *Mondi: 6 June 2019: Brendan Crawford responded. As per raw wind data from the eSikhaleni station the wind directions before, during and after the exceedances were not favourable from Mondi. At approximately 17:15pm there was a distinct drop in the wind speed to zero and thereafter wind speeds were almost negligible. This corresponds with the start of the exceedances. There was one exceedance of the RBCAA limit recorded at Mondi's Alton monitoring stations at 17:00pm, however Mondi was downwind at the time and could not have been the source. UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. Mondi had no upset conditions at the time. Effluent stack emissions were very low, and the Flare was not in use. Based on the prevalent wind conditions it is unlikely that Mondi would have been a contributor. With the drop in wind speed it is very likely that the exceedances were caused by a source close to the station.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| 78 | *Mondi: 6 March 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 269 degrees with low wind speeds. This is favourable for Mondi as a possible source. There were TRS exceedances recorded Mondi's Hytec ambient monitoring station between 22:20pm and 23:00pm. At the time of the exceedances the Lime Kiln was shut resulting in CNCG gases being diverted to the Flare and Incinerator. Both the Flare and Incinerator experienced several trips due to build-up of condensate in the CNCG system. Each time the Flare or Incinerator tripped the gases were vented through the carbon filters which resulted in odorous emissions. The condensate was eventually drained from the CNCG system resulting in improved stability on the Flare and Incinerator.* | | | | | | |
| 79 | *Mondi: 6 March 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 275 degrees with low wind speeds. This is favourable for Mondi as a possible source. There were TRS exceedances recorded Mondi's Hytec ambient monitoring station between 00:50am and 01:30am. During the exceedances, the Demin plant was undergoing a cation regen. The build-up in the Demin Buffer Tank resulted in the overflow of acidic effluent into the sewer. The pH shock resulted in the increase in H2S emissions from effluent which was recorded on the Effluent Stack analyser. The low capacity of the Demin Buffer Tank has been identified as a bottleneck and CAPEX is being prepared to increase the capacity of this tank.* | | | | | | |
| 80 | *Mondi: 7 January 2020: Candice Webb responded. During the time of the exceedances the average wind direction was 38 degrees with very low wind speeds. There were TRS exceedances recorded at Mondi's Alton ambient monitoring station between 4:10am and 4:30am. There were no mill upsets. The Flare was not in use. There was a very short increase in H2S emissions from the effluent stack at 3:30am due to a Demin regen. Based on the above it is possible that Mondi was the source of the odour.* | | | | | | |
| 81 | *Mondi: 7 January 2020: Candice Webb responded. During the time of the exceedances the wind direction was 84 degrees with very low wind speeds. There were no mill upsets. However, based on the above and fugitive emissions it is possible that Mondi was the source of the odour.* | | | | | | |
| 82 | *Mondi: 7 January 2020: Candice Webb responded. The average wind direction measured at eSikhaleni station was 132 degrees with very low wind speeds. However, at the time of the exceedance wind direction was 53 degrees which is favourable from Mondi. At 1:30am the Demin plant had just completed a cation regen. At the time, the buffer tank was full which resulted in acidic effluent entering the sewer, creating a pH shock, and increasing H2S emissions from effluent. It is possible that Mondi contributed to the exceedances.* | | | | | | |
| 83 | *Mondi: 7 January 2020: Candice Webb responded. Wind conditions highlighted below were favourable from Mondi. Mondi has been unable to identify root cause, however based on wind direction and fugitive emissions it is possible Mondi contributed to the odour.* | | | | | | |
| 84 | *Mondi: 7 January 2020: Candice Webb responded. Wind direction at the time of the exceedance was favourable from Mondi. Mondi identified odour at the effluent plant due to poor quality condensate as the root cause of the exceedance. A plan has been developed to address this source of odour.* | | | | | | |
| 85 | *Mondi: 7 January 2020: Candice Webb responded. Wind direction prior to the exceedance was favourable from Mondi during the period investigated. There were no TRS exceedances recorded at Mondi's monitoring stations. There were no upsets or abnormal conditions at the mill during the time of the exceedances. However, it is possible that fugitive emissions contributed to the odour.* | | | | | | |
| 86 | *Mondi: 8 November 2019: Brendan Crawford responded. Wind direction was not favourable from Mondi although it must be noted that wind speeds were very low. There were no TRS exceedances recorded at Mondi's monitoring stations. A maintenance issue on the Lime Kiln require Non-condensable gases to be switched to the Flare at 5:30am. It is possible that emissions from the Flare may have contributed toward the exceedances.* | | | | | | |
| 87 | *Mondi: 9 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This compares favourably with most of the exceedances. TRS exceedances were recorded at all of Mondi's monitoring stations throughout, Hytec and Alton. Mondi's effluent plant was identified as the source of the odorous emissions. Actions were taken to reduce the odorous impact of the Effluent Plant.* | | | | | | |
| 88 | *Mondi: 9 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This compares favourably with most of the exceedances. TRS exceedances were recorded at all of Mondi's monitoring stations throughout, Hytec and* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | Response # |
|---|---|---|---|---|---|---|---|
| | *Alton. Mondi had commenced a planned shut down as communicated to relevant authorities and stakeholders. All point source emissions were within AEL limits and there were no upset conditions recorded. It can be assumed that background odour emissions may have increased due to shut down activities.* | | | | | | |
| *90* | *Mondi: Night-time exceedances (23:30pm to 23:50pm). Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Hytec monitoring station between 21:30pm to 22:40pm. Before the exceedances, a cation Demin regen had taken place. The volume of acidic effluent generated exceeded the capacity available in the buffer tank and overflowed into the alkaline sewer. The pH shock resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |
| *91* | *Mondi: Night-time exceedances. During the time of the exceedances the average wind direction measured at eSikhaleni station was 42 degrees with very low wind speeds. This is favourable from Mondi.*<br>*There were TRS exceedances recorded at Mondi's Portable ambient monitoring station between 6:00am and 7:10am. After start-up it was found that a design flaw introduced during the Annual Shut was resulting in the Evaps plant backing up and caused the venting of NCG gas to the atmosphere. The engineering contractor appointed by Mondi for the Annual Shut accepted responsibility for the design flaw. Venting from this plant started at 5:00am. A hot tap was conducted on the plant on the 2nd May 2019 which prevented the venting of NCG gas from the plant. The design flaw was corrected during a short shut on the 22nd May 2019.* | | | | | | |

*Table: G3: RBCAA 10-minute Target (4.5 ppb)*

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/01/02 03:00 | 6 | 235 | 8.1 | * | * | 1 |
| CBD | 2019/01/02 04:40 | 5 | 227 | 7.9 | * | * | 1 |
| CBD | 2019/01/16 02:10 | 6 | 231 | 6.2 | * | * | 1 |
| CBD | 2019/01/16 02:20 | 5 | 228 | 7.5 | * | * | 1 |
| CBD | 2019/01/16 02:40 | 5 | 234 | 6.9 | * | * | 1 |
| CBD | 2019/01/16 03:00 | 6 | 231 | 6.2 | * | * | 1 |
| CBD | 2019/01/16 03:10 | 6 | 228 | 7.8 | * | * | 1 |
| CBD | 2019/01/16 03:20 | 6 | 231 | 7.6 | * | * | 1 |
| CBD | 2019/01/16 04:20 | 5 | 234 | 6.5 | * | * | 1 |
| CBD | 2019/01/16 05:00 | 5 | 228 | 7.9 | * | * | 1 |
| CBD | 2019/01/20 07:30 | 5 | 232 | 3.5 | * | * | 1 |
| CBD | 2019/02/12 22:20 | 8 | 279 | 1.5 | * | * | 1 |
| CBD | 2019/02/12 22:30 | 16 | 295 | 1.4 | Mondi | Mondi Flare | 78 |
| CBD | 2019/02/12 22:40 | 21 | 307 | 1.0 | Mondi | Mondi Flare | 78 |
| CBD | 2019/02/12 22:50 | 19 | 303 | 1.0 | Mondi | Mondi Flare | 78 |
| CBD | 2019/02/12 23:00 | 11 | 307 | 1.5 | Mondi | Mondi Flare | 78 |
| CBD | 2019/02/12 23:10 | 6 | 299 | 1.8 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/02/25 01:10 | 6 | 300 | 1.5 | * | * | 1 |
| CBD | 2019/02/25 01:20 | 8 | 330 | 1.4 | * | * | 1 |
| CBD | 2019/02/25 07:40 | 7 | 263 | 1.6 | * | * | 1 |
| CBD | 2019/02/25 07:50 | 7 | 243 | 1.5 | * | * | 1 |
| CBD | 2019/02/27 20:10 | 7 | 255 | 4.3 | * | * | 1 |
| CBD | 2019/02/27 20:20 | 6 | 252 | 3.6 | * | * | 1 |
| CBD | 2019/03/02 22:20 | 6 | 230 | 6.8 | * | * | 1 |
| CBD | 2019/03/03 23:10 | 9 | 265 | 1.8 | * | * | 1 |
| CBD | 2019/03/03 23:20 | 8 | 264 | 2.3 | * | * | 1 |
| CBD | 2019/03/03 23:40 | 9 | 226 | 1.7 | * | * | 1 |
| CBD | 2019/03/03 23:50 | 6 | 245 | 2.4 | * | * | 1 |
| CBD | 2019/03/05 23:10 | 6 | 241 | 2.5 | * | * | 1 |
| CBD | 2019/03/05 23:20 | 7 | 241 | 2.2 | * | * | 1 |
| CBD | 2019/03/05 23:30 | 8 | 255 | 2.6 | * | * | 1 |
| CBD | 2019/03/05 23:40 | 6 | 257 | 2.6 | * | * | 1 |
| CBD | 2019/03/06 02:30 | 7 | 287 | 1.9 | * | * | 1 |
| CBD | 2019/03/09 02:30 | 6 | 28 | 0.7 | * | * | 1 |
| CBD | 2019/03/09 02:40 | 5 | 42 | 0.7 | * | * | 1 |
| CBD | 2019/03/09 05:10 | 6 | 290 | 1.9 | * | * | 1 |
| CBD | 2019/03/10 02:30 | 7 | 301 | 2.3 | * | * | 1 |
| CBD | 2019/03/10 08:00 | 9 | 236 | 2.7 | * | * | 1 |
| CBD | 2019/03/10 08:10 | 5 | 265 | 3.1 | * | * | 1 |
| CBD | 2019/03/14 23:40 | 6 | 269 | 0.9 | * | * | 1 |
| CBD | 2019/03/14 23:50 | 16 | 286 | 1.2 | Mondi | Biological treatment plant | 67 |
| CBD | 2019/03/15 00:00 | 34 | 263 | 1.4 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 00:10 | 67 | 256 | 1.0 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 00:20 | 89 | 297 | 1.0 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 00:30 | 85 | 279 | 1.5 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 00:40 | 37 | 259 | 1.2 | Mondi | Biological treatment plant | 73 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/03/15 00:50 | 17 | 242 | 1.7 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:00 | 15 | 240 | 1.3 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:10 | 23 | 249 | 1.5 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:20 | 22 | 256 | 1.4 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:30 | 37 | 244 | 1.8 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:40 | 41 | 241 | 1.6 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 01:50 | 31 | 242 | 1.3 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:00 | 20 | 250 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:10 | 27 | 274 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:20 | 25 | 239 | 0.5 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:30 | 22 | 273 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:40 | 22 | 260 | 0.7 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 02:50 | 32 | 245 | 1.5 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:00 | 29 | 240 | 2.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:10 | 15 | 245 | 1.9 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:20 | 15 | 237 | 1.1 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:30 | 14 | 249 | 2.0 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:40 | 22 | 293 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 03:50 | 21 | 273 | 0.8 | Mondi | Biological treatment plant | 73 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/03/15 04:00 | 20 | 302 | 1.2 | Mondi | Biological treatment plant | 73 |
| CBD | 2019/03/15 04:10 | 6 | 301 | 1.0 | * | * | 1 |
| CBD | 2019/03/18 20:40 | 14 | 269 | 3.2 | Mondi | Biological treatment plant | 72 |
| CBD | 2019/03/18 21:20 | 11 | 200 | 2.1 | Mondi | Biological treatment plant | 72 |
| CBD | 2019/03/19 01:00 | 9 | 268 | 1.7 | * | * | 1 |
| CBD | 2019/03/19 01:10 | 15 | 255 | 1.6 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 01:20 | 10 | 299 | 1.2 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 01:30 | 14 | 289 | 1.3 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 01:40 | 7 | 285 | 1.2 | * | * | 1 |
| CBD | 2019/03/19 07:00 | 5 | 234 | 0.9 | * | * | 1 |
| CBD | 2019/03/19 07:10 | 20 | 243 | 2.5 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 07:20 | 65 | 242 | 2.7 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 07:30 | 33 | 253 | 3.0 | Mondi | Biological treatment plant | 74 |
| CBD | 2019/03/19 07:40 | 6 | 261 | 3.2 | * | * | 1 |
| CBD | 2019/04/01 22:00 | 5 | 241 | 6.2 | * | * | 1 |
| CBD | 2019/04/01 23:10 | 6 | 230 | 5.3 | * | * | 1 |
| CBD | 2019/04/01 23:20 | 6 | 227 | 4.5 | * | * | 1 |
| CBD | 2019/04/01 23:30 | 5 | 241 | 4.8 | * | * | 1 |
| CBD | 2019/04/05 00:30 | 5 | 231 | 7.3 | * | * | 1 |
| CBD | 2019/04/05 00:40 | 5 | 225 | 6.8 | * | * | 1 |
| CBD | 2019/04/05 00:50 | 5 | 229 | 7.9 | * | * | 1 |
| CBD | 2019/04/05 01:10 | 5 | 227 | 7.7 | * | * | 1 |
| CBD | 2019/04/05 17:20 | 5 | 230 | 5.5 | * | * | 1 |
| CBD | 2019/04/05 17:30 | 5 | 248 | 5.5 | * | * | 1 |
| CBD | 2019/04/05 19:50 | 5 | 241 | 4.6 | * | * | 1 |
| CBD | 2019/04/05 20:00 | 7 | 233 | 4.8 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/04/05 20:10 | 5 | 241 | 4.6 | * | * | 1 |
| CBD | 2019/04/05 20:30 | 5 | 239 | 4.8 | * | * | 1 |
| CBD | 2019/04/05 20:40 | 8 | 229 | 5.5 | * | * | 1 |
| CBD | 2019/04/05 20:50 | 9 | 228 | 5.8 | * | * | 1 |
| CBD | 2019/04/05 21:00 | 8 | 237 | 5.1 | * | * | 1 |
| CBD | 2019/04/05 21:10 | 5 | 240 | 5.1 | * | * | 1 |
| CBD | 2019/04/05 21:40 | 5 | 226 | 5.4 | * | * | 1 |
| CBD | 2019/04/05 21:50 | 6 | 221 | 6.2 | * | * | 1 |
| CBD | 2019/04/05 23:30 | 6 | 231 | 5.2 | * | * | 1 |
| CBD | 2019/04/06 01:10 | 5 | 229 | 8.0 | * | * | 1 |
| CBD | 2019/04/06 01:20 | 7 | 235 | 7.3 | * | * | 1 |
| CBD | 2019/04/06 01:50 | 7 | 227 | 7.8 | * | * | 1 |
| CBD | 2019/04/06 02:00 | 7 | 234 | 7.4 | * | * | 1 |
| CBD | 2019/04/06 02:10 | 6 | 232 | 6.6 | * | * | 1 |
| CBD | 2019/04/06 02:20 | 8 | 230 | 7.0 | * | * | 1 |
| CBD | 2019/04/06 02:30 | 7 | 234 | 6.6 | * | * | 1 |
| CBD | 2019/04/06 03:10 | 5 | 239 | 6.8 | * | * | 1 |
| CBD | 2019/04/06 03:20 | 6 | 239 | 6.0 | * | * | 1 |
| CBD | 2019/04/06 03:30 | 5 | 239 | 6.5 | * | * | 1 |
| CBD | 2019/04/06 03:40 | 6 | 236 | 5.6 | * | * | 1 |
| CBD | 2019/04/06 03:50 | 6 | 239 | 5.5 | * | * | 1 |
| CBD | 2019/04/06 04:00 | 7 | 235 | 6.4 | * | * | 1 |
| CBD | 2019/04/06 04:10 | 7 | 247 | 5.8 | * | * | 1 |
| CBD | 2019/04/06 06:40 | 7 | 224 | 6.1 | * | * | 1 |
| CBD | 2019/04/06 06:50 | 5 | 238 | 4.9 | * | * | 1 |
| CBD | 2019/04/06 07:00 | 5 | 236 | 5.2 | * | * | 1 |
| CBD | 2019/04/08 23:00 | 5 | 258 | 5.2 | * | * | 1 |
| CBD | 2019/04/09 23:20 | 6 | 267 | 1.6 | * | * | 1 |
| CBD | 2019/04/09 23:30 | 7 | 269 | 2.6 | * | * | 1 |
| CBD | 2019/04/09 23:40 | 8 | 271 | 2.5 | * | * | 1 |
| CBD | 2019/04/10 01:40 | 5 | 258 | 2.9 | * | * | 1 |
| CBD | 2019/04/10 01:50 | 6 | 260 | 3.0 | * | * | 1 |
| CBD | 2019/04/10 02:30 | 6 | 268 | 2.6 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/04/10 02:40 | 7 | 259 | 2.4 | * | * | 1 |
| CBD | 2019/04/10 02:50 | 5 | 262 | 2.6 | * | * | 1 |
| CBD | 2019/04/10 03:00 | 5 | 271 | 2.4 | * | * | 1 |
| CBD | 2019/04/10 03:10 | 8 | 269 | 2.6 | * | * | 1 |
| CBD | 2019/04/10 03:20 | 7 | 267 | 2.4 | * | * | 1 |
| CBD | 2019/04/10 03:50 | 5 | 261 | 2.5 | * | * | 1 |
| CBD | 2019/04/10 04:00 | 8 | 266 | 2.0 | * | * | 1 |
| CBD | 2019/04/10 04:10 | 8 | 270 | 1.5 | * | * | 1 |
| CBD | 2019/04/10 04:20 | 6 | 287 | 1.7 | * | * | 1 |
| CBD | 2019/04/10 07:40 | 13 | 277 | 2.8 | Mondi | Flare | 69 |
| CBD | 2019/04/10 07:50 | 21 | 278 | 2.0 | Mondi | Flare | 69 |
| CBD | 2019/04/10 08:00 | 26 | 261 | 2.5 | Mondi | Flare | 69 |
| CBD | 2019/04/10 08:10 | 7 | 221 | 3.7 | * | * | 1 |
| CBD | 2019/04/15 00:20 | 6 | 252 | 2.8 | * | * | 1 |
| CBD | 2019/04/15 00:50 | 5 | 262 | 3.0 | * | * | 1 |
| CBD | 2019/04/16 03:30 | 5 | 223 | 1.9 | * | * | 1 |
| CBD | 2019/04/17 05:30 | 5 | 226 | 2.1 | * | * | 1 |
| CBD | 2019/04/21 20:30 | 5 | 222 | 5.5 | * | * | 1 |
| CBD | 2019/04/25 20:50 | 5 | 248 | 3.8 | * | * | 1 |
| CBD | 2019/04/26 01:20 | 5 | 258 | 3.3 | * | * | 1 |
| CBD | 2019/04/26 04:00 | 5 | 259 | 2.9 | * | * | 1 |
| CBD | 2019/05/01 06:10 | 5 | 260 | 2.0 | * | * | 1 |
| CBD | 2019/05/01 06:20 | 6 | 294 | 1.4 | * | * | 1 |
| CBD | 2019/05/01 20:20 | 5 | 251 | 3.7 | * | * | 1 |
| CBD | 2019/05/01 20:30 | 6 | 238 | 2.8 | * | * | 1 |
| CBD | 2019/05/01 20:40 | 6 | 250 | 2.6 | * | * | 1 |
| CBD | 2019/05/01 20:50 | 6 | 248 | 2.1 | * | * | 1 |
| CBD | 2019/05/01 21:00 | 5 | 256 | 1.4 | * | * | 1 |
| CBD | 2019/05/01 21:10 | 5 | 248 | 2.0 | * | * | 1 |
| CBD | 2019/05/01 21:20 | 5 | 255 | 3.0 | * | * | 1 |
| CBD | 2019/05/04 05:40 | 5 | 249 | 2.8 | * | * | 1 |
| CBD | 2019/05/04 05:50 | 5 | 253 | 3.1 | * | * | 1 |
| CBD | 2019/05/04 20:40 | 5 | 257 | 5.5 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/05/05 06:30 | 5 | 244 | 2.3 | * | * | 1 |
| CBD | 2019/05/09 22:40 | 5 | 255 | 4.5 | * | * | 1 |
| CBD | 2019/05/09 22:50 | 5 | 251 | 4.1 | * | * | 1 |
| CBD | 2019/05/09 23:00 | 5 | 251 | 4.2 | * | * | 1 |
| CBD | 2019/05/09 23:10 | 5 | 252 | 4.5 | * | * | 1 |
| CBD | 2019/05/13 06:00 | 5 | 279 | 2.8 | * | * | 1 |
| CBD | 2019/05/16 04:10 | 5 | 322 | 1.6 | * | * | 1 |
| CBD | 2019/05/16 04:20 | 5 | 300 | 1.4 | * | * | 1 |
| CBD | 2019/05/16 05:10 | 5 | 296 | 0.5 | * | * | 1 |
| CBD | 2019/05/28 01:10 | 5 | 245 | 3.1 | * | * | 1 |
| CBD | 2019/05/28 01:20 | 5 | 246 | 3.0 | * | * | 1 |
| CBD | 2019/05/28 01:40 | 6 | 273 | 2.5 | * | * | 1 |
| CBD | 2019/05/28 01:50 | 8 | 289 | 2.4 | * | * | 1 |
| CBD | 2019/05/30 06:20 | 5 | 256 | 4.9 | * | * | 1 |
| CBD | 2019/05/30 07:00 | 5 | 256 | 5.4 | * | * | 1 |
| CBD | 2019/06/03 01:00 | 8 | 246 | 3.2 | * | * | 1 |
| CBD | 2019/06/03 01:10 | 6 | 238 | 3.2 | * | * | 1 |
| CBD | 2019/06/03 01:20 | 5 | 237 | 3.0 | * | * | 1 |
| CBD | 2019/06/03 01:30 | 7 | 251 | 3.5 | * | * | 1 |
| CBD | 2019/06/03 01:40 | 7 | 255 | 3.7 | * | * | 1 |
| CBD | 2019/06/03 01:50 | 5 | 273 | 2.4 | * | * | 1 |
| CBD | 2019/06/06 00:30 | 6 | 251 | 4.0 | * | * | 1 |
| CBD | 2019/06/06 05:00 | 9 | 243 | 2.7 | * | * | 1 |
| CBD | 2019/06/06 05:10 | 6 | 251 | 2.6 | * | * | 1 |
| CBD | 2019/06/06 06:00 | 5 | 258 | 3.0 | * | * | 1 |
| CBD | 2019/06/06 06:10 | 9 | 253 | 3.2 | * | * | 1 |
| CBD | 2019/06/06 06:20 | 8 | 255 | 3.3 | * | * | 1 |
| CBD | 2019/06/06 06:30 | 7 | 257 | 3.3 | * | * | 1 |
| CBD | 2019/06/06 06:40 | 6 | 260 | 2.8 | * | * | 1 |
| CBD | 2019/06/06 06:50 | 5 | 261 | 2.0 | * | * | 1 |
| CBD | 2019/06/06 07:00 | 5 | 272 | 2.3 | * | * | 1 |
| CBD | 2019/06/06 07:10 | 5 | 268 | 2.3 | * | * | 1 |
| CBD | 2019/06/06 07:20 | 5 | 262 | 3.0 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/06/06 07:30 | 5 | 258 | 3.1 | * | * | 1 |
| CBD | 2019/06/06 08:00 | 5 | 244 | 3.4 | * | * | 1 |
| CBD | 2019/06/06 08:10 | 5 | 248 | 3.4 | * | * | 1 |
| CBD | 2019/06/06 08:30 | 5 | 261 | 3.8 | * | * | 1 |
| CBD | 2019/06/10 20:40 | 5 | 240 | 3.4 | * | * | 1 |
| CBD | 2019/06/10 20:50 | 6 | 246 | 3.1 | * | * | 1 |
| CBD | 2019/06/10 21:00 | 5 | 247 | 3.5 | * | * | 1 |
| CBD | 2019/06/10 22:50 | 6 | 227 | 4.8 | * | * | 1 |
| CBD | 2019/06/10 23:00 | 5 | 226 | 5.1 | * | * | 1 |
| CBD | 2019/06/10 23:10 | 5 | 230 | 4.1 | * | * | 1 |
| CBD | 2019/06/10 23:20 | 5 | 236 | 3.4 | * | * | 1 |
| CBD | 2019/06/11 04:10 | 5 | 254 | 3.5 | * | * | 1 |
| CBD | 2019/06/11 04:20 | 5 | 252 | 3.1 | * | * | 1 |
| CBD | 2019/06/11 05:30 | 5 | 239 | 2.5 | * | * | 1 |
| CBD | 2019/06/12 19:40 | 6 | 244 | 3.1 | * | * | 1 |
| CBD | 2019/06/12 19:50 | 8 | 238 | 1.9 | * | * | 1 |
| CBD | 2019/06/12 20:30 | 5 | 268 | 2.8 | * | * | 1 |
| CBD | 2019/06/13 21:40 | 6 | 245 | 3.0 | * | * | 1 |
| CBD | 2019/06/19 06:20 | 5 | 255 | 3.1 | * | * | 1 |
| CBD | 2019/06/19 07:30 | 5 | 251 | 2.9 | * | * | 1 |
| CBD | 2019/06/23 03:30 | 6 | 286 | 2.2 | * | * | 1 |
| CBD | 2019/07/01 17:20 | 5 | 226 | 8.7 | * | * | 1 |
| CBD | 2019/07/05 07:40 | 6 | 246 | 3.2 | * | * | 1 |
| CBD | 2019/07/05 07:50 | 6 | 249 | 3.6 | * | * | 1 |
| CBD | 2019/07/05 08:00 | 5 | 246 | 4.2 | * | * | 1 |
| CBD | 2019/07/05 08:10 | 6 | 250 | 4.6 | * | * | 1 |
| CBD | 2019/07/05 08:20 | 6 | 247 | 4.6 | * | * | 1 |
| CBD | 2019/07/05 08:30 | 6 | 246 | 5.0 | * | * | 1 |
| CBD | 2019/07/05 08:40 | 6 | 236 | 4.0 | * | * | 1 |
| CBD | 2019/07/05 23:30 | 5 | 266 | 3.9 | * | * | 1 |
| CBD | 2019/07/05 23:40 | 6 | 260 | 4.3 | * | * | 1 |
| CBD | 2019/07/05 23:50 | 6 | 258 | 4.9 | * | * | 1 |
| CBD | 2019/07/10 22:00 | 5 | 248 | 3.7 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/07/10 22:10 | 7 | 249 | 3.1 | * | * | 1 |
| CBD | 2019/07/10 22:20 | 12 | 249 | 3.5 | Mondi | Effluent Plant | 19 |
| CBD | 2019/07/10 22:30 | 13 | 246 | 3.3 | Mondi | Effluent Plant | 19 |
| CBD | 2019/07/10 22:40 | 12 | 245 | 3.1 | Mondi | Effluent Plant | 19 |
| CBD | 2019/07/10 22:50 | 7 | 238 | 3.2 | * | * | 1 |
| CBD | 2019/07/11 01:10 | 7 | 257 | 3.2 | * | * | 1 |
| CBD | 2019/07/11 01:20 | 7 | 268 | 2.4 | * | * | 1 |
| CBD | 2019/07/11 01:30 | 6 | 267 | 2.3 | * | * | 1 |
| CBD | 2019/07/11 01:50 | 6 | 259 | 2.1 | * | * | 1 |
| CBD | 2019/07/11 02:00 | 8 | 254 | 2.6 | * | * | 1 |
| CBD | 2019/07/11 02:10 | 5 | 263 | 1.8 | * | * | 1 |
| CBD | 2019/07/12 06:40 | 8 | 279 | 1.8 | * | * | 1 |
| CBD | 2019/07/12 06:50 | 8 | 252 | 2.2 | * | * | 1 |
| CBD | 2019/07/12 07:00 | 6 | 252 | 3.4 | * | * | 1 |
| CBD | 2019/07/12 07:10 | 8 | 257 | 3.9 | * | * | 1 |
| CBD | 2019/07/12 07:20 | 12 | 260 | 3.5 | Mondi | Lime Kiln | 22 |
| CBD | 2019/07/12 07:30 | 16 | 261 | 3.6 | Mondi | Lime Kiln | 22 |
| CBD | 2019/07/12 07:40 | 11 | 260 | 3.5 | Mondi | Lime Kiln | 22 |
| CBD | 2019/07/12 08:10 | 5 | 236 | 3.6 | * | * | 1 |
| CBD | 2019/07/12 08:20 | 5 | 228 | 5.6 | * | * | 1 |
| CBD | 2019/07/12 20:40 | 11 | 250 | 3.5 | Mondi | Lime Kiln | 21 |
| CBD | 2019/07/12 20:50 | 10 | 243 | 3.5 | Mondi | Lime Kiln | 21 |
| CBD | 2019/07/12 21:00 | 7 | 253 | 3.7 | * | * | 1 |
| CBD | 2019/07/12 22:00 | 7 | 252 | 2.9 | * | * | 1 |
| CBD | 2019/07/12 22:10 | 5 | 252 | 3.4 | * | * | 1 |
| CBD | 2019/07/16 06:10 | 8 | 247 | 2.7 | * | * | 1 |
| CBD | 2019/07/16 06:20 | 12 | 256 | 2.3 | Mondi | Effluent Plant | 37 |
| CBD | 2019/07/16 06:30 | 14 | 271 | 1.6 | Mondi | Effluent Plant | 37 |
| CBD | 2019/07/16 06:40 | 11 | 293 | 1.7 | Mondi | Effluent Plant | 37 |
| CBD | 2019/07/19 20:00 | 10 | 220 | 5.1 | Mondi | Effluent Plant | 38 |
| CBD | 2019/07/21 04:20 | 6 | 239 | 3.8 | * | * | 1 |
| CBD | 2019/07/26 01:10 | 5 | 247 | 2.7 | * | * | 1 |
| CBD | 2019/07/31 03:40 | 5 | 246 | 3.4 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/07/31 03:50 | 5 | 244 | 3.7 | * | * | 1 |
| CBD | 2019/07/31 04:20 | 5 | 236 | 4.4 | * | * | 1 |
| CBD | 2019/07/31 04:30 | 5 | 237 | 3.9 | * | * | 1 |
| CBD | 2019/07/31 04:40 | 5 | 227 | 5.1 | * | * | 1 |
| CBD | 2019/07/31 04:50 | 5 | 235 | 4.2 | * | * | 1 |
| CBD | 2019/07/31 05:20 | 5 | 230 | 4.7 | * | * | 1 |
| CBD | 2019/07/31 05:30 | 6 | 235 | 4.4 | * | * | 1 |
| CBD | 2019/07/31 05:40 | 5 | 243 | 3.2 | * | * | 1 |
| CBD | 2019/07/31 05:50 | 5 | 229 | 5.0 | * | * | 1 |
| CBD | 2019/07/31 06:00 | 5 | 225 | 5.8 | * | * | 1 |
| CBD | 2019/08/01 03:40 | 5 | 237 | 3.8 | * | * | 1 |
| CBD | 2019/08/04 00:20 | 6 | 248 | 3.2 | * | * | 1 |
| CBD | 2019/08/04 01:40 | 5 | 250 | 3.0 | * | * | 1 |
| CBD | 2019/08/04 01:50 | 7 | 256 | 3.5 | * | * | 1 |
| CBD | 2019/08/04 02:00 | 5 | 260 | 3.9 | * | * | 1 |
| CBD | 2019/08/04 02:20 | 6 | 239 | 3.2 | * | * | 1 |
| CBD | 2019/08/04 02:30 | 8 | 239 | 3.0 | * | * | 1 |
| CBD | 2019/08/04 02:40 | 6 | 244 | 3.2 | * | * | 1 |
| CBD | 2019/08/04 02:50 | 8 | 247 | 3.0 | * | * | 1 |
| CBD | 2019/08/04 03:00 | 7 | 253 | 3.7 | * | * | 1 |
| CBD | 2019/08/04 03:10 | 9 | 249 | 3.1 | * | * | 1 |
| CBD | 2019/08/04 03:20 | 6 | 259 | 3.4 | * | * | 1 |
| CBD | 2019/08/04 03:30 | 7 | 245 | 2.9 | * | * | 1 |
| CBD | 2019/08/04 03:40 | 6 | 237 | 2.7 | * | * | 1 |
| CBD | 2019/08/04 03:50 | 7 | 253 | 3.2 | * | * | 1 |
| CBD | 2019/08/04 04:00 | 10 | 254 | 4.0 | Mondi | Effluent Plant | 2 |
| CBD | 2019/08/04 04:10 | 8 | 257 | 3.2 | * | * | 1 |
| CBD | 2019/08/04 04:20 | 10 | 250 | 2.9 | Mondi | Effluent Plant | 2 |
| CBD | 2019/08/04 04:30 | 9 | 248 | 1.8 | * | * | 1 |
| CBD | 2019/08/04 04:40 | 8 | 260 | 1.2 | * | * | 1 |
| CBD | 2019/08/05 06:20 | 7 | 255 | 1.6 | * | * | 1 |
| CBD | 2019/08/05 07:00 | 7 | 260 | 2.2 | * | * | 1 |
| CBD | 2019/08/05 07:10 | 12 | 258 | 2.2 | Mondi | Effluent Plant | 48 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/08/05 07:20 | 9 | 273 | 1.4 | * | * | 1 |
| CBD | 2019/08/05 07:30 | 7 | 255 | 1.9 | * | * | 1 |
| CBD | 2019/08/05 07:40 | 7 | 278 | 1.6 | * | * | 1 |
| CBD | 2019/08/08 21:50 | 5 | 250 | 3.8 | * | * | 1 |
| CBD | 2019/08/08 22:00 | 5 | 254 | 4.4 | * | * | 1 |
| CBD | 2019/08/09 07:10 | 6 | 262 | 3.9 | * | * | 1 |
| CBD | 2019/08/09 07:20 | 5 | 259 | 3.5 | * | * | 1 |
| CBD | 2019/08/09 12:10 | 6 | 249 | 3.9 | * | * | 1 |
| CBD | 2019/08/13 03:20 | 6 | 254 | 3.1 | * | * | 1 |
| CBD | 2019/08/13 03:30 | 5 | 254 | 2.8 | * | * | 1 |
| CBD | 2019/08/13 04:10 | 7 | 246 | 3.0 | * | * | 1 |
| CBD | 2019/08/13 05:10 | 9 | 261 | 2.6 | Mondi | Effluent Plant | 46 |
| CBD | 2019/08/13 05:20 | 8 | 269 | 1.9 | * | * | 1 |
| CBD | 2019/08/15 00:10 | 8 | 251 | 4.6 | * | * | 1 |
| CBD | 2019/08/15 00:20 | 11 | 251 | 4.4 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 00:30 | 9 | 251 | 4.1 | * | * | 1 |
| CBD | 2019/08/15 00:40 | 13 | 254 | 3.9 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 00:50 | 9 | 260 | 3.3 | * | * | 1 |
| CBD | 2019/08/15 01:00 | 5 | 257 | 3.7 | * | * | 1 |
| CBD | 2019/08/15 01:10 | 8 | 266 | 3.2 | * | * | 1 |
| CBD | 2019/08/15 01:40 | 7 | 238 | 2.2 | * | * | 1 |
| CBD | 2019/08/15 01:50 | 12 | 238 | 2.5 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 02:00 | 12 | 245 | 1.8 | Mondi | Fugitive emission | 49 |
| CBD | 2019/08/15 02:10 | 9 | 286 | 2.2 | * | * | 1 |
| CBD | 2019/08/25 19:50 | 14 | 244 | 1.7 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:00 | 11 | 266 | 1.1 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:10 | 9 | 276 | 1.4 | * | * | 1 |
| CBD | 2019/08/25 20:20 | 13 | 299 | 1.0 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:30 | 16 | 348 | 0.4 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:40 | 15 | 40 | 0.3 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 20:50 | 12 | 40 | 0.5 | Mondi | Effluent Plant | 51 |
| CBD | 2019/08/25 21:00 | 9 | 336 | 0.7 | * | * | 1 |
| CBD | 2019/08/25 21:10 | 7 | 69 | 1.1 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/08/25 21:20 | 5 | 72 | 1.2 | * | * | 1 |
| CBD | 2019/08/25 23:00 | 6 | 326 | 1.1 | * | * | 1 |
| CBD | 2019/08/25 23:10 | 5 | 335 | 1.1 | * | * | 1 |
| CBD | 2019/08/25 23:20 | 6 | 254 | 1.2 | * | * | 1 |
| CBD | 2019/08/25 23:30 | 6 | 271 | 1.4 | * | * | 1 |
| CBD | 2019/08/25 23:40 | 8 | 272 | 0.8 | * | * | 1 |
| CBD | 2019/08/25 23:50 | 7 | 285 | 1.7 | * | * | 1 |
| CBD | 2019/08/26 00:00 | 5 | 259 | 2.4 | * | * | 1 |
| CBD | 2019/08/26 00:10 | 5 | 241 | 2.6 | * | * | 1 |
| CBD | 2019/08/26 00:20 | 8 | 261 | 3.0 | * | * | 1 |
| CBD | 2019/08/26 00:30 | 11 | 255 | 3.6 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 00:40 | 13 | 256 | 4.2 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 00:50 | 10 | 263 | 3.2 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 01:00 | 6 | 256 | 3.7 | * | * | 1 |
| CBD | 2019/08/26 01:10 | 6 | 261 | 3.7 | * | * | 1 |
| CBD | 2019/08/26 01:20 | 5 | 246 | 3.8 | * | * | 1 |
| CBD | 2019/08/26 03:10 | 6 | 260 | 4.8 | * | * | 1 |
| CBD | 2019/08/26 03:20 | 6 | 262 | 4.6 | * | * | 1 |
| CBD | 2019/08/26 03:30 | 7 | 263 | 4.7 | * | * | 1 |
| CBD | 2019/08/26 03:40 | 7 | 258 | 4.8 | * | * | 1 |
| CBD | 2019/08/26 03:50 | 6 | 256 | 4.4 | * | * | 1 |
| CBD | 2019/08/26 06:20 | 5 | 237 | 2.6 | * | * | 1 |
| CBD | 2019/08/26 19:50 | 5 | 302 | 1.5 | * | * | 1 |
| CBD | 2019/08/26 22:30 | 10 | 263 | 3.3 | Mondi | Fugitive emission | 53 |
| CBD | 2019/08/26 22:40 | 8 | 260 | 3.3 | * | * | 1 |
| CBD | 2019/08/26 23:00 | 5 | 255 | 3.0 | * | * | 1 |
| CBD | 2019/08/26 23:10 | 6 | 262 | 3.1 | * | * | 1 |
| CBD | 2019/08/26 23:20 | 6 | 263 | 3.0 | * | * | 1 |
| CBD | 2019/08/26 23:30 | 6 | 266 | 2.8 | * | * | 1 |
| CBD | 2019/08/26 23:40 | 8 | 272 | 2.4 | * | * | 1 |
| CBD | 2019/08/26 23:50 | 8 | 270 | 2.3 | * | * | 1 |
| CBD | 2019/08/27 00:00 | 7 | 269 | 2.2 | * | * | 1 |
| CBD | 2019/08/27 00:10 | 7 | 255 | 2.7 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/08/27 00:20 | 8 | 242 | 2.9 | * | * | 1 |
| CBD | 2019/08/27 00:30 | 7 | 240 | 2.8 | * | * | 1 |
| CBD | 2019/08/27 00:40 | 6 | 228 | 2.9 | * | * | 1 |
| CBD | 2019/08/27 01:50 | 6 | 247 | 3.3 | * | * | 1 |
| CBD | 2019/08/27 02:00 | 8 | 249 | 3.1 | * | * | 1 |
| CBD | 2019/08/27 02:10 | 7 | 249 | 3.1 | * | * | 1 |
| CBD | 2019/08/27 02:20 | 6 | 245 | 3.2 | * | * | 1 |
| CBD | 2019/08/27 02:30 | 5 | 247 | 2.9 | * | * | 1 |
| CBD | 2019/08/27 05:40 | 5 | 255 | 3.4 | * | * | 1 |
| CBD | 2019/08/27 05:50 | 5 | 252 | 3.3 | * | * | 1 |
| CBD | 2019/08/28 20:20 | 5 | 247 | 4.5 | * | * | 1 |
| CBD | 2019/08/28 21:50 | 5 | 265 | 5.2 | * | * | 1 |
| CBD | 2019/08/28 22:00 | 5 | 264 | 5.0 | * | * | 1 |
| CBD | 2019/08/28 22:20 | 5 | 254 | 6.2 | * | * | 1 |
| CBD | 2019/08/28 22:40 | 5 | 250 | 6.4 | * | * | 1 |
| CBD | 2019/09/01 01:20 | 5 | 261 | 3.4 | * | * | 1 |
| CBD | 2019/09/01 02:20 | 5 | 252 | 3.5 | * | * | 1 |
| CBD | 2019/09/04 07:40 | 6 | 237 | 2.3 | * | * | 1 |
| CBD | 2019/09/04 07:50 | 7 | 224 | 4.1 | * | * | 1 |
| CBD | 2019/09/04 08:00 | 5 | 222 | 4.0 | * | * | 1 |
| CBD | 2019/09/04 08:10 | 5 | 218 | 4.7 | * | * | 1 |
| CBD | 2019/09/05 02:30 | 11 | 261 | 1.6 | Mondi | Effluent Plant | 87 |
| CBD | 2019/09/05 02:40 | 14 | 270 | 1.6 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 02:50 | 12 | 277 | 1.5 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 03:00 | 11 | 264 | 1.4 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 03:10 | 9 | 303 | 1.3 | * | * | 1 |
| CBD | 2019/09/05 03:20 | 5 | 294 | 1.4 | * | * | 1 |
| CBD | 2019/09/05 04:20 | 6 | 245 | 1.8 | * | * | 1 |
| CBD | 2019/09/05 04:30 | 11 | 246 | 1.7 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 04:40 | 12 | 246 | 1.8 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 04:50 | 7 | 243 | 1.4 | * | * | 1 |
| CBD | 2019/09/05 05:00 | 5 | 251 | 1.6 | * | * | 1 |
| CBD | 2019/09/05 05:10 | 6 | 252 | 1.8 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/09/05 05:20 | 14 | 259 | 1.6 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 05:30 | 15 | 278 | 1.1 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 05:40 | 10 | 302 | 1.1 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 05:50 | 9 | 283 | 1.4 | * | * | 1 |
| CBD | 2019/09/05 06:00 | 7 | 260 | 1.1 | * | * | 1 |
| CBD | 2019/09/05 06:10 | 6 | 278 | 0.7 | * | * | 1 |
| CBD | 2019/09/05 06:30 | 5 | 58 | 0.8 | * | * | 1 |
| CBD | 2019/09/05 07:30 | 16 | 277 | 1.5 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 07:40 | 24 | 265 | 2.5 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/05 07:50 | 11 | 252 | 2.7 | Mondi | Effluent Plant | 89 |
| CBD | 2019/09/14 01:10 | 6 | 256 | 4.0 | * | * | 1 |
| CBD | 2019/09/14 01:20 | 6 | 257 | 4.4 | * | * | 1 |
| CBD | 2019/09/14 01:30 | 7 | 255 | 4.2 | * | * | 1 |
| CBD | 2019/09/14 01:40 | 7 | 258 | 3.6 | * | * | 1 |
| CBD | 2019/09/14 01:50 | 5 | 259 | 3.8 | * | * | 1 |
| CBD | 2019/09/14 03:30 | 9 | 245 | 3.8 | * | * | 1 |
| CBD | 2019/09/14 03:50 | 10 | 247 | 3.1 | Mondi | Flare | 29 |
| CBD | 2019/09/14 04:00 | 10 | 241 | 3.0 | Mondi | Flare | 29 |
| CBD | 2019/09/14 04:10 | 6 | 252 | 3.6 | * | * | 1 |
| CBD | 2019/09/14 04:20 | 8 | 259 | 4.1 | * | * | 1 |
| CBD | 2019/09/14 04:30 | 7 | 238 | 3.6 | * | * | 1 |
| CBD | 2019/09/14 04:40 | 7 | 244 | 3.2 | * | * | 1 |
| CBD | 2019/09/14 04:50 | 9 | 246 | 3.2 | * | * | 1 |
| CBD | 2019/09/14 05:00 | 8 | 261 | 3.6 | * | * | 1 |
| CBD | 2019/09/14 05:10 | 7 | 235 | 2.6 | * | * | 1 |
| CBD | 2019/09/14 05:20 | 7 | 232 | 2.4 | * | * | 1 |
| CBD | 2019/09/14 05:30 | 7 | 255 | 2.1 | * | * | 1 |
| CBD | 2019/09/14 05:40 | 6 | 252 | 2.8 | * | * | 1 |
| CBD | 2019/09/14 05:50 | 5 | 280 | 1.5 | * | * | 1 |
| CBD | 2019/09/14 06:50 | 7 | 256 | 3.6 | * | * | 1 |
| CBD | 2019/09/14 07:00 | 7 | 256 | 3.8 | * | * | 1 |
| CBD | 2019/09/14 07:10 | 5 | 251 | 3.4 | * | * | 1 |
| CBD | 2019/09/14 19:30 | 7 | 265 | 2.9 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/09/14 19:40 | 5 | 269 | 2.4 | * | * | 1 |
| CBD | 2019/09/14 20:50 | 5 | 251 | 2.9 | * | * | 1 |
| CBD | 2019/09/14 22:10 | 5 | 292 | 2.3 | * | * | 1 |
| CBD | 2019/09/23 04:00 | 6 | 229 | 6.2 | * | * | 1 |
| CBD | 2019/09/23 04:10 | 5 | 234 | 5.2 | * | * | 1 |
| CBD | 2019/09/24 01:00 | 5 | 227 | 3.2 | * | * | 1 |
| CBD | 2019/09/24 01:50 | 7 | 262 | 4.0 | * | * | 1 |
| CBD | 2019/09/24 03:30 | 6 | 254 | 4.8 | * | * | 1 |
| CBD | 2019/09/24 03:40 | 7 | 252 | 4.0 | * | * | 1 |
| CBD | 2019/09/24 03:50 | 8 | 256 | 4.5 | * | * | 1 |
| CBD | 2019/09/24 04:00 | 7 | 261 | 6.2 | * | * | 1 |
| CBD | 2019/09/24 05:10 | 6 | 257 | 5.3 | * | * | 1 |
| CBD | 2019/09/24 05:20 | 8 | 255 | 5.5 | * | * | 1 |
| CBD | 2019/09/24 05:30 | 6 | 255 | 5.3 | * | * | 1 |
| CBD | 2019/09/24 20:40 | 5 | 286 | 2.7 | * | * | 1 |
| CBD | 2019/09/30 04:10 | 5 | 246 | 5.4 | * | * | 1 |
| CBD | 2019/10/04 19:40 | 5 | 230 | 4.9 | * | * | 1 |
| CBD | 2019/10/14 06:30 | 5 | 277 | 3.6 | * | * | 1 |
| CBD | 2019/10/15 11:30 | 6 | 281 | 6.2 | * | * | 1 |
| CBD | 2019/10/15 11:40 | 5 | 274 | 5.2 | * | * | 1 |
| CBD | 2019/10/15 22:50 | 5 | 274 | 4.6 | * | * | 1 |
| CBD | 2019/10/16 00:20 | 5 | 270 | 4.6 | * | * | 1 |
| CBD | 2019/10/25 00:20 | 6 | 215 | 6.3 | * | * | 1 |
| CBD | 2019/11/08 20:10 | 6 | 238 | 1.7 | * | * | 1 |
| CBD | 2019/11/08 20:20 | 9 | 201 | 1.6 | * | * | 1 |
| CBD | 2019/11/08 21:20 | 7 | 312 | 3.1 | * | * | 1 |
| CBD | 2019/11/08 21:30 | 5 | 344 | 2.5 | * | * | 1 |
| CBD | 2019/11/08 23:00 | 6 | 300 | 3.5 | * | * | 1 |
| CBD | 2019/11/08 23:10 | 7 | 306 | 3.2 | * | * | 1 |
| CBD | 2019/11/08 23:20 | 9 | 315 | 4.6 | * | * | 1 |
| CBD | 2019/11/09 02:20 | 5 | 293 | 2.6 | * | * | 1 |
| CBD | 2019/11/09 02:30 | 8 | 259 | 2.0 | * | * | 1 |
| CBD | 2019/11/09 02:40 | 9 | 276 | 2.4 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/11/09 02:50 | 9 | 289 | 2.6 | * | * | 1 |
| CBD | 2019/11/09 03:00 | 13 | 290 | 2.7 | Mondi | Effluent Plant | 32 |
| CBD | 2019/11/09 03:10 | 7 | 283 | 2.4 | * | * | 1 |
| CBD | 2019/11/09 03:20 | 6 | 271 | 2.3 | * | * | 1 |
| CBD | 2019/11/09 03:30 | 6 | 277 | 2.5 | * | * | 1 |
| CBD | 2019/11/09 04:40 | 5 | 319 | 2.2 | * | * | 1 |
| CBD | 2019/11/10 07:40 | 12 | 12 | 2.0 | Mondi | Fugitive emission | 85 |
| CBD | 2019/11/10 07:50 | 8 | 20 | 2.2 | * | * | 1 |
| CBD | 2019/11/15 05:10 | 5 | 263 | 4.5 | * | * | 1 |
| CBD | 2019/11/15 06:30 | 5 | 225 | 6.0 | * | * | 1 |
| CBD | 2019/11/15 08:50 | 7 | 263 | 6.3 | * | * | 1 |
| CBD | 2019/11/18 04:10 | 7 | 319 | 2.9 | * | * | 1 |
| CBD | 2019/12/04 05:10 | 5 | 210 | 4.1 | * | * | 1 |
| CBD | 2019/12/04 05:20 | 5 | 209 | 3.9 | * | * | 1 |
| CBD | 2019/12/04 05:50 | 6 | 227 | 3.5 | * | * | 1 |
| CBD | 2019/12/04 18:20 | 6 | 209 | 1.2 | * | * | 1 |
| CBD | 2019/12/20 04:50 | 5 | 275 | 3.9 | * | * | 1 |
| CBD | 2019/12/20 05:30 | 6 | 270 | 3.9 | * | * | 1 |
| CBD | 2019/12/20 05:40 | 6 | 275 | 3.9 | * | * | 1 |
| CBD | 2019/12/23 00:50 | 6 | 252 | 4.0 | * | * | 1 |
| CBD | 2019/12/23 01:00 | 5 | 243 | 3.0 | * | * | 1 |
| CBD | 2019/12/28 01:40 | 5 | 288 | 3.9 | * | * | 1 |
| CBD | 2019/12/28 01:50 | 8 | 300 | 5.6 | * | * | 1 |
| CBD | 2019/12/28 03:30 | 10 | 294 | 4.2 | Mondi | Effluent plant - poor quality condensate | 84 |
| CBD | 2019/12/28 03:40 | 11 | 294 | 4.7 | Mondi | Effluent plant - poor quality condensate | 84 |
| CBD | 2019/12/28 03:50 | 15 | 292 | 5.2 | Mondi | Effluent plant - poor quality condensate | 84 |
| CBD | 2019/12/28 04:00 | 8 | 295 | 5.0 | * | * | 1 |
| CBD | 2019/12/28 05:40 | 6 | 310 | 4.8 | * | * | 1 |
| CBD | 2019/12/28 05:50 | 7 | 314 | 4.9 | * | * | 1 |
| CBD | 2019/12/28 06:00 | 7 | 318 | 4.9 | * | * | 1 |
| CBD | 2019/12/28 06:10 | 6 | 321 | 4.7 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| CBD | 2019/12/28 06:50 | 5 | 282 | 3.0 | * | * | 1 |
| CBD | 2019/12/28 07:40 | 6 | 289 | 5.4 | * | * | 1 |
| CBD | 2019/12/31 04:40 | 5 | 261 | 2.3 | * | * | 1 |
| CBD | 2019/12/31 04:50 | 5 | 249 | 2.4 | * | * | 1 |
| eSikhaleni | 2019/04/23 02:40 | 6 | 302 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/04/23 02:50 | 5 | 326 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/04/23 07:20 | 6 | 73 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/04/23 20:30 | 6 | 93 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/04/23 20:40 | 6 | 97 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/04/23 20:50 | 8 | 61 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/04/23 21:00 | 8 | 51 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/04/23 21:10 | 7 | 27 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/04/23 21:20 | 5 | 21 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/04/23 22:10 | 5 | 358 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/04/24 03:20 | 13 | 99 | 0.3 | Mondi | Design flaw introduced during annual shut. | 42 |
| eSikhaleni | 2019/04/24 03:30 | 12 | 67 | 0.2 | Mondi | Design flaw introduced during annual shut. | 42 |
| eSikhaleni | 2019/04/24 03:40 | 8 | 56 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/04/24 03:50 | 8 | 33 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/04/24 04:00 | 8 | 59 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/04/24 04:10 | 6 | 54 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/04/24 04:20 | 5 | 15 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/04/27 06:20 | 5 | 262 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/03 04:40 | 7 | 57 | 1.7 | * | * | 1 |
| eSikhaleni | 2019/05/03 04:50 | 14 | 64 | 1.6 | Mondi | Fugitive emission | 41 |
| eSikhaleni | 2019/05/03 05:00 | 16 | 63 | 1.4 | Mondi | Fugitive emission | 41 |
| eSikhaleni | 2019/05/03 05:10 | 17 | 66 | 1.5 | Mondi | Fugitive emission | 41 |
| eSikhaleni | 2019/05/03 05:20 | 13 | 68 | 1.9 | Mondi | Fugitive emission | 41 |
| eSikhaleni | 2019/05/03 05:30 | 8 | 64 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/05/03 05:40 | 8 | 61 | 2.3 | * | * | 1 |
| eSikhaleni | 2019/05/03 05:50 | 8 | 53 | 2.5 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/05/03 06:00 | 5 | 51 | 2.5 | * | * | 1 |
| eSikhaleni | 2019/05/03 06:30 | 5 | 54 | 2.1 | * | * | 1 |
| eSikhaleni | 2019/05/03 06:40 | 5 | 42 | 2.1 | * | * | 1 |
| eSikhaleni | 2019/05/03 07:10 | 5 | 44 | 2.6 | * | * | 1 |
| eSikhaleni | 2019/05/03 07:20 | 6 | 53 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/05/06 23:40 | 21 | 330 | 0.1 | Mondi | Effluent plant | 6 |
| eSikhaleni | 2019/05/06 23:50 | 11 | 330 | 0.0 | Mondi | Effluent plant | 6 |
| eSikhaleni | 2019/05/07 00:00 | 7 | 321 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/07 00:10 | 6 | 289 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/05/07 00:20 | 12 | 325 | 0.1 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 00:30 | 12 | 335 | 0.0 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 00:40 | 11 | 332 | 0.0 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 00:50 | 7 | 261 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/05/07 02:20 | 8 | 321 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/05/07 02:30 | 7 | 343 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/07 02:40 | 5 | 337 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/07 05:20 | 6 | 48 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/05/07 05:30 | 8 | 82 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/05/07 06:10 | 7 | 61 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/05/07 06:20 | 22 | 42 | 0.8 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 06:30 | 35 | 43 | 1.0 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 06:40 | 15 | 69 | 0.8 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 06:50 | 10 | 65 | 0.8 | Mondi | Flare | 54 |
| eSikhaleni | 2019/05/07 07:00 | 7 | 68 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/05/07 07:10 | 5 | 60 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/05/07 07:20 | 5 | 53 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/05/11 20:10 | 5 | 293 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/11 20:40 | 5 | 119 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/11 20:50 | 5 | 36 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/11 21:10 | 5 | 137 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/11 21:20 | 5 | 137 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/05/11 23:50 | 6 | 29 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/05/12 01:40 | 5 | 88 | 0.0 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/05/12 02:20 | 7 | 55 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/05/12 02:30 | 6 | 57 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/05/12 02:40 | 5 | 89 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/05/12 03:30 | 5 | 44 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/05/12 03:50 | 5 | 99 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/05/12 04:00 | 5 | 86 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/05/12 04:10 | 5 | 113 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/05/12 04:40 | 6 | 73 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/05/12 04:50 | 9 | 44 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/05/12 05:00 | 7 | 35 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/05/12 05:10 | 5 | 38 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/05/12 05:30 | 5 | 43 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/05/12 05:40 | 6 | 51 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/05/12 07:40 | 6 | 82 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/05/12 07:50 | 5 | 82 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/05/12 08:00 | 8 | 69 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/05/12 08:10 | 7 | 44 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/05/12 09:10 | 5 | 21 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/05/13 05:20 | 10 | 48 | 1.5 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 05:30 | 9 | 26 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/05/13 05:50 | 7 | 11 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/05/13 06:00 | 6 | 28 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/05/13 06:50 | 9 | 69 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/05/13 07:00 | 20 | 65 | 2.0 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 07:10 | 11 | 49 | 2.0 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 07:20 | 19 | 46 | 1.9 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 07:30 | 31 | 34 | 1.4 | Mondi | Flare | 58 |
| eSikhaleni | 2019/05/13 07:40 | 9 | 30 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/05/13 08:20 | 6 | 5 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/05/14 19:40 | 6 | 295 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/05/14 19:50 | 6 | 296 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/14 20:00 | 6 | 281 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/05/14 20:10 | 5 | 247 | 0.2 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/05/14 20:20 | 6 | 280 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/14 20:30 | 6 | 354 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/05/14 20:40 | 6 | 8 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/05/15 00:50 | 7 | 79 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/05/15 01:00 | 5 | 71 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/05/15 16:10 | 9 | 74 | 3.4 | * | * | 1 |
| eSikhaleni | 2019/05/15 16:20 | 7 | 68 | 3.5 | * | * | 1 |
| eSikhaleni | 2019/05/15 16:30 | 7 | 69 | 3.6 | * | * | 1 |
| eSikhaleni | 2019/05/15 16:40 | 5 | 72 | 2.9 | * | * | 1 |
| eSikhaleni | 2019/05/15 17:00 | 7 | 90 | 2.1 | * | * | 51 |
| eSikhaleni | 2019/05/15 17:10 | 8 | 75 | 2.7 | * | * | 1 |
| eSikhaleni | 2019/05/15 17:20 | 5 | 58 | 3.1 | * | * | 1 |
| eSikhaleni | 2019/05/16 03:20 | 6 | 53 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/05/16 03:30 | 9 | 130 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/05/16 03:40 | 7 | 71 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/05/16 04:20 | 11 | 44 | 0.3 | Mondi | Effluent plant | 82 |
| eSikhaleni | 2019/05/16 04:30 | 15 | 46 | 0.5 | Mondi | Effluent plant | 82 |
| eSikhaleni | 2019/05/16 04:40 | 10 | 49 | 0.2 | Mondi | Effluent plant | 82 |
| eSikhaleni | 2019/05/16 04:50 | 5 | 309 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/05/17 05:00 | 5 | 38 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/05/17 05:10 | 7 | 269 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/05/17 05:20 | 11 | 46 | 0.3 | Mondi | Effluent plant | 80 |
| eSikhaleni | 2019/05/17 05:30 | 10 | 52 | 0.0 | Mondi | Effluent plant | 80 |
| eSikhaleni | 2019/05/17 05:40 | 8 | 52 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/17 05:50 | 9 | 35 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/05/17 06:00 | 11 | 19 | 0.0 | Mondi | Effluent plant | 80 |
| eSikhaleni | 2019/05/17 06:10 | 9 | 20 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/05/17 06:20 | 7 | 337 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/05/17 23:50 | 6 | 101 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/05/18 00:10 | 6 | 84 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/05/18 01:00 | 5 | 60 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/05/18 01:10 | 5 | 41 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/05/18 01:30 | 6 | 95 | 0.7 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/05/18 01:40 | 11 | 87 | 1.1 | Mondi | Fugitive emission | 81 |
| eSikhaleni | 2019/05/18 01:50 | 6 | 94 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/05/18 02:10 | 8 | 61 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/05/18 04:50 | 5 | 56 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/05/20 03:30 | 6 | 67 | 2.1 | * | * | 1 |
| eSikhaleni | 2019/05/20 04:00 | 6 | 58 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/05/20 04:10 | 14 | 80 | 1.6 | Mondi | Effluent plant | 57 |
| eSikhaleni | 2019/05/20 04:20 | 11 | 81 | 2.0 | Mondi | Effluent plant | 57 |
| eSikhaleni | 2019/05/20 04:30 | 12 | 78 | 2.2 | Mondi | Effluent plant | 57 |
| eSikhaleni | 2019/05/20 04:40 | 11 | 78 | 2.2 | Mondi | Effluent plant | 57 |
| eSikhaleni | 2019/05/20 06:40 | 5 | 31 | 2.4 | * | * | 1 |
| eSikhaleni | 2019/05/25 02:30 | 9 | 74 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/05/25 02:40 | 10 | 54 | 0.8 | Mondi | Fugitive emission | 61 |
| eSikhaleni | 2019/05/25 02:50 | 8 | 61 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/05/25 03:00 | 5 | 78 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/05/25 03:20 | 6 | 78 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/05/25 03:30 | 5 | 75 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/05/31 18:00 | 5 | 330 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/06/01 17:20 | 6 | 348 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/06/01 19:00 | 6 | 272 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/06/01 19:10 | 6 | 257 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/06/01 19:30 | 5 | 292 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/06/01 20:00 | 5 | 280 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/06/02 18:00 | 5 | 54 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/06/02 22:00 | 5 | 299 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/06/02 22:10 | 5 | 27 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/06/02 22:20 | 5 | 142 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/06/03 07:10 | 5 | 76 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/06/03 19:40 | 6 | 64 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/06/03 20:40 | 6 | 23 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/06/03 20:50 | 9 | 27 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/06/03 21:00 | 11 | 39 | 0.8 | Mondi | Flare | 76 |
| eSikhaleni | 2019/06/03 21:10 | 13 | 52 | 0.7 | Mondi | Flare | 76 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/06/03 21:20 | 13 | 48 | 1.0 | Mondi | Flare | 76 |
| eSikhaleni | 2019/06/03 21:30 | 14 | 41 | 0.9 | Mondi | Flare | 76 |
| eSikhaleni | 2019/06/03 21:40 | 13 | 21 | 1.0 | Mondi | Flare | 76 |
| eSikhaleni | 2019/06/03 21:50 | 7 | 45 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/06/04 00:40 | 6 | 16 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/06/04 00:50 | 11 | 28 | 1.8 | Mondi | Fugitive emission | 14 |
| eSikhaleni | 2019/06/04 01:00 | 7 | 30 | 2.3 | * | * | 1 |
| eSikhaleni | 2019/06/04 03:30 | 6 | 2 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/06/04 03:40 | 12 | 37 | 1.1 | Mondi | Fugitive emission | 14 |
| eSikhaleni | 2019/06/04 03:50 | 12 | 82 | 1.2 | Mondi | Fugitive emission | 14 |
| eSikhaleni | 2019/06/04 04:00 | 8 | 77 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/06/04 05:20 | 6 | 91 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/06/04 07:00 | 6 | 48 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/06/04 07:30 | 5 | 33 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/06/04 07:50 | 7 | 39 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/06/04 08:00 | 6 | 37 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/06/04 08:40 | 7 | 16 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/06/04 08:50 | 7 | 25 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/06/10 07:30 | 7 | 71 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/06/10 07:40 | 6 | 78 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/06/10 07:50 | 8 | 81 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/06/10 08:00 | 7 | 67 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/06/12 08:20 | 5 | 26 | 2.3 | * | * | 1 |
| eSikhaleni | 2019/06/12 08:30 | 5 | 31 | 2.6 | * | * | 1 |
| eSikhaleni | 2019/06/12 09:10 | 7 | 27 | 2.3 | * | * | 1 |
| eSikhaleni | 2019/06/12 09:20 | 7 | 9 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/06/14 07:20 | 5 | 21 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/06/14 07:30 | 6 | 25 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/06/16 00:40 | 5 | 52 | 2.1 | * | * | 1 |
| eSikhaleni | 2019/06/16 00:50 | 5 | 66 | 2.3 | * | * | 1 |
| eSikhaleni | 2019/06/16 18:50 | 5 | 63 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/06/16 19:00 | 6 | 70 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/06/16 20:10 | 5 | 75 | 0.8 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/06/16 20:20 | 6 | 74 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/06/16 22:30 | 6 | 49 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/06/17 20:50 | 8 | 58 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/06/17 21:00 | 5 | 86 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/06/17 22:40 | 6 | 22 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/06/17 23:30 | 6 | 63 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/06/19 17:10 | 6 | 38 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/06/19 17:20 | 7 | 13 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/06/19 18:40 | 5 | 43 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/06/19 18:50 | 5 | 39 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/06/19 19:00 | 6 | 35 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/06/19 19:10 | 5 | 27 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/06/19 19:40 | 5 | 350 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/06/23 22:50 | 5 | 12 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/06/28 17:30 | 6 | 59 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/06/28 17:40 | 6 | 73 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/06/28 17:50 | 8 | 47 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/06/28 18:00 | 5 | 58 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/06/28 18:10 | 6 | 52 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/06/28 18:20 | 8 | 74 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/06/28 18:30 | 8 | 35 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/06/28 19:10 | 6 | 65 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/06/28 19:20 | 7 | 65 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/06/28 19:30 | 6 | 79 | 1.8 | * | * | 1 |
| eSikhaleni | 2019/06/28 19:40 | 5 | 85 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/06/28 19:50 | 8 | 70 | 1.8 | * | * | 1 |
| eSikhaleni | 2019/06/28 20:00 | 9 | 64 | 1.8 | * | * | 1 |
| eSikhaleni | 2019/06/28 20:10 | 12 | 68 | 1.5 | Mondi | Effluent Plant | 25 |
| eSikhaleni | 2019/06/28 20:20 | 9 | 87 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/06/28 21:20 | 5 | 65 | 2.3 | * | * | 1 |
| eSikhaleni | 2019/06/28 22:40 | 6 | 58 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/06/28 22:50 | 5 | 66 | 1.7 | * | * | 1 |
| eSikhaleni | 2019/06/29 02:50 | 6 | 80 | 1.6 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/06/29 03:00 | 8 | 104 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/06/29 03:10 | 5 | 108 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/06/29 20:30 | 5 | 53 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/06/29 20:50 | 6 | 46 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/06/29 21:30 | 5 | 65 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/06/29 21:40 | 39 | 50 | 1.3 | Mondi | Effluent Plant | 26 |
| eSikhaleni | 2019/06/29 21:50 | 78 | 8 | 1.2 | Mondi | Effluent Plant | 26 |
| eSikhaleni | 2019/06/29 22:00 | 43 | 24 | 0.6 | Mondi | Effluent Plant | 26 |
| eSikhaleni | 2019/06/29 22:10 | 30 | 68 | 0.2 | Mondi | Effluent Plant | 26 |
| eSikhaleni | 2019/06/29 22:20 | 23 | 50 | 0.3 | Mondi | Effluent Plant | 26 |
| eSikhaleni | 2019/06/29 22:30 | 5 | 35 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/06/30 04:40 | 12 | 20 | 4.0 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 04:50 | 13 | 21 | 3.2 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 05:00 | 9 | 19 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/06/30 05:10 | 7 | 32 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/06/30 05:20 | 13 | 26 | 2.2 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 05:30 | 13 | 34 | 1.9 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 05:40 | 9 | 29 | 2.4 | * | * | 1 |
| eSikhaleni | 2019/06/30 05:50 | 10 | 38 | 2.5 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 06:00 | 6 | 32 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/06/30 06:10 | 8 | 32 | 2.4 | * | * | 1 |
| eSikhaleni | 2019/06/30 06:20 | 11 | 41 | 1.7 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 06:30 | 16 | 70 | 2.1 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 06:40 | 18 | 62 | 1.6 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 06:50 | 11 | 92 | 1.3 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:00 | 8 | 89 | 1.8 | * | * | 1 |
| eSikhaleni | 2019/06/30 07:10 | 14 | 58 | 1.8 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:20 | 19 | 71 | 1.9 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:30 | 14 | 71 | 2.0 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:40 | 13 | 79 | 1.5 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 07:50 | 70 | 68 | 1.4 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 08:00 | 56 | 71 | 1.6 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 08:10 | 30 | 57 | 1.1 | Mondi | Unknown source | 27 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/06/30 08:20 | 12 | 33 | 1.2 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 08:30 | 5 | 25 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/06/30 09:30 | 8 | 48 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/06/30 09:40 | 14 | 51 | 2.2 | Mondi | Unknown source | 27 |
| eSikhaleni | 2019/06/30 09:50 | 7 | 39 | 2.5 | * | * | 1 |
| eSikhaleni | 2019/06/30 18:30 | 5 | 41 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/06/30 21:00 | 6 | 36 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/06/30 21:10 | 5 | 45 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/06/30 21:30 | 5 | 19 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/06/30 22:30 | 5 | 42 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/07/03 00:00 | 15 | 16 | 2.3 | Mondi | Biological treatment plant | 74 |
| eSikhaleni | 2019/07/03 00:10 | 9 | 17 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/07/03 00:20 | 32 | 23 | 2.4 | Mondi | Lime Kiln | 11 |
| eSikhaleni | 2019/07/03 00:30 | 21 | 18 | 2.7 | Mondi | Lime Kiln | 11 |
| eSikhaleni | 2019/07/03 00:40 | 9 | 20 | 2.6 | * | * | 1 |
| eSikhaleni | 2019/07/04 03:50 | 7 | 82 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/04 04:00 | 19 | 83 | 0.9 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:10 | 18 | 75 | 1.0 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:20 | 12 | 86 | 1.0 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:30 | 10 | 95 | 1.1 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:40 | 10 | 76 | 1.4 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 04:50 | 10 | 53 | 1.5 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 05:00 | 10 | 31 | 2.1 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 05:10 | 10 | 25 | 2.2 | Mondi | Effluent Plant | 10 |
| eSikhaleni | 2019/07/04 05:20 | 9 | 26 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/04 05:30 | 6 | 23 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/04 08:20 | 5 | 26 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/07/04 08:30 | 6 | 32 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/07/04 08:40 | 6 | 13 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/07/06 18:10 | 5 | 52 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/07/06 18:20 | 5 | 47 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/06 20:10 | 6 | 41 | 2.0 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/06 20:20 | 7 | 42 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/06 20:30 | 7 | 42 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/07/06 22:00 | 7 | 67 | 1.7 | * | * | 1 |
| eSikhaleni | 2019/07/06 22:20 | 5 | 97 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/08 19:50 | 5 | 31 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/07/08 20:10 | 7 | 25 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/07/08 20:20 | 13 | 41 | 0.6 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 20:30 | 13 | 81 | 0.5 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 20:40 | 12 | 81 | 0.5 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 20:50 | 12 | 79 | 0.8 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 21:00 | 12 | 74 | 0.6 | Mondi | Effluent Plant | 8 |
| eSikhaleni | 2019/07/08 21:10 | 9 | 113 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/07/08 21:20 | 7 | 79 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/07/08 21:30 | 7 | 157 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/07/08 21:40 | 7 | 153 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/07/08 21:50 | 7 | 326 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/07/08 22:00 | 8 | 345 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/07/08 22:10 | 7 | 166 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/07/08 22:20 | 7 | 87 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/07/08 22:30 | 8 | 25 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/07/08 22:40 | 6 | 293 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/07/10 04:30 | 5 | 80 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/07/10 04:50 | 7 | 64 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/07/10 05:00 | 9 | 60 | 0.9 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/10 05:10 | 8 | 123 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/07/10 05:20 | 7 | 121 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/07/10 05:30 | 7 | 62 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/07/10 05:40 | 6 | 70 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/10 05:50 | 5 | 40 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/07/10 06:00 | 8 | 32 | 1.8 | * | * | 1 |
| eSikhaleni | 2019/07/10 06:10 | 8 | 18 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/10 06:20 | 7 | 17 | 1.7 | * | * | 1 |
| eSikhaleni | 2019/07/10 06:30 | 8 | 29 | 1.8 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/10 06:40 | 8 | 37 | 1.7 | * | * | 1 |
| eSikhaleni | 2019/07/10 06:50 | 7 | 24 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/10 07:00 | 5 | 14 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/10 08:30 | 5 | 57 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/07/10 08:50 | 8 | 14 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/07/10 09:00 | 10 | 17 | 1.6 | Mondi | Effluent Plant | 18 |
| eSikhaleni | 2019/07/10 09:10 | 7 | 22 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/07/10 09:20 | 7 | 26 | 2.6 | * | * | 1 |
| eSikhaleni | 2019/07/10 16:40 | 6 | 43 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/07/12 00:00 | 7 | 15 | 2.4 | * | * | 1 |
| eSikhaleni | 2019/07/12 00:10 | 7 | 22 | 3.0 | * | * | 1 |
| eSikhaleni | 2019/07/12 00:20 | 11 | 23 | 2.6 | Mondi | Lime Kiln | 22 |
| eSikhaleni | 2019/07/12 00:30 | 6 | 24 | 2.5 | * | * | 1 |
| eSikhaleni | 2019/07/12 00:40 | 8 | 52 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/07/12 00:50 | 10 | 205 | 1.1 | Mondi | Lime Kiln | 22 |
| eSikhaleni | 2019/07/12 01:00 | 9 | 83 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/12 01:10 | 6 | 121 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/07/12 01:50 | 5 | 87 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/07/12 02:00 | 7 | 63 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/07/12 02:10 | 5 | 75 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/07/12 02:40 | 5 | 79 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/07/12 02:50 | 6 | 100 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/07/12 03:00 | 6 | 65 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/07/12 03:10 | 5 | 34 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/12 05:30 | 5 | 82 | 1.7 | * | * | 1 |
| eSikhaleni | 2019/07/12 05:40 | 6 | 77 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/12 05:50 | 9 | 142 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/07/12 06:00 | 6 | 243 | 2.6 | * | * | 1 |
| eSikhaleni | 2019/07/13 03:40 | 6 | 33 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/07/13 03:50 | 8 | 21 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/07/13 09:50 | 5 | 359 | 1.8 | * | * | 1 |
| eSikhaleni | 2019/07/13 10:00 | 5 | 4 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/07/15 08:00 | 5 | 47 | 1.8 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/15 08:20 | 5 | 61 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/07/15 08:30 | 5 | 50 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/07/16 00:20 | 7 | 79 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/07/16 02:30 | 5 | 62 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/07/16 02:40 | 17 | 63 | 1.8 | Mondi | Effluent Plant | 36 |
| eSikhaleni | 2019/07/16 02:50 | 14 | 16 | 1.7 | Mondi | Effluent Plant | 36 |
| eSikhaleni | 2019/07/16 03:00 | 8 | 36 | 2.4 | * | * | 1 |
| eSikhaleni | 2019/07/16 03:10 | 9 | 48 | 2.3 | * | * | 1 |
| eSikhaleni | 2019/07/16 03:20 | 7 | 59 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/07/16 03:30 | 6 | 58 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/07/16 03:40 | 5 | 46 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/16 03:50 | 7 | 51 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/16 04:00 | 6 | 58 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/07/16 04:10 | 6 | 42 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/07/16 04:20 | 6 | 345 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/07/17 07:30 | 8 | 69 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/07/17 07:40 | 6 | 19 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/07/17 18:20 | 5 | 17 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/07/17 18:30 | 5 | 89 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/07/17 18:40 | 5 | 85 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/07/17 19:50 | 5 | 79 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/07/17 20:00 | 5 | 82 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/07/17 21:50 | 5 | 84 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/07/18 02:00 | 6 | 81 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/07/18 02:10 | 10 | 97 | 0.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 02:20 | 13 | 48 | 1.3 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 02:30 | 10 | 9 | 1.3 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 06:30 | 5 | 57 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/07/18 06:40 | 5 | 78 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/07/18 06:50 | 8 | 95 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/07/18 07:00 | 8 | 73 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/07/18 07:10 | 10 | 70 | 0.4 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 07:20 | 9 | 19 | 0.0 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/18 18:20 | 7 | 92 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/07/18 18:30 | 6 | 28 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/07/18 18:40 | 7 | 76 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/18 18:50 | 8 | 34 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/07/18 19:00 | 5 | 79 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/07/18 19:10 | 5 | 76 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/07/18 19:20 | 5 | 63 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/07/18 20:10 | 5 | 76 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/07/18 20:20 | 6 | 66 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/07/18 20:30 | 12 | 66 | 1.2 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 20:40 | 6 | 60 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/07/18 20:50 | 8 | 19 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/07/18 21:10 | 6 | 47 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/07/18 21:40 | 5 | 65 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/07/18 21:50 | 11 | 36 | 1.8 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:00 | 15 | 68 | 0.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:10 | 20 | 45 | 1.4 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:20 | 20 | 84 | 1.6 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:30 | 13 | 81 | 1.6 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:40 | 10 | 72 | 1.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 22:50 | 5 | 80 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/07/18 23:10 | 5 | 77 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/07/18 23:20 | 6 | 85 | 1.8 | * | * | 1 |
| eSikhaleni | 2019/07/18 23:30 | 12 | 70 | 1.8 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 23:40 | 20 | 44 | 2.1 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/18 23:50 | 11 | 40 | 1.9 | Mondi | Effluent Plant | 35 |
| eSikhaleni | 2019/07/19 00:00 | 10 | 14 | 2.0 | Mondi | Lime Kiln | 39 |
| eSikhaleni | 2019/07/19 01:30 | 10 | 26 | 2.2 | Mondi | Lime Kiln | 39 |
| eSikhaleni | 2019/07/19 01:40 | 9 | 17 | 2.1 | * | * | 1 |
| eSikhaleni | 2019/07/19 01:50 | 8 | 17 | 2.6 | * | * | 1 |
| eSikhaleni | 2019/07/19 02:00 | 10 | 14 | 2.0 | Mondi | Lime Kiln | 39 |
| eSikhaleni | 2019/07/19 06:50 | 6 | 253 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/19 07:00 | 5 | 271 | 0.8 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/19 18:50 | 5 | 260 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/07/19 19:00 | 5 | 269 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/07/19 19:10 | 5 | 269 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/07/21 19:50 | 5 | 35 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/21 20:00 | 5 | 30 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/07/21 20:10 | 5 | 17 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/07/21 22:20 | 9 | 7 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/21 22:30 | 6 | 8 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/07/21 22:40 | 7 | 10 | 2.4 | * | * | 1 |
| eSikhaleni | 2019/07/21 22:50 | 7 | 14 | 2.7 | * | * | 1 |
| eSikhaleni | 2019/07/22 22:50 | 11 | 31 | 2.3 | Mondi | Fugitive emission | 40 |
| eSikhaleni | 2019/07/22 23:00 | 16 | 30 | 2.6 | Mondi | Fugitive emission | 40 |
| eSikhaleni | 2019/07/22 23:10 | 5 | 24 | 3.3 | * | * | 1 |
| eSikhaleni | 2019/07/23 01:20 | 5 | 93 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/23 01:30 | 8 | 76 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/23 05:20 | 6 | 85 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/23 05:30 | 8 | 84 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/07/23 05:40 | 6 | 97 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/07/23 06:20 | 5 | 81 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/23 06:30 | 5 | 92 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/07/23 08:00 | 6 | 50 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/07/23 08:10 | 5 | 47 | 1.7 | * | * | 1 |
| eSikhaleni | 2019/07/23 09:20 | 5 | 54 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/07/23 10:30 | 5 | 9 | 2.8 | * | * | 1 |
| eSikhaleni | 2019/07/23 22:20 | 5 | 39 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/07/24 04:00 | 5 | 358 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/24 04:10 | 6 | 348 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/24 04:20 | 5 | 345 | 2.4 | * | * | 1 |
| eSikhaleni | 2019/07/25 06:10 | 5 | 46 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/07/27 05:00 | 21 | 37 | 1.3 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 05:10 | 37 | 49 | 0.9 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 05:20 | 24 | 49 | 1.0 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 05:30 | 35 | 46 | 1.3 | Mondi | Flare | 62 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/27 05:40 | 25 | 45 | 1.3 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 05:50 | 10 | 55 | 1.1 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 06:00 | 9 | 72 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/07/27 06:10 | 10 | 65 | 0.5 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 06:20 | 11 | 73 | 0.6 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 06:30 | 12 | 57 | 0.8 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 06:40 | 9 | 79 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/27 06:50 | 6 | 89 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/07/27 08:00 | 7 | 45 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/07/27 08:10 | 12 | 67 | 1.0 | Mondi | Flare | 62 |
| eSikhaleni | 2019/07/27 08:20 | 6 | 73 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/07/28 07:40 | 6 | 58 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/07/28 07:50 | 7 | 48 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/28 08:50 | 5 | 28 | 2.1 | * | * | 1 |
| eSikhaleni | 2019/07/28 09:00 | 7 | 28 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/28 09:10 | 7 | 35 | 2.5 | * | * | 1 |
| eSikhaleni | 2019/07/28 09:20 | 8 | 29 | 2.1 | * | * | 1 |
| eSikhaleni | 2019/07/28 09:30 | 5 | 7 | 2.1 | * | * | 1 |
| eSikhaleni | 2019/07/29 03:40 | 7 | 55 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/07/29 03:50 | 7 | 50 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/07/29 04:00 | 7 | 59 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/07/29 04:10 | 5 | 63 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/07/29 04:20 | 5 | 51 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/07/29 04:30 | 5 | 37 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/07/29 04:40 | 6 | 44 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/07/29 04:50 | 10 | 45 | 1.5 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 05:00 | 10 | 43 | 1.8 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 05:10 | 5 | 33 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/29 05:20 | 6 | 41 | 1.8 | * | * | 1 |
| eSikhaleni | 2019/07/29 05:30 | 6 | 49 | 1.7 | * | * | 1 |
| eSikhaleni | 2019/07/29 05:40 | 5 | 45 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/07/29 07:20 | 7 | 67 | 1.6 | * | * | 1 |
| eSikhaleni | 2019/07/29 07:30 | 6 | 62 | 1.3 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/07/29 07:40 | 7 | 67 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/29 07:50 | 7 | 68 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/29 08:00 | 9 | 59 | 1.9 | * | * | 1 |
| eSikhaleni | 2019/07/29 08:10 | 9 | 49 | 1.8 | * | * | 1 |
| eSikhaleni | 2019/07/29 08:20 | 11 | 43 | 1.7 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 08:30 | 12 | 50 | 1.9 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 08:40 | 11 | 47 | 2.0 | Mondi | Flare | 63 |
| eSikhaleni | 2019/07/29 08:50 | 6 | 44 | 2.1 | * | * | 1 |
| eSikhaleni | 2019/07/30 20:00 | 6 | 70 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/07/31 00:40 | 6 | 8 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/07/31 00:50 | 8 | 1 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/07/31 01:00 | 8 | 9 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/07/31 01:10 | 6 | 109 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/08/04 06:50 | 9 | 67 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/08/04 07:00 | 7 | 116 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/08/04 07:50 | 10 | 20 | 0.9 | Mondi | Effluent Plant | 5 |
| eSikhaleni | 2019/08/04 08:00 | 6 | 16 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/08/04 08:40 | 6 | 26 | 1.5 | * | * | 1 |
| eSikhaleni | 2019/08/06 22:10 | 9 | 75 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/08/06 22:20 | 31 | 89 | 0.1 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 22:30 | 27 | 119 | 0.0 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 22:40 | 24 | 73 | 0.0 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 22:50 | 20 | 69 | 0.1 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 23:00 | 8 | 122 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/08/06 23:20 | 8 | 326 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/08/06 23:30 | 10 | 12 | 0.2 | Mondi | Effluent Plant | 52 |
| eSikhaleni | 2019/08/06 23:40 | 9 | 14 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/08/06 23:50 | 8 | 329 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/08/07 00:00 | 7 | 3 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/08/07 21:10 | 9 | 25 | 3.1 | * | * | 1 |
| eSikhaleni | 2019/08/07 21:20 | 11 | 23 | 3.2 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/07 21:30 | 6 | 17 | 3.3 | * | * | 1 |
| eSikhaleni | 2019/08/07 21:50 | 5 | 14 | 3.7 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/08/07 22:00 | 6 | 16 | 3.9 | * | * | 1 |
| eSikhaleni | 2019/08/07 22:10 | 10 | 16 | 3.9 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/07 22:20 | 10 | 4 | 3.2 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/07 22:30 | 10 | 356 | 2.5 | Mondi | Effluent Plant | 47 |
| eSikhaleni | 2019/08/07 22:40 | 5 | 357 | 2.8 | * | * | 1 |
| eSikhaleni | 2019/08/07 23:50 | 6 | 358 | 4.0 | * | * | 1 |
| eSikhaleni | 2019/08/08 01:10 | 13 | 12 | 2.4 | Mondi | Effluent Plant | 50 |
| eSikhaleni | 2019/08/08 01:20 | 12 | 7 | 2.1 | Mondi | Effluent Plant | 50 |
| eSikhaleni | 2019/08/08 01:30 | 11 | 18 | 1.6 | Mondi | Effluent Plant | 50 |
| eSikhaleni | 2019/08/10 05:40 | 5 | 38 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/08/10 05:50 | 5 | 39 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/08/10 06:00 | 5 | 22 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/08/16 04:10 | 5 | 94 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/08/16 04:20 | 7 | 96 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/08/16 04:30 | 5 | 104 | 2.3 | * | * | 1 |
| eSikhaleni | 2019/08/16 09:30 | 5 | 30 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/08/16 18:20 | 5 | 67 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/08/16 18:30 | 5 | 66 | 0.8 | * | * | 1 |
| eSikhaleni | 2019/08/16 18:40 | 5 | 11 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/08/16 20:20 | 5 | 63 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/08/16 20:30 | 6 | 60 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/08/18 01:40 | 5 | 17 | 1.0 | * | * | 1 |
| eSikhaleni | 2019/09/06 21:30 | 9 | 280 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/09/06 21:40 | 8 | 328 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/09/06 21:50 | 7 | 276 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/09/06 22:00 | 6 | 257 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/09/09 19:40 | 6 | 53 | 2.3 | * | * | 1 |
| eSikhaleni | 2019/09/09 19:50 | 6 | 55 | 2.0 | * | * | 1 |
| eSikhaleni | 2019/09/10 03:30 | 5 | 34 | 1.2 | * | * | 1 |
| eSikhaleni | 2019/09/10 03:40 | 6 | 34 | 1.1 | * | * | 1 |
| eSikhaleni | 2019/09/10 03:50 | 6 | 32 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/09/10 04:00 | 6 | 50 | 0.9 | * | * | 1 |
| eSikhaleni | 2019/09/10 08:20 | 6 | 12 | 2.4 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/09/18 03:30 | 5 | 34 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/09/18 03:50 | 5 | 39 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/09/18 04:00 | 7 | 55 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/09/18 04:10 | 6 | 44 | 0.0 | * | * | 1 |
| eSikhaleni | 2019/10/04 07:30 | 5 | 41 | 2.3 | * | * | 1 |
| eSikhaleni | 2019/10/09 06:30 | 8 | 34 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/11/01 06:10 | 7 | 20 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/11/01 06:20 | 6 | 342 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/11/17 04:50 | 7 | 340 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/11/17 05:00 | 16 | 323 | 0.2 | Mondi | Start-up fugitive | 34 |
| eSikhaleni | 2019/11/17 05:10 | 18 | 263 | 0.2 | Mondi | Start-up fugitive | 34 |
| eSikhaleni | 2019/11/17 05:20 | 18 | 23 | 0.6 | Mondi | Start-up fugitive | 34 |
| eSikhaleni | 2019/11/17 05:30 | 13 | 54 | 0.3 | Mondi | Start-up fugitive | 34 |
| eSikhaleni | 2019/11/17 05:40 | 7 | 27 | 0.7 | * | * | 1 |
| eSikhaleni | 2019/11/23 07:00 | 6 | 66 | 2.2 | * | * | 1 |
| eSikhaleni | 2019/11/27 01:00 | 5 | 52 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/11/27 01:10 | 8 | 46 | 0.4 | * | * | 1 |
| eSikhaleni | 2019/11/27 01:20 | 9 | 28 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/11/27 01:30 | 13 | 34 | 0.7 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 01:40 | 15 | 24 | 0.9 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 01:50 | 13 | 46 | 1.0 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 02:00 | 6 | 43 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/11/27 02:30 | 5 | 85 | 0.5 | * | * | 1 |
| eSikhaleni | 2019/11/27 02:40 | 8 | 93 | 0.6 | * | * | 1 |
| eSikhaleni | 2019/11/27 02:50 | 8 | 102 | 0.3 | * | * | 1 |
| eSikhaleni | 2019/11/27 03:00 | 9 | 99 | 0.1 | * | * | 1 |
| eSikhaleni | 2019/11/27 03:10 | 5 | 39 | 0.2 | * | * | 1 |
| eSikhaleni | 2019/11/27 05:00 | 19 | 70 | 1.2 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:10 | 37 | 67 | 1.2 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:20 | 27 | 47 | 1.3 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:30 | 19 | 42 | 1.4 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:40 | 12 | 47 | 1.5 | Mondi | Effluent plant | 84 |
| eSikhaleni | 2019/11/27 05:50 | 8 | 44 | 1.4 | * | * | 1 |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| eSikhaleni | 2019/11/27 06:00 | 5 | 48 | 1.4 | * | * | 1 |
| eSikhaleni | 2019/11/27 06:10 | 5 | 51 | 1.3 | * | * | 1 |
| eSikhaleni | 2019/11/27 06:20 | 5 | 56 | 1.6 | * | * | 1 |

| Response # | Response |
|---|---|
| *1* | *Not required at this time.* |
| *2* | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with all the exceedances recorded. There were TRS exceedances recorded at Mondi's: • Hytec monitoring station between 23:37pm and 1:30am. • Hytec monitoring station between 2:30 am to 3:30 am and 4:50 am to 5:40 am. Increased H2S emissions had been, detected at the Effluent Plant stack at the time. Upon investigation now tank overflows had occurred and, although a Demin Regen had been, conducted, Effluent pH was stable and does not correlate with the initial exceedances.* |
| *3* | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were TRS exceedances recorded at Mondi's Landfill monitoring stations between 21:20pm and 22:00pm. At 0:00am a Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack.*<br>*The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* |
| *4* | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. Wind speeds increased from 2 m/s to 7 m/s over this period. There were TRS exceedances recorded at Mondi's Hytec monitoring station between 4:50am and 7:00am. Odour checks were conducted, and a minor leak was detected on the NCG line. The leak was temporarily wrapped and planned for repair during the next opportunity shut.* |
| *5* | *Mondi: 07 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with the last exceedance recorded. There were TRS exceedances recorded at Mondi's Alton monitoring station between 4:50am to 7:00am. Increased H2S emissions had been detected at the Effluent Plant stack at the time. Upon investigation no tank overflows had occurred and, although a Demin Regen had been conducted, Effluent pH was stable and does not correlate with the initial exceedances.* |
| *6* | *Mondi: 07 January 2020 Candice Webb responded. The wind direction measured at eSikhaleni station was 330 degrees with low wind speeds. This is favourable from Mondi. There were TRS exceedances from Mondi's Alton ambient monitoring station between 22:50pm and 00:40am which indicate that Mondi's effluent plant may have been a contributor to the odour.* |
| *7* | *Mondi: 10 July 2019: Brendan Crawford responded. Morning exceedances (7:40am to 8:40am). Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Alton monitoring station between 6:40am to 8:40am and at Hytec station between 6:30am to 8:50am. There were no upsets or abnormal activities taking place in the mill. All stack emissions were within AEL limits and the Flare was not in use. There were no increased emissions from the Effluent Plant. Based on favourable wind direction it is likely that an unidentified fugitive emission from the mill was the cause for the exceedances.* |
| *8* | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi which is just before the exceedances started to occur. There were TRS exceedances recorded at Mondi's Alton monitoring station between 20:50pm and 23:40pm. Alton station is near the Effluent Plant. In preparation for the Demin regen, the effluent buffer tank was drained to make space. The contents drained were mostly acidic and, when mixed with the alkaline contents of the sewer, created a pH shock, and increased the H2S emissions from the Effluent Plant.* |
| *9* | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of most of the exceedances. There were intermittent TRS exceedances recorded at any of Mondi's Hytec monitoring station, however this station was upwind of Mondi at the time. There was an increase noted at the portable station (UVS), which is between Mondi and eSikhaleni, between 19:10pm and 20:30pm. There were no upsets or abnormal activities taking place in the mill. All stack emissions were within AEL limits and the Flare was not in use. There were no increased* |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| | *emissions from the Effluent Plant. Based on favourable wind direction it is likely that an unidentified fugitive emission from the mill was the cause for the exceedances.* | | | | | | |
| *10* | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of most of the exceedances. There were intermittent TRS exceedances recorded at any of Mondi's Hytec monitoring stations, however this station was upwind of Mondi at the time. In preparation for the Demin regen, the effluent buffer tank was drained to make space. The contents drained were mostly acidic and, when mixed with the alkaline contents of the sewer, created a pH shock, and increased the H2S emissions from the Effluent Plant.* | | | | | | |
| *11* | *Mondi: 10 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of the exceedances. There were no TRS exceedances recorded at any of Mondi's monitoring stations. On 2 July 2019, the Lime Kiln had been taken offline for cleaning of the LMCD nozzles which had become blocked. By 22:10pm the Kiln was back online and NCG gases had been diverted back into the Kiln. During start up the Kiln experienced some instability which resulted in increased TRS emissions above the AEL limit. This lasted for less than ten minutes and TRS emissions decreased once the Kiln became stable.* | | | | | | |
| *12* | *Mondi: 11 February 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedance and found the following: During the time of the exceedances the average wind direction measured at Mondi stations was 258 degrees with medium wind speeds (RBCAA web site currently not working). There were no exceedances recorded at any of Mondi's stations however an increase in TRS was noted at the Portable station between 0:20am and 0:40am. The entire mill was shut at this time to accommodate the Mhlathuze Water Effluent Line shut was which was occurring at this time. As such it is unlikely that the exceedances could be attributed to Mondi mill operations. There is a possibility that fugitive emissions could have arisen from the activities occurring at the Mhlathuze Water Effluent Line i.e. unblocking of the line at Air Chamber 1.* | | | | | | |
| *13* | *Mondi: 11 June 2019: Brendan Crawford responded. Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Alton monitoring station between 23:30pm and 0:40am and at Hytec station between 1:30am and 2:10am. All TRS stack emissions were well below the AEL limits and no other odorous events were recorded on the Mondi Odour Dashboard. Given the favourable wind conditions and the confirmation of high TRS from Mondi's own monitoring stations it can only be concluded that an unidentified fugitive emission emanating from Mondi was responsible.* | | | | | | |
| *14* | *Mondi: 11 June 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were no TRS exceedances recorded at any of Mondi's monitoring stations that are online. UVS had been disconnected at the time to allow Mhlathuze Water to conduct urgent pipework at the pump station. All TRS stack emissions were well below the AEL limits. From 1:50am to 2:25am increased H2S emissions were recorded from the Effluent stack resulting from an earlier Demin cation regen. Given that the exceedances started well before these increased emissions and their short duration it is unlikely that this could have been the sole contributor. Given the favourable wind conditions it can only be concluded that an unidentified fugitive emission emanating from Mondi combined with the momentary increased effluent emissions was responsible.* | | | | | | |
| *15* | *Mondi: 13 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. Intermittent TRS exceedances were recorded at all of Mondi's Landfill monitoring against wind direction. The TRS analyser was suspected to be faulty and has been replaced. There were no upset conditions or stack exceedances that may have contributed to an odour event. Mondi is currently updating its odour inventory to determine its current background odour.* | | | | | | |
| *16* | *Mondi: 13 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. Intermittent TRS exceedances were recorded at all of Mondi's Landfill monitoring station between 18:00pm and 22:00pm. Low Lime Mud levels required the unplanned shut down of the Lime Kiln and the diversion of NCG to the Flare and Incinerator at 16:00pm. Lime Kiln was back on line at 20:20pm. Mpact 16 September 2019: Yolande Schoeman responded: Source and Nature of Emissions: The distance from Mpact Felixton Mill to the eSikhaleni monitoring station is ±3.5km , the wind speed during the time of the exceedance was low averaging around 0.4 m/s. The wind direction at the time fluctuated from 257 -328°.North Westerly's winds, i.e. ±315°, are required from Mpact, to reach eSikhaleni station. Based on the wind speed and distance from Mpact to the monitoring station, the Mpact night shift reports were examined from 19H00 to 22h30 on the 6th September 2019. The areas investigated were the wastewater treatment ponds; wastewater treatment plant (WWTP) and the boiler house activities. There was no pond and clarifier cleaning activities occurring at Mpact WWTP that could* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| | *have impacted the air quality. The boiler house reports, and opacity log sheets show that all the boilers were running steady, with no abnormal events. Compliance with Permit\s: No non-compliances identified. Findings & Recommendations: Mpact is unlikely to be the source of the TRS odour nuisance episodes detected at ESikhaleni the evening of 6 September 2019.* | | | | | | |
| *17* | *Mondi: 14 June 2019: Brendan Crawford responded. Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. It is worth noting that an odour complaint was also received from Veldenvlei during the noted timeframe. There were also TRS exceedances recorded at Mondi's portable monitoring station (Afrox) between 0:40am to 1:40am, 3:00am t0 3:40am and 4:20am to 6:00am. Recovery Boiler 2 had been taken offline for a planned shut. No non-compliances were recorded however TRS emissions from the Lime Kiln did intermittently spike above 10 mg/Nm3 between 6:15am and 7:03am. A density control issue on the WLCD (White Liquor Clari Disc) because of partially blocked chute shower nozzles affected the 1st stage washing and resulted in Soda carryover to the Lime Kiln. This in effect increased the TRS emissions from the Lime Kiln. The WLCD was taken offline and the chute shower nozzles washed. Once the WLCD was put back in service the Lime Kiln TRS emissions started to decrease.* | | | | | | |
| *18* | *Mondi: 15 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of most of the exceedances. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station from 00:30am to 9:40am. The exceedances corresponded with overflows of condensate to the effluent drains which occurred early that morning. Overflows stopped at 6:00am.* | | | | | | |
| *19* | *Mondi: 15 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of the exceedances. There were exceedances recorded at Mondi's Hytec monitoring station throughout. Based on the high TRS recorded at Hytec mill standby personnel were called in to conduct investigations. An overflow of filtrate from the LMCD (Lime Mud Clari Disc) increased the sulphur loading on the effluent. This coincided with a cation regen at the Demin plant which introduced acidic effluent into the system from the buffer tank overflow. The increased sulphur loading combined with the pH shock caused increased H2S emissions from the effluent plant.* | | | | | | |
| *20* | *Mondi: 15 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of the exceedances. There were exceedances recorded at Mondi's Hytec monitoring station until 1:10am and thereafter at the Alton station. The exceedances were caused by the same incident which caused the exceedances on the 10 July 2019, details of which are given below: Based on the high TRS recorded at Hytec mill standby personnel were called in to conduct investigations. An overflow of filtrate from the LMCD (Lime Mud Clari Disc) increased the sulphur loading on the effluent. This coincided with a cation regen at the Demin plant which introduced acidic effluent into the system from the buffer tank overflow. The increased sulphur loading combined with the pH shock caused increased H2S emissions from the effluent plant.* | | | | | | |
| *21* | *Mondi: 16 July 2019: Brendan Crawford responded. Night-time exceedances (20:30pm to 22:10pm): Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were TRS exceedances recorded at Mondi's Hytec monitoring station between 20:00pm to 22:10pm. Although the Lime Kiln stack TRS emissions were below the AEL limit, they were higher than average which may have contributed towards the exceedances.*<br>*Considering these events the Kiln operating temperature is being reviewed by the plant.* | | | | | | |
| *22* | *Mondi: 16 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds well with the time of some of the exceedances. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station from 20:00pm to 23:10pm on 11 July. Although the Lime Kiln stack TRS emissions were below the AEL limit, they were higher than average which may have contributed towards the exceedances.* | | | | | | |
| *23* | *Mondi: 18 June 2019: Brendan Crawford responded. Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Alton monitoring station between 18:20pm to 20:20pm. At 17:40pm, in preparation for the Demin cation regen, the effluent buffer tank was drained intermittently to create space for the regen effluent. The intermittent draining created pH shocks in the alkaline sewer which started to liberate H2S. This was verified by the increased TRS recorded at Alton (which is close to the Effluent Plant) and the increased H2S emissions recorded at the Effluent Plant stack at the same time.* | | | | | | |
| *24* | *Mondi: 2 July 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: Wind conditions highlighted below were favourable from Mondi. There were no TRS exceedances recorded at any of Mondi's monitoring stations that are online. UVS had been disconnected at the time to allow Mhlathuze Water to conduct urgent pipework at the pump station. A Demin Regen resulted in acidic effluent overflowing from the buffer tank* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| | *into the alkaline sewer at 5:15am. The pH shock resulted in increased H2S emissions from effluent. This was confirmed by the Effluent Stack analysers which recorded increased levels of H2S at this time.* | | | | | | |
| *25* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. Between 17:25pm and 18:45pm wind speed was too low for measured wind directions to be reliable. There were no TRS exceedances recorded at any of Mondi's monitoring stations that are online. UVS had been disconnected at the time to allow Mhlathuze Water to conduct urgent pipework at the pump station. A Demin Regen resulted in acidic effluent overflowing from the buffer tank into the alkaline sewer at 17:37pm. The pH shock resulted in increased H2S emissions from effluent. This was confirmed by the Effluent Stack analysers which recorded increased levels of H2S at this time.* | | | | | | |
| *26* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. There were exceedances of the WHO TRS limit of 5ppb recorded at Mondi's Alton monitoring station between 5:40am and 8:10am. It must be noted that the wind was blowing steadily towards the North East at this time and any odour emission from Mondi would have impacted on CBD monitoring station rather than eSikhaleni. A Demin Regen resulted in acidic effluent overflowing from the buffer tank into the alkaline sewer at 4:10am. The pH shock resulted in increased H2S emissions from effluent. This was confirmed by the Effluent Stack analysers which recorded increased levels of H2S at this time.* | | | | | | |
| *27* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. There were no TRS exceedances recorded at any of Mondi's monitoring stations. All stack emissions were below the AEL limits and there were no incidents or abnormal plant conditions that may have contributed toward odour exceedances. Due to an odour complaint that had been received on this day, in depth odour investigations were conducted in the mill and could not establish any odour source.* | | | | | | |
| *28* | *Mondi: 2 July 2019: Brendan Crawford responded. Wind direction before 17:00pm averaged 100 degrees which does not favour Mondi. After 17:00pm wind speeds dropped below 1 m/s which is not ideal for measuring wind direction. There were no TRS exceedances recorded at any of Mondi's monitoring stations. All stack emissions were below the AEL limits and there were no incidents or abnormal plant conditions that may have contributed toward odour exceedances.* | | | | | | |
| *29* | *Mondi: 2 October 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This correlates with all the exceedances recorded. Intermittent TRS exceedances were recorded at Mondi's Alton and Hytec monitoring stations from 1:00am to 6:40am. A breakdown on the Lime Kiln resulted in Non-condensable Gases being routed to the Flare. Even though all precautions were taken to minimise emissions from the Flare, it has been acknowledged that the Flare is not as efficient as the Lime Kiln and CAPEX projects are in place to resolve this.* | | | | | | |
| *30* | *Mondi: 2 October 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This correlates with most of the exceedances recorded. Intermittent TRS exceedances were recorded at Mondi's Alton and Hytec monitoring stations from 2:00am to 6:00am. Overflow of mill condensate into drains resulted in increased odour emissions from the Effluent Plant. Odour abatement technologies will be trialled at the Effluent Plant in October 2019.* | | | | | | |
| *31* | *Mondi: 2 October 2019: Brendan Crawford responded. Wind speeds were too low (< 1m/s) for wind direction to be considered reliable. TRS exceedances were recorded at Mondi's Alton monitoring station from 1:20am to 2:50am. The Lime Kiln experienced swings in TRS due to burner tip temperature loss. Methanol firing was taken offline and only reinstated once the density had been adjusted.* | | | | | | |
| *32* | *Mondi: 20 November 2019: Brendan Crawford responded. Wind direction was favourable from Mondi during the periods highlighted below. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station between 2:00 and 4:20. An odour was identified as originating from the Mondi Effluent Plant due to mill condensate overflowing into the effluent drainage system and then on to the effluent plant.* | | | | | | |
| *33* | *Mondi: 20 November 2019: Brendan Crawford responded. Wind direction was favourable from Mondi during the periods highlighted below. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station between 20:40 and 21:40. An odour was identified as originating from the Mondi Effluent Plant due to mill condensate overflowing into the effluent drainage system and then on to the effluent plant. A complaint was received from the RBCAA with regards to this which Mondi has responded to.* | | | | | | |
| *34* | *Mondi: 20 November 2019: Brendan Crawford responded. Wind speed measured was too low for wind direction to be considered a reliable indicator of odour source. There were no TRS exceedances recorded at Mondi's monitoring stations. A municipal power failure in Richards Bay on 15th November 2019 had impacted on mill utilities and resulted in most of the mill being shut down. This was communicated to external stakeholders. Sections of the mill were still in start-* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| | *up during the period of the exceedances. Although no point sources were identified it is possible that fugitive emissions from start-up activities may have contributed to exceedances.* | | | | | | |
| *35* | *Mondi: 22 July 2019: Brendan Crawford responded. Night-time exceedances (18:20pm to 23:50pm): Wind conditions in the area shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were intermittent TRS exceedances recorded at Mondi's Hytec monitoring station between 17:20pm to 21:00pm. In preparation for a cation regen acidic effluent from the Demin buffer tank was drained creating a pH shock in the effluent. This combined with the high sulphidity in the effluent resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |
| *36* | *Mondi: 22 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time of some of the exceedances. There were TRS exceedances recorded at Mondi's Alton monitoring station from 23:10pm to 23:50pm and at Portable (UVS) station from 2:20am to 3:00am. An overflow of filtrate occurred at the Liner plant. This increased the sulphidity in the mill effluent. A cation regeneration at 23:10pm resulted in acidic effluent overflowing into the drain and creating a pH shock. This combined with the high sulphidity in the effluent resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |
| *37* | *Mondi: 22 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time of some of the exceedances. There were TRS exceedances recorded at Mondi's Landfill monitoring station from 5:50am to 6:20am and at Alton station from 6:30am to 7:20am. An overflow of filtrate occurred at the Liner plant. This increased the sulphidity in the mill effluent. In preparation for a cation regen acidic effluent from the Demin buffer tank was drained creating a pH shock in the effluent. This combined with the high sulphidity in the effluent resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |
| *38* | *Mondi: 23 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time just before the exceedance. There were TRS exceedances recorded at Mondi's: Alton monitoring station from 19:20pm to 20:20pm. Portable (UVS) monitoring station from 19:40pm to 20:10pm. Hytec monitoring station from 20:00pm to 20:40pm. In preparation for a cation regen acidic effluent from the Demin buffer tank was drained creating a pH shock in the effluent. This resulted in increased H2S emissions from the Effluent Plant.*<br>*It is also worth noting that the Portable monitoring, located 5km upwind from Mondi at the time, also recorded exceedances which would suggest that a secondary odour source also contributed towards exceedances.* | | | | | | |
| *39* | *Mondi: 23 July 2019: Brendan Crawford responded. Wind conditions highlighted below were favourable from Mondi. This corresponds with the time of some of the exceedances. There were TRS exceedances recorded at Mondi's: Hytec monitoring station from 20:20pm to 21:00pm. Alton monitoring station from 7:00am to 8:00am. Although all Stack emissions were within AEL limits, the Lime Kiln TRS emissions were close to the limit. Methanol firing rate in the Lime Kiln was reduced to reduce TRS emissions.* | | | | | | |
| *40* | *Mondi: 24 July 2019: Brendan Crawford responded. Wind conditions were favourable from Mondi throughout. There were no TRS exceedances recorded at Mondi's monitoring stations. All Stack emissions were within AEL limits and effluent pH was stable. There were no upset conditions that would have contributed towards odour emissions. Due to the favourable wind conditions it is possible that an unidentified fugitive emission from Mondi could have contributed to the exceedances.* | | | | | | |
| *41* | *Mondi: 24 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 53 degrees with moderate wind speeds. This is favourable from Mondi. Although Mondi has not been able to identify the root cause of the odour. It is most likely that fugitive emissions from Mondi contributed to the odour.* | | | | | | |
| *42* | *Mondi: 24 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 63 degrees with very low wind speeds. It must be noted that there was high degree of variability in the wind direction and there were times before the exceedances where the wind direction was favourable from Mondi. There were TRS exceedances Mondi's Landfill ambient monitoring station between 2:10am to 2:30am but this was upwind at the time. After start-up it was found that a design flaw introduced during the Annual Shut was resulting in the Evaps plant backing up and caused the venting of NCG gas to the atmosphere. The engineering contractor appointed by Mondi for the Annual Shut accepted responsibility for the design flaw. Venting from this plant started at 2:20am. A hot tap was conducted on the plant on the 2nd May 2019 which prevented the venting of NCG gas from the plant. The design flaw was corrected during a short shut on the 22nd May 2019.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
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| 43 | *Mondi: 24 May 2019: Brendan Crawford responded. Night-time exceedances: During the time of the exceedances the average wind direction measured at CBD station was 249 degrees with moderate wind speeds. This is favourable from Mondi. There were TRS exceedances recorded at Mondi's Landfill ambient monitoring station between 19:30pm and 20:00pm. Root cause is the same as above as the equipment was still venting at the time.* | | | | | | |
| 44 | *Mondi: 25 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. Lime Kiln TRS emissions had increased close to the limit and eventually exceeded the limit at 9:00am. The Lime Kiln was stopped and the LMCD was washed. When the Kiln was put back online the TRS emissions had reduced.* | | | | | | |
| 45 | *Mondi: 25 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This is just before the exceedances started to occur. Of note is the sudden shift in wind direction at the time of the exceedances which may have affected dispersion. There were TRS exceedances recorded at Mondi's Landfill monitoring stations from 2:10am to 2:30am. All stack emissions were well within effluent limits. Effluent pH was steady with no increased H2S emissions recorded at the Effluent Plant stack. Due to the exceedance at the Landfill station an investigation was conducted here, and everything was found to be in order i.e. the leachate dam aeration pump was online. It is likely that sudden change in the wind direction affected the ambient TRS as the exceedance was only registered during this short period of wind direction change.* | | | | | | |
| 46 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with all the exceedances recorded. There were TRS exceedances recorded at the following Mondi monitoring stations: Hytec between 1:30am and 1:50am, Alton between 3:50am and 4:10am. A Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack. The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* | | | | | | |
| 47 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were no TRS exceedances recorded at any of Mondi's monitoring stations. A Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack. The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* | | | | | | |
| 48 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were TRS exceedances recorded at Mondi's Alton monitoring station between 4:40am to 5:20am and again between 5:50am to 7:30am. Upon investigation the mill's effluent average pH was found to be lower than normal. Detailed inspections were conducted to determine the source of the low pH. During these investigations, a leak was found on the outlet line of the Sulphuric Acid holding tank. Sulphuric Acid migration into the sewer network would have lowered the pre-neutralised Effluent pH resulting in increased H2S emissions from the Effluent Plant. An odour complaint was received related to the above.* | | | | | | |
| 49 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were TRS exceedances recorded at the Mondi's Alton monitoring stations between from 23:30pm to 00:10 am and 2:30am to 3:00 am. There were no deviations or increases noted at any of the monitored odour sources. An intensive odour investigation was conducted by manually monitoring odour sources as per the odour emissions inventory. No source of concentrated odour could be found using this method. Mondi can only assume that an unidentified fugitive odour emission from the mill was responsible due to the favourable wind conditions measured.* | | | | | | |
| 50 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with the last exceedance recorded. There were no TRS exceedances recorded at any of Mondi's monitoring stations. A Demin regen was conducted producing acidic effluent. Even though the buffer tank was emptied prior to the regen, the amount of effluent generated exceeded the capacity of the tank and overflowed to the sewer. This created excess H2S emissions from the Effluent Plant as confirmed by the H2S analyser in the effluent stack. The Demin regen cycle has been identified as an odour source and projects are being investigated to mitigate.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
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| 51 | *Mondi: 27 August 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. Wind speeds were very low most of the time resulting in high variance in wind direction. Under conditions like these wind directions cannot reliably be used as an indicator of emission source. There were intermittent TRS exceedances recorded at Mondi's Alton, Hytec and Landfill monitoring stations throughout the timespan. The Effluent Plant was found to be the source of the odour. A combination of high effluent temperature and contamination resulted in increased H2S emissions. An action plan was developed to reduce temperature and contamination in effluent.* | | | | | | |
| 52 | *Mondi: 27 August 2019: Brendan Crawford responded. Wind speeds were very low throughout resulting in high variance in wind direction. Under conditions like these wind directions cannot reliably be used as an indicator of emission source. There were no TRS exceedances recorded at any of Mondi's monitoring stations. On 5th August 2019, the mill's effluent average pH was found to be lower than normal. This was caused by a leak was found on the outlet line of the Sulphuric Acid holding tank which lowered the pre-neutralised Effluent pH resulting in increased H2S emissions from the Effluent Plant. Although the leak was repaired on the day the Effluent pH took more than 24 hours to recover.* | | | | | | |
| 53 | *Mondi: 27 August 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: Morning (0:00am to 6:20am). Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with all the exceedances recorded. There were intermittent TRS exceedances recorded at Mondi's Alton, Hytec and Landfill monitoring stations throughout the timespan. The Effluent Plant was found to be the source of the odour. A combination of high effluent temperature and contamination resulted in increased H2S emissions. An action plan was developed to reduce temperature and contamination in effluent. Night (19:50pm to 23:50pm)*<br>*Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with most of the exceedances recorded. There were intermittent TRS exceedances recorded at Mondi's Alton, Hytec and Landfill monitoring stations from 19:00pm. There were no deviations or increases noted at any of the monitored odour sources, however Mondi was preparing to shut down the mill for a planned Water Wash as communicated to the RBCAA. It is likely that a fugitive emission source related to shut down was responsible.* | | | | | | |
| 54 | *Mondi: 27 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 176 degrees with low wind speeds. It must be noted that the exceedances occurred over a large timespan during which average wind direction changed several times, namely:•0:00am to 3:22am – Average 293 degrees (not favourable from Mondi)• 3:23am to 3:37am – Average 180 degrees (not favourable from Mondi)•3:38am to 4:16am – Average 107 degrees (not favourable from Mondi)•4:17am to 4:48am – Average 126 degrees (not favourable from Mondi) •Mondi)There were no TRS exceedances from Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. At 2:00am Mondi mill suffered a ground fault on the main electrical incomer to the board feeding the boiler feedwater pumps. During this time, the NCG gases were switched from the Lime Kiln to the Flare. Initially the TRS emissions from the Flare were high due to the instability of the gases from a sudden loss of power. The TRS emissions did start decreasing when the gases stabilised. Mondi could not have been a contributor to the exceedances at eSikhaleni station from 0:00am to 4:48am due to the unfavourable wind directions. However, Mondi can take responsibility for the exceedances from 4:49am to 7:20am due to the favourable wind direction and the occurrence of an incident which led to the use of the Flare.* | | | | | | |
| 55 | *Mondi: 27 May 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: The average wind direction measured at eSikhaleni station was 204 degrees with very low wind speeds. While there was some variation in wind direction, wind speeds were so low so that it would not have been possible for Mondi to be the sole contributor. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. The mill had been shut from the day before to rectify a design flaw on the Evaps plant. All units had been degassed which meant that the Flare was only operating on pilot flame. Due to unfavourable wind conditions and with the mill being completely shut Mondi could not have contributed to the exceedances.* | | | | | | |
| 56 | *Mondi: 27 May 2019: Brendan Crawford responded. Night-time exceedances: During the time of the exceedances the average wind direction measured at eSikhaleni station was 69 degrees with high wind speeds. This is not favourable from Mondi. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. The effluent stack analyser had started to register high H2S emission from 16:00pm. This may have been related to tank draining from start up.* | | | | | | |
| 57 | *Mondi: 27 May 2019: Brendan Crawford responded. The average wind direction measured at eSikhaleni station was 30 degrees with high wind speeds. This is favourable from Mondi. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
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| | *allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station.<br>After a cationic regen on the Demin plant the effluent experienced a pH shock at 1:30am which increased TRS emissions from the Effluent Plant from 5:40am to 6:40am.* | | | | | | |
| *58* | *Mondi: 27 May 2019: Brendan Crawford responded. The average wind direction measured at eSikhaleni station was 44 degrees with low wind speeds. This is favourable from Mondi. There were no TRS exceedances recorded at Mondi's ambient monitoring however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. The Evaps plant embarked on a planned shut to rectify a design flaw introduced during the Annual Shut. While NCG gases had not yet been diverted to the Flare, instability from shutting down activities did result in some short, sporadic NCG venting from the Evaps and Fibre line Hardwood carbon filters. NCG gases were diverted to the Flare from 7:15am.* | | | | | | |
| *59* | *Mondi: 27 May 2019: Brendan Crawford responded. The average wind direction measured at eSikhaleni station was 62 degrees with very low wind speeds. While this is not favourable from Mondi there were significant variations during the timespan of the exceedances during which Mondi may have been a contributor. There were TRS exceedances recorded from Mondi's Portable ambient monitoring station between 5:00am and 5:20am. UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. After a cationic regen on the Demin plant the effluent experienced a pH shock at 0:30am which increased TRS emissions from the Effluent Plant. NCG gases had also been diverted to the Flare from 4:00am to 7:30am due to an issue with the Lime Mud density.* | | | | | | |
| *60* | *Mondi: 30 May 2019: Brendan Crawford responded. As per raw wind data from the CBD station the areas highlighted below would have been favourable from Mondi. Wind speeds were moderate at the time. There were TRS exceedances recorded at Mondi's Hytec station from 1:20am to 1:50am and at Alton Monitoring station from 1:50am to 2:50am. TRS exceedances were recorded from the Lime Kiln stack however these only started from 2:00am, after the recorded exceedances, with very little activity before then. It is suspected that the TRS emissions may have originated from the Biological Treatment Plant as an odour was observed from here later in the morning. The Biological Treatment Plant was bypassed for a few hours to allow the biological cultures to recuperate.* | | | | | | |
| *61* | *Mondi: 30 May 2019: Brendan Crawford responded. As per raw wind data from the eSikhaleni station the areas highlighted below would have been favourable from Mondi. Wind speeds were moderate with some areas of inactivity. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. There were no upset conditions at the time. Effluent pH was steady with very low H2S emissions being recorded at the Effluent Plant stack. The Flare was not in use. Wind conditions immediately prior to the exceedances were favourable from Mondi however there is no indication as to what the root cause of the odour may have been.* | | | | | | |
| *62* | *Mondi: 31 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. It must be noted that wind speeds were mostly low resulting high variability of wind direction. There were TRS exceedances recorded at Mondi's Portable (UVS) monitoring station between 3:50am and 4:10am. The mill experienced an external power outage on the 26th July 2019 which resulted in the shutdown of most of the plant. During start-up we encountered issues on Paper machine 41 throughout the weekend which created a process imbalance in the mill. As a result, most of the plant, including the Lime Kiln, was shut down. Diversion of NCG gases to the Flare was required during this time. With the Digester and Evaps plants offline, the volume of gases decreased thus reducing the energy (fuel) to the flare. With the supply of fuel lower, the flare could not reach the desired set point temperature in the combustion chamber. The air dampers therefore reacted by closing to maintain the temperature and resulted in high TRS emissions. An odour complaint was logged in relation to this on 28th July 2019 and feedback was given by Mondi.* | | | | | | |
| *63* | *Mondi: 31 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were no TRS exceedances recorded at Mondi's monitoring stations. The mill experienced an external power outage on the 26th July 2019 which resulted in the shutdown of most of the plant. During start-up we encountered issues on Paper machine 41 throughout the weekend which created a process imbalance in the mill. As a result, most of the plant, including the Lime Kiln, was shut down. Diversion of NCG gases to the Flare was required during this time. The mill was in start-up mode during this time with NCG gases still being burned in the Flare. While Flare TRS emissions had been brought under control, the Flare is not as efficient as the Lime Kiln at combustion of NCG and would have likely resulted in the exceedances.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
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| 64 | *Mondi: 5 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 246 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 22:20pm to 23:00pm. A fault with the steam diaphragm valve to the Lime Kiln necessitated the switching of Softwood NCG gases to the Flare. Just before the exceedance the SW gases tripped out of the Flare and switched to the Incinerator. This contributed towards the exceedances. The steam diaphragm valve was replaced the following morning when the part arrived from Durban and the SW NCG gases were switched back into the Lime Kiln.* | | | | | | |
| 64 | *Mondi: 31 July 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi and correlates with some of the exceedances recorded. There were no TRS exceedances recorded at Mondi's monitoring stations. The mill experienced an external power outage on the 26th July 2019 which resulted in the shutdown of most of the plant. During start-up we encountered issues on Paper machine 41 throughout the weekend which created a process imbalance in the mill. As a result, most of the plant, including the Lime Kiln, was shut down. Diversion of NCG gases to the Flare was required during this time. With the Digester and Evaps plants offline, the volume of gases decreased thus reducing the energy (fuel) to the flare. With the supply of fuel lower, the flare could not reach the desired set point temperature in the combustion chamber. The air dampers therefore reacted by closing to maintain the temperature and resulted in high TRS emissions. An odour complaint was logged in relation to this and feedback was given by Mondi.* | | | | | | |
| 65 | *Mondi: 5 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 247 degrees with low to moderate wind speeds. There were no TRS exceedances recorded at any of Mondi's ambient monitoring stations, however there were increases noted at Hytec station from 22:50pm to 23:20pm. There were no exceedances against the AEL limits, the Flare and Incinerator were not in use, Effluent pH was steady and very low H2S emissions were recorded on the Effluent stack analyser. In the absence of a clear source and with the wind direction favourable from Mondi it can only be assumed that one of Mondi's fugitive emissions was responsible for the exceedances.* | | | | | | |
| 66 | *Mondi: 5 April 2019: Brendan Crawford responded. For the exceedance at 02:30am: During the time of the exceedance the average wind direction measured at CBD station was 274 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 02:10am to 02:50am. During the exceedances, the Demin plant was undergoing an anion regen. The build-up in the Demin Buffer Tank resulted in the overflow of alkaline effluent into the sewer. The pH shock resulted in the increase in H2S emissions from effluent which was recorded on the Effluent Stack analyser. The low capacity of the Demin Buffer Tank has been identified as a bottleneck and CAPEX is being prepared to increase the capacity of this tank. For the exceedances from 08:00 to 08:10am: During the time of the exceedance the average wind direction measured at CBD station was 232 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 07:10am to 08:50am. During the exceedances it was noted that the Lime Kiln TRS emissions had started to increase. This was rectified by adjusting the operating conditions of the Lime Kiln.* | | | | | | |
| 67 | *Mondi: 5 April 2019: Brendan Crawford responded. Mondi has investigated the TRS exceedances and found the following: During the time of the exceedances the average wind direction measured at CBD station was 270 degrees with low wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 14 March 2019 22:40pm to 15 March 2019 04:20am. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019.*<br>*Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |
| 68 | *Mondi: 5 May 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 241 degrees with low to medium wind speeds. There were no TRS exceedances recorded at Mondi's ambient monitoring stations before or after the exceedances. Shortly prior to the exceedances the Demin plant was undergoing a cation regen. The build-up in the Demin Buffer Tank resulted in the overflow of acidic effluent into the sewer. The pH shock resulted in the increase in H2S emissions from effluent which was recorded on the Effluent Stack analyser. The low capacity of the Demin Buffer Tank has been identified as a bottleneck and CAPEX is being prepared to increase the capacity of this tank.* | | | | | | |
| 69 | *Mondi: 5 May 2019: Brendan Crawford responded. During the time of the exceedances the wind direction measured at CBD station was 259 degrees with medium wind speeds. There were intermittent TRS exceedances recorded at Mondi's Alton monitoring stations between 00:00am and 5:00am and at Hytec station between 7:40am and 8:20am. The mill was in start-up condition following the Annual Shut. At the time CNCG gases were being generated and* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
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| | *combusted in the Flare as the Lime Kiln was still shut. While the Flare burner temperature was being maintained automatically, the Flare stack temperature, which requires Operator intervention, was dipping below the optimum temperature range. This resulted in the increase in TRS emissions from the Flare and would result in odour complaints the same day. A checklist was developed for the rest of the start up to improve temperature monitoring in the Flare. Tie-ins were installed during the shut for the fitment of damper actuators in June 2019. The new actuators will improve temperature control in the Flare by making automatic adjustments to the damper.* | | | | | | |
| *70* | *Mondi: 5 May 2019: Brendan Crawford responded. During the time of the exceedances the wind direction measured at CBD station was 267 degrees with high wind speeds. There were no TRS exceedances recorded at Mondi's ambient monitoring stations however there was a very slight increase noted at the Alton monitoring station between 22:00pm and 22:20pm. The mill was in start-up condition following the Annual Shut. At the time CNCG gases were being generated and combusted in the Flare as the Lime Kiln was still shut. While the Flare burner temperature was being maintained automatically, the Flare stack temperature, which requires Operator intervention, was dipping below the optimum temperature range. This resulted in the increase in TRS emissions from the Flare and would later result in odour complaints the following day. A checklist was developed for the rest of the start up to improve temperature monitoring in the Flare. Tie-ins were installed during the shut for the fitment of damper actuators in June 2019. The new actuators will improve temperature control in the Flare by making automatic adjustments to the damper.* | | | | | | |
| *71* | *Mondi: 5 May 2019: Brendan Crawford responded. Morning exceedances: During the time of the exceedances the average wind direction measured at CBD station was 227 degrees with mid to high wind speeds. There were no TRS exceedances or increases recorded at Mondi's ambient monitoring stations before or after the exceedances. At the time of the exceedances the mill was starting up from the Annual Shut which entailed some draining of equipment to effluent. The impact to the effluent was noticeable in the Sulphidity trend. The combination of high sulphidity and hot effluent would have increased H2S emissions. Night-time exceedances: During the time of the exceedances the average wind direction measured at CBD station was 232 degrees with low to high wind speeds. There were no TRS exceedances recorded at Mondi's ambient monitoring stations, however there was a slight increase noted at the Landfill station at 13:00pm. Although equipment draining had impacted on the effluent sulphidity in the morning this had reduced to almost negligible by 8:00am. No other sources could be found however the increase noted at the Landfill station would suggest that Mondi was an odour source close to this time, most likely because of an unidentified fugitive emission.* | | | | | | |
| *72* | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 244 degrees with moderate wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 19:50pm to 20:40pm and 21:20pm to 21:50pm. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019.*<br>*Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |
| *73* | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 264 degrees with low wind speeds. There were TRS exceedances recorded at Mondi's Hytec ambient monitoring station from 14 March 2019 22:40pm to 15 March 2019 04:20am. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019.*<br>*Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |
| *74* | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 271 degrees with low wind speeds. There were TRS exceedances recorded at Mondi's Alton ambient monitoring station periodically from 01:00am to 06:10am. The source was confirmed as coming from the Third Chamber of the Biological Treatment Plant (SETP). The number of recent upset conditions in the mill had impacted on effluent quality and may have negatively impacted on the biological species in the SETP thus resulting in increased H2S emissions. These increased emissions also resulted in 2 x odour complaints from the Alton area on the 15 March 2019. Periodic bypassing was instituted on the SETP for COD load reduction to allow the biological species to recover. An internal directive was also communicated to all mill staff to reduce spills and overflows to effluent drain.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
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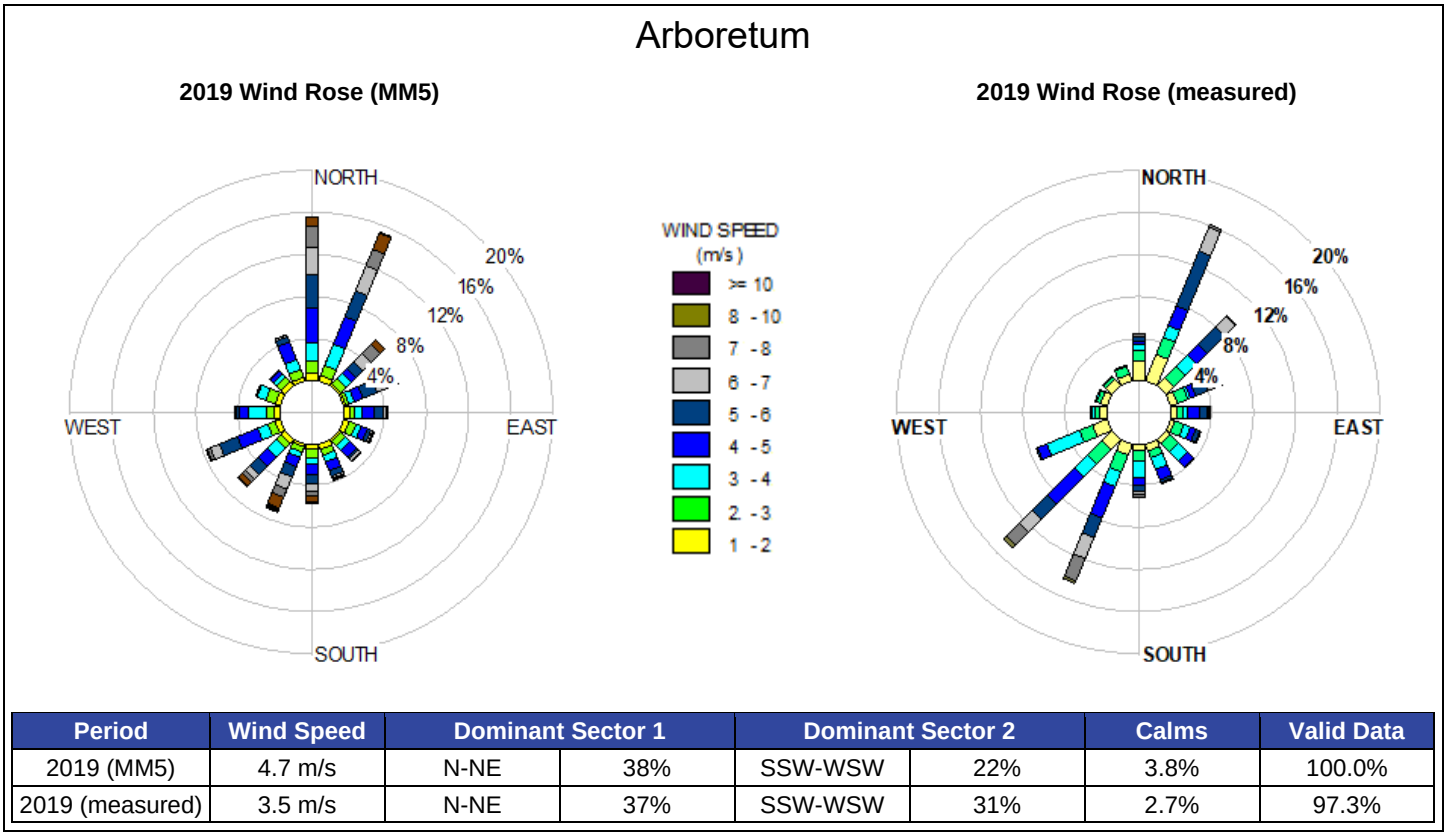
| *75* | *Mondi: 6 April 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 239 degrees with high wind speeds. There were no TRS exceedances or increases recorded at any of Mondi's ambient monitoring stations. The mill at the time was in the middle of the planned annual shut which had been communicated to the authorities and stakeholders. The only plant still in operation at the time was the Effluent Plant. The flow from the Effluent Plant was at minimum however the emergency ponds were at maximum level coming out of a planned shut on the Mhalthuze Water Effluent to Sea line. The wind direction at the time of the exceedances carried several times between 213 and 265 degrees. It may be possible that Mondi's Effluent Plant contributed towards these exceedances but considering the varied wind conditions other contributors should be considered.* | | | | | | |
| *76* | *Mondi: 6 June 2019: Brendan Crawford responded. As per raw wind data from the eSikhaleni station the areas highlighted are times when wind direction and speed were favourable from Mondi. There were TRS exceedances recorded at Mondi's Alton monitoring station between 3:30am and 9:22am. One exceedance had been recorded at Hytec station although TRS had been on the increase from 9:25am. UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. With regards to the Alton exceedances in the morning; in preparation for a cationic Demin regen the buffer tank was slowly drained to effluent to create capacity for the Demin regen effluent to not create an overflow. During the draining activity it seems that a pH shock might have unintentionally been created as the ambient TRS at Alton station, which is closest to Effluent Plant, started to increase with draining activity. Once this had been noted the draining activity was ceased. Based on the prevalent wind conditions and its impact on Easterly and North-Easterly based monitoring stations at the time the Mondi incident could not have contributed to the exceedance at 7:10am at eSikhaleni. Between 14:00pm and 17:15pm the Lime Kiln was taken offline to repair a drive chain on the crusher which had slipped off. The NCG gases were diverted to the Flare during this time which is a less efficient burner of NCG.*<br>*Based on the switch to favourable wind conditions and a confirmed odour source Mondi was a contributor to the exceedances from 19:40pm onwards.* | | | | | | |
| *77* | *Mondi: 6 June 2019: Brendan Crawford responded. As per raw wind data from the eSikhaleni station the wind directions before, during and after the exceedances were not favourable from Mondi. At approximately 17:15pm there was a distinct drop in the wind speed to zero and thereafter wind speeds were almost negligible. This corresponds with the start of the exceedances. There was one exceedance of the RBCAA limit recorded at Mondi's Alton monitoring stations at 17:00pm, however Mondi was downwind at the time and could not have been the source. UVS had been disconnected at the time to allow Mhlathuze Water to conduct emergency repairs on a water pipe located beneath the station. Mondi had no upset conditions at the time. Effluent stack emissions were very low, and the Flare was not in use. Based on the prevalent wind conditions it is unlikely that Mondi would have been a contributor. With the drop in wind speed it is very likely that the exceedances were caused by a source close to the station.* | | | | | | |
| *78* | *Mondi: 6 March 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 269 degrees with low wind speeds. This is favourable for Mondi as a possible source. There were TRS exceedances recorded Mondi's Hytec ambient monitoring station between 22:20pm and 23:00pm. At the time of the exceedances the Lime Kiln was shut resulting in CNCG gases being diverted to the Flare and Incinerator. Both the Flare and Incinerator experienced several trips due to build-up of condensate in the CNCG system. Each time the Flare or Incinerator tripped the gases were vented through the carbon filters which resulted in odorous emissions. The condensate was eventually drained from the CNCG system resulting in improved stability on the Flare and Incinerator.* | | | | | | |
| *79* | *Mondi: 6 March 2019: Brendan Crawford responded. During the time of the exceedances the average wind direction measured at CBD station was 275 degrees with low wind speeds. This is favourable for Mondi as a possible source. There were TRS exceedances recorded Mondi's Hytec ambient monitoring station between 00:50am and 01:30am. During the exceedances, the Demin plant was undergoing a cation regen. The build-up in the Demin Buffer Tank resulted in the overflow of acidic effluent into the sewer. The pH shock resulted in the increase in H2S emissions from effluent which was recorded on the Effluent Stack analyser. The low capacity of the Demin Buffer Tank has been identified as a bottleneck and CAPEX is being prepared to increase the capacity of this tank.* | | | | | | |
| *80* | *Mondi: 7 January 2020: Candice Webb responded. During the time of the exceedances the average wind direction was 38 degrees with very low wind speeds. There were TRS exceedances recorded at Mondi's Alton ambient monitoring station between 4:10am and 4:30am. There were no mill upsets. The Flare was not in use. There was a very short increase in H2S emissions from the effluent stack at 3:30am due to a Demin regen. Based on the above it is possible that Mondi was the source of the odour.* | | | | | | |
| *81* | *Mondi: 7 January 2020: Candice Webb responded. During the time of the exceedances the wind direction was 84 degrees with very low wind speeds. There were no mill upsets. However, based on the above and fugitive emissions it is possible that Mondi was the source of the odour.* | | | | | | |

| Station | Date | Value (ppb) | Wind Direction (°) | Wind Speed (m/s) | Source | Comment | # |
|---|---|---|---|---|---|---|---|
| *82* | *Mondi: 7 January 2020: Candice Webb responded. The average wind direction measured at eSikhaleni station was 132 degrees with very low wind speeds. However, at the time of the exceedance wind direction was 53 degrees which is favourable from Mondi. At 1:30am the Demin plant had just completed a cation regen. At the time, the buffer tank was full which resulted in acidic effluent entering the sewer, creating a pH shock, and increasing H2S emissions from effluent. It is possible that Mondi contributed to the exceedances.* | | | | | | |
| *83* | *Mondi: 7 January 2020: Candice Webb responded. Wind conditions highlighted below were favourable from Mondi. Mondi has been unable to identify root cause, however based on wind direction and fugitive emissions it is possible Mondi contributed to the odour.* | | | | | | |
| *84* | *Mondi: 7 January 2020: Candice Webb responded. Wind direction at the time of the exceedance was favourable from Mondi. Mondi identified odour at the effluent plant due to poor quality condensate as the root cause of the exceedance. A plan has been developed to address this source of odour.* | | | | | | |
| *85* | *Mondi: 7 January 2020: Candice Webb responded. Wind direction prior to the exceedance was favourable from Mondi during the period investigated. There were no TRS exceedances recorded at Mondi's monitoring stations. There were no upsets or abnormal conditions at the mill during the time of the exceedances. However, it is possible that fugitive emissions contributed to the odour.* | | | | | | |
| *86* | *Mondi: 8 November 2019: Brendan Crawford responded. Wind direction was not favourable from Mondi although it must be noted that wind speeds were very low. There were no TRS exceedances recorded at Mondi's monitoring stations. A maintenance issue on the Lime Kiln require Non-condensable gases to be switched to the Flare at 5:30am. It is possible that emissions from the Flare may have contributed toward the exceedances.* | | | | | | |
| *87* | *Mondi: 9 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This compares favourably with most of the exceedances. TRS exceedances were recorded at all of Mondi's monitoring stations throughout, Hytec and Alton. Mondi's effluent plant was identified as the source of the odorous emissions. Actions were taken to reduce the odorous impact of the Effluent Plant.* | | | | | | |
| *88* | *Mondi: 9 September 2019: Brendan Crawford responded. Based on wind direction and speed the areas shaded below would have been most favourable from Mondi. This compares favourably with most of the exceedances. TRS exceedances were recorded at all of Mondi's monitoring stations throughout, Hytec and Alton. Mondi had commenced a planned shut down as communicated to relevant authorities and stakeholders. All point source emissions were within AEL limits and there were no upset conditions recorded. It can be assumed that background odour emissions may have increased due to shut down activities.* | | | | | | |
| *90* | *Mondi: Night-time exceedances (23:30pm to 23:50pm). Based on wind direction and speed the area shaded below would have been most favourable from Mondi and correlates well with the exceedances recorded. There were also TRS exceedances recorded at Mondi's Hytec monitoring station between 21:30pm to 22:40pm. Before the exceedances, a cation Demin regen had taken place. The volume of acidic effluent generated exceeded the capacity available in the buffer tank and overflowed into the alkaline sewer. The pH shock resulted in increased H2S emissions from the Effluent Plant.* | | | | | | |
| *91* | *Mondi: Night-time exceedances. During the time of the exceedances the average wind direction measured at eSikhaleni station was 42 degrees with very low wind speeds. This is favourable from Mondi.*<br>*There were TRS exceedances recorded at Mondi's Portable ambient monitoring station between 6:00am and 7:10am. After start-up it was found that a design flaw introduced during the Annual Shut was resulting in the Evaps plant backing up and caused the venting of NCG gas to the atmosphere. The engineering contractor appointed by Mondi for the Annual Shut accepted responsibility for the design flaw. Venting from this plant started at 5:00am. A hot tap was conducted on the plant on the 2nd May 2019 which prevented the venting of NCG gas from the plant. The design flaw was corrected during a short shut on the 22nd May 2019.* | | | | | | |

# APPENDIX H
# METEOROLOGICAL MONITORING

## Wind Field

MM5[1] modelled and measured annual wind roses for 2019 at Arboretum are, presented in Figure 2. They indicate that wind blew predominantly along the NE and SW axis. NE wind is generally associated with fair weather, while SW wind is usually associated with the passage of coastal lows, cold fronts, and inclement weather. The similarity between the MM5 and measured wind roses indicates a high degree of confidence in the data used for simulations.




| Period | Wind Speed | Dominant Sector 1 | | Dominant Sector 2 | | Calms | Valid Data |
|---|---|---|---|---|---|---|---|
| 2019 (MM5) | 4.7 m/s | N-NE | 38% | SSW-WSW | 22% | 3.8% | 100.0% |
| 2019 (measured) | 3.5 m/s | N-NE | 37% | SSW-WSW | 31% | 2.7% | 97.3% |

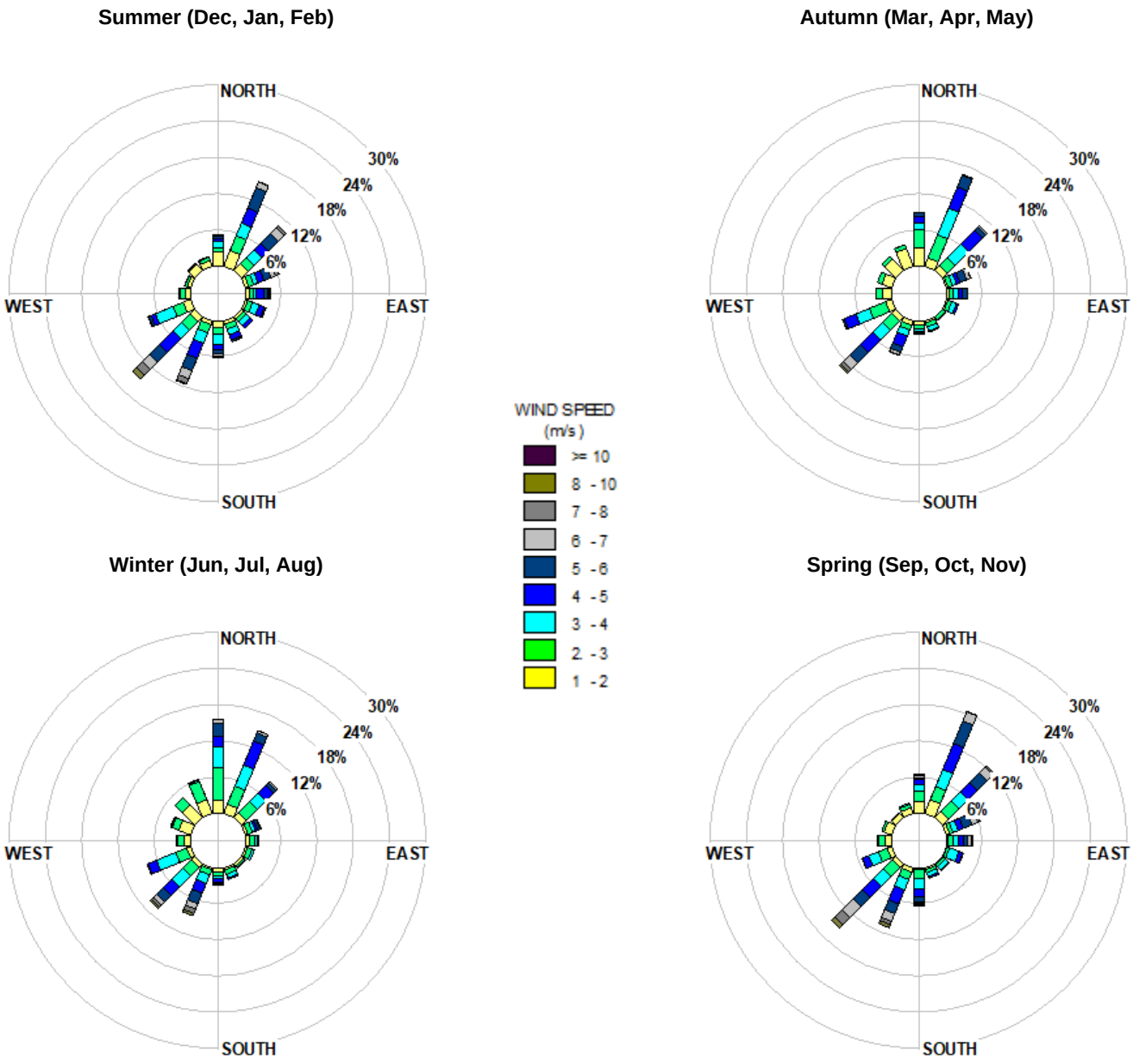
*Figure: H1 Monthly wind roses.*

## Seasonal and Diurnal Wind Roses

Seasonal and diurnal wind roses for 2019 can be, seen in Figure 4 and Figure 4. Note the increase in light (1 to 3 m/s) to moderate (3 to 6 m/s) wind from the NNW during winter (and the seasonal increase in fresh (6 to 8 m/s) to strong (> 8 m/s)

[1] The Penn State University (PSU) / National Centre for Atmospheric Research (NCAR) meso-scale model is a limited-area, non-hydrostatic or hydrostatic (Version 2 only), terrain-following sigma-coordinate model designed to simulate or predict meso-scale and regional-scale atmospheric circulation. It has been developed at PSU and NCAR as a community meso-scale model and is continuously being improved by contributions from users at several universities and government laboratories. The Fifth-Generation PSU / NCAR Meso-scale Model is known as MM5.

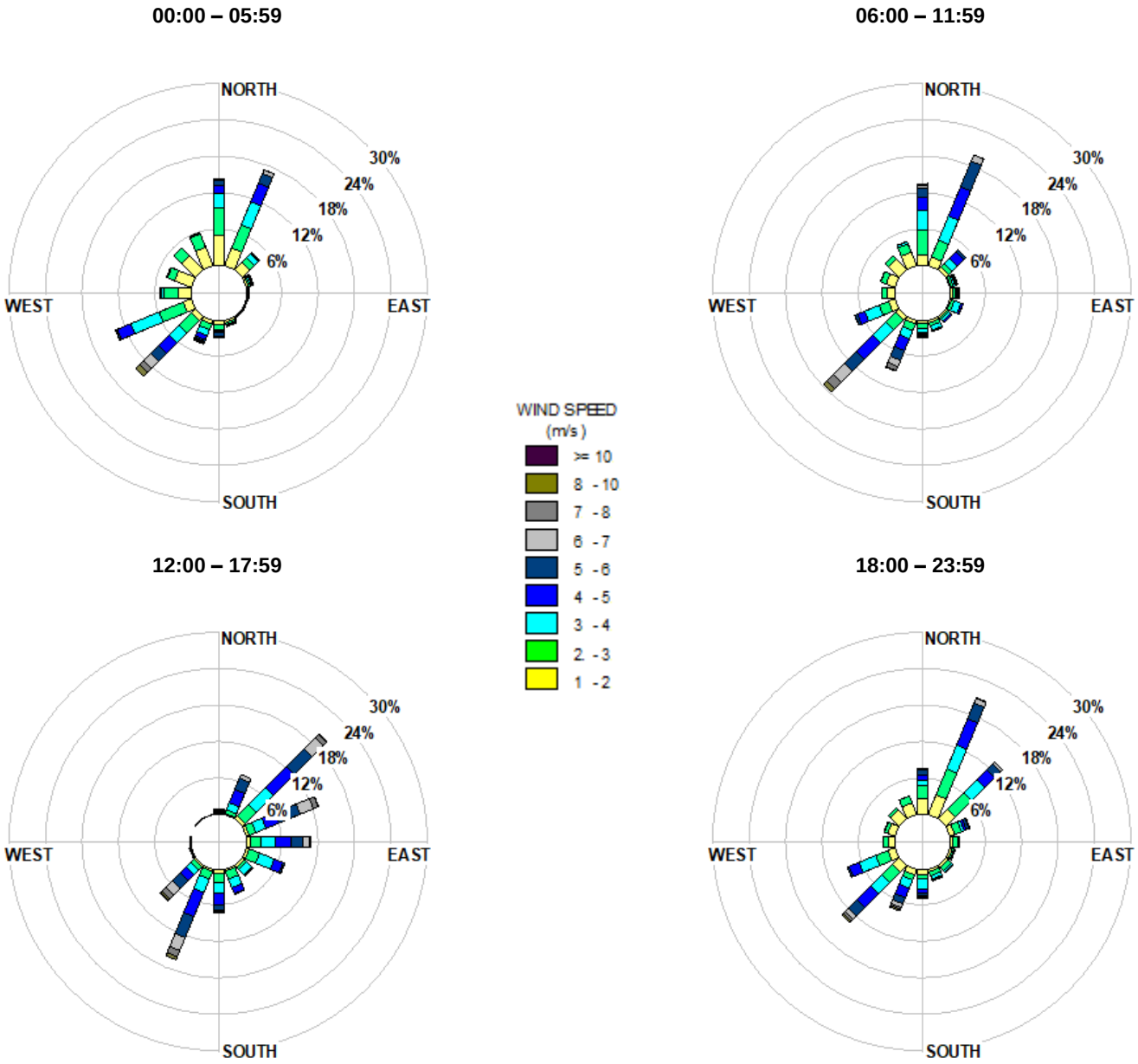
N to NE wind during periods that include spring and early summer. Strong southerly to SSW wind occurs throughout the year, typically associated with the arrival of coastal lows and cold fronts.




| Period | Wind Speed | Dominant Sector 1 | | Dominant Sector 2 | | Calms | Valid Data |
|---|---|---|---|---|---|---|---|
| Summer (Dec-Jan) | 3.7 m/s | NNE-NE | 27% | SSW-WSW | 35% | 3.2% | 99.4% |
| Autumn (Feb-Mar) | 3.3 m/s | N-NE | 39% | SSW-WSW | 31% | 2.3% | 93.2% |
| Winter (Jun-Aug) | 3.2 m/s | NNW-NE | 48% | SSW-WSW | 28% | 2.8% | 96.8% |
| Spring (Sept-Nov) | 3.9 m/s | N-NE | 38% | S-SW | 33% | 2.6% | 100.0% |

*Figure: H2: Seasonal wind roses.*

## Arboretum – 2019 (MM5)




| Period | Wind Speed | Dominant Sector 1 | | Dominant Sector 2 | | Calms | Valid Data |
|---|---|---|---|---|---|---|---|
| 00:00-05:59 | 2.9 m/s | NNW-NNE | 40% | SW-WSW | 29% | 4.3% | 97.3% |
| 06:00-11:59 | 3.6 m/s | N-NNE | 35% | SSW-WSW | 36% | 2.3% | 97.1% |
| 12:00-17:59 | 4.4 m/s | NNE-ESE | 59% | S-SW | 32% | 0.8% | 97.2% |
| 18:00-23:59 | 3.2 m/s | N-NE | 44% | SSW-WSW | 31% | 3.5% | 97.7% |

*Figure: H3: Diurnal wind roses.*

## Rainfall

*Table H1: Monthly Rainfall Richards Bay*

| Month | Richards Bay | | | |
|---|---|---|---|---|
| | 2016 | 2017 | 2018 | 2019 |
| Jan | 84 | 277 | 94 | 182 |
| Feb | 100 | 345 | 232 | 195 |
| Mar | 137 | 142 | 139 | 78 |
| Apr | 179 | 22 | 261 | 214 |
| May | 291 | 476 | 311 | 9 |
| Jun | 152 | 62 | 70 | 78 |
| Jul | 293 | 25 | 20 | 16 |
| Aug | 41 | 75 | 100 | 160 |
| Sep | 172 | 51 | 85 | 43 |
| Oct | 205 | 94 | 213 | 260 |
| Nov | 128 | 144 | 119 | 296 |
| Dec | 53 | 260 | 156 | 320 |
| **Minimum** | 41 | 22 | 20 | 9 |
| **Average** | 153 | 164 | 150 | 154 |
| **Maximum** | 293 | 476 | 311 | 320 |
| **Total** | 1834 | 1973 | 1798 | 1850 |

*Table H2: Monthly Felixton*

| Month | Felixton | | | |
|---|---|---|---|---|
| | 2016 | 2017 | 2018 | 2019 |
| Jan | 64 | 193 | 43 | 138 |
| Feb | 61 | 277 | 129 | 138 |
| Mar | 83 | 101 | 89 | 70 |
| Apr | 116 | 116 | 138 | 143 |
| May | 243 | 286 | 342 | 9 |
| Jun | 32 | 24 | 60 | 53 |
| Jul | 183 | 27 | 22 | 17 |
| Aug | 20 | 54 | 83 | 39 |
| Sep | 92 | 95 | 53 | 79 |
| Oct | 124 | 119 | 201 | 144 |
| Nov | 77 | 82 | 84 | 121 |
| Dec | 32 | 138 | 111 | 311 |
| **Minimum** | 20 | 24 | 22 | 9 |
| **Average** | 94 | 126 | 113 | 105 |

| Month | Felixton | | | |
|---|---|---|---|---|
| | 2016 | 2017 | 2018 | 2019 |
| **Maximum** | 243 | 286 | 342 | 311 |
| **Total** | 1126 | 1512 | 1354 | 1261 |

*Table H3: RBCT*

| Month | Richards Bay | | | |
|---|---|---|---|---|
| | 2016 | 2017 | 2018 | 2019 |
| Jan | - | 160 | 42 | 110 |
| Feb | - | 323 | 137 | 124 |
| Mar | 96 | 98 | 78 | 172 |
| Apr | 75 | 32 | 161 | 174 |
| May | 162 | 382 | 175 | 14 |
| Jun | 80 | 41 | 59 | 24 |
| Jul | 240 | 23 | 21 | 5 |
| Aug | 8 | 51 | 35 | 68 |
| Sep | 144 | 70 | 41 | 59 |
| Oct | 55 | 103 | 80 | 164 |
| Nov | 58 | 89 | 70 | 186 |
| Dec | 19 | 183 | 104 | 216 |
| **Minimum** | 8 | 23 | 21 | 5 |
| **Average** | 94 | 130 | 84 | 110 |
| **Maximum** | 240 | 382 | 175 | 216 |
| **Total** | 936 | 1555 | 1005 | 1317 |


AIMS