AIMS

Report

Monthly Air Quality

Richards Bay May 2025

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Document Approval

Action	Designation	Name	Date
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Note

This report has been finalised with the available information at the time of its compilation.

Table of Contents

Appendices

Appendix A: List of Abbreviations and Terms

Appendix B: Quality Assurance

Appendix C: Emission Inventory

Appendix D: Operational Report

Appendix E: Rainfall

Appendix F: Complaints Log

Appendix G: PM_{10} Exceedance Log

Appendix H: $PM_{2.5}$ Exceedance Log

Appendix I: SO_2 Exceedance Log

Appendix J: TRS Exceedance Log

List of Tables

List of Figures

1. INTRODUCTION

This monthly air quality report provided by the Richards Bay Clean Air Association (RBCAA) offers a comprehensive overview of air quality monitoring data for the specific month under review. It aims to provide a detailed analysis of meteorology, sulphur dioxide (SO_2), total reduced sulphur (TRS), and particulate matter (PM) levels measured by the RBCAAs monitoring network. Each monthly report focuses on a single calendar month, highlighting any notable incidents or exceedances of the applicable ambient air quality standards during that period. By analysing the monthly data, trends and patterns in air quality can be identified, helping to assess potential environmental impacts and mitigate any adverse effects.

In addition to the monthly reports, RBCAA publishes annual air quality reports summarising the key findings and trends observed over a complete calendar year. These annual reports offer a broader perspective on the region's overall air quality performance and long-term patterns. They provide stakeholders with a comprehensive understanding of the air quality and serve as a valuable tool for decision-making, policy development, and environmental management. By consistently monitoring and reporting air quality data, the RBCAA aims to promote transparency, facilitate ongoing environmental assessments, and ensure the well-being of the local community and surrounding environment.

The RBCAA monitoring network comprises ten (10) stations (Figure 1.1 and Table 1.1).

Figure 1.1: RBCAA monitoring network.

Table 1.1: Station coordinates.

Station	Latitude	Longitude	Elevation (m)
Airport	-28.738138	32.093333	34
Arboretum	-28.752385	32.062738	30
Brackenham	-28.731301	32.039016	51
CBD	-28.744719	32.054805	32
eSikhaleni	-28.865244	31.911679	13
Felixton	-28.829229	31.893536	51
Felixton Met	-28.836487	31.892513	30
Harbour West	-28.787286	32.027065	6
Richardia	-28.762776	32.066072	20
Scorpio	-28.769692	32.034228	31

2. METEOROLOGY

2.1. Data Availability

The percentage of valid data received from the meteorological network for May 2025 is shown in Table 2.1.

Table 2.1: Meteorological data capture.

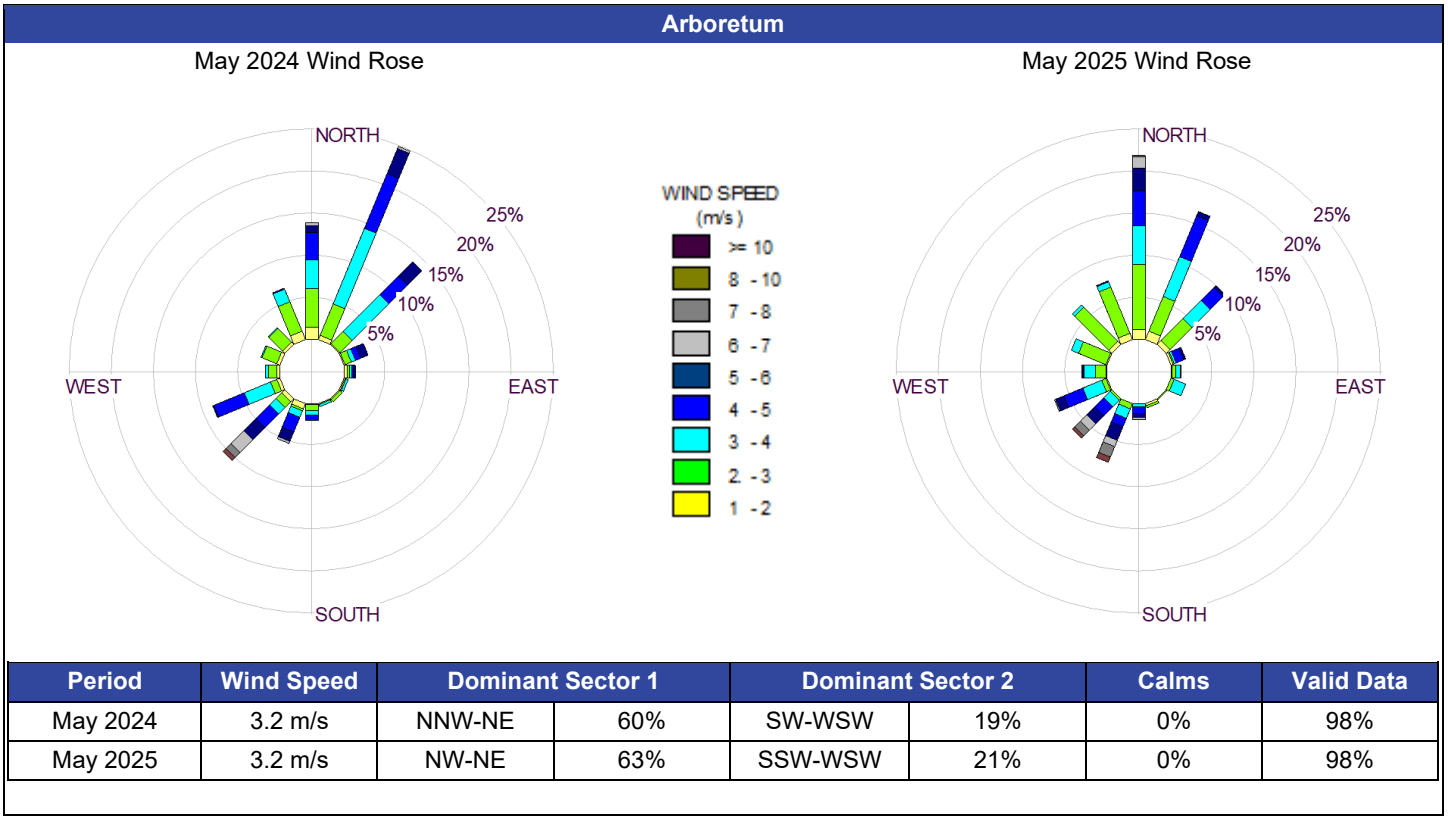
Station	Availability (%)	Wind (%)	Temperature (%)	Relative Humidity (%)	Pressure (%)	Solar Radiation (%)	Rain (%)
Airport	100	100	100	100	100	100	-
Arboretum	99	98	99	-	-	-	-
Brackenham	100	100	100	-	-	-	-
CBD	100	100	100	-	100	-	-
CBD Rain	99	-	-	-	-	-	99
eSikhaleni	100	100	100	-	100	-	-
Felixton Met	97	97	97	-	97	-	-
Harbour West	100	100	100	-	-	-	-

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

Missing Data (Station and Meteorology):
- *Felixton - power outages, data invalidation (2 days with <80% data capture, 9-10 May 2025).*

2.2. Wind Roses

Monthly wind roses for May 2024 and 2025 for Arboretum are presented in Figure 2.1. They indicate that the wind blew predominantly along the NE and SW axes. 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.



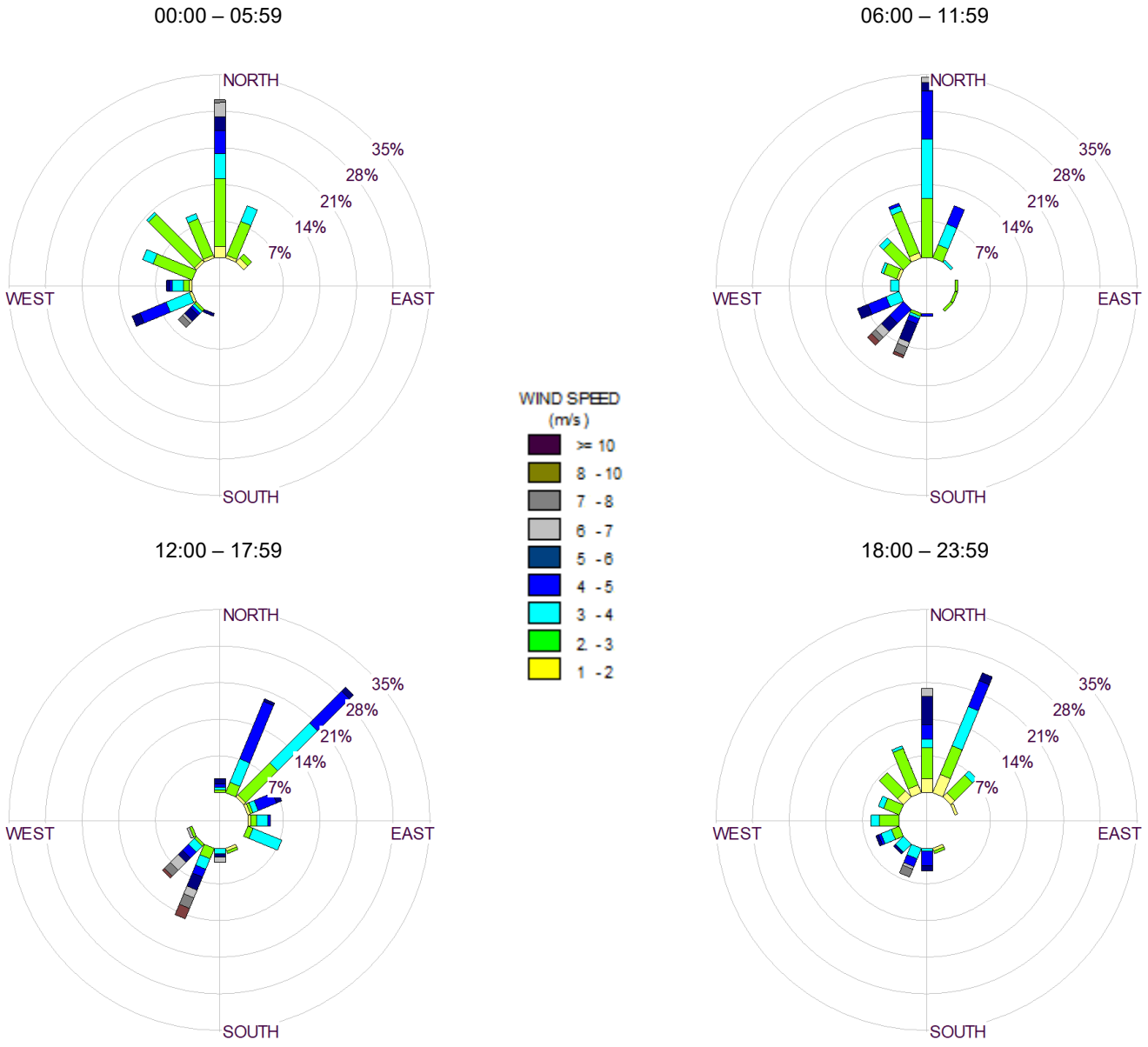
Period	Wind Speed	Dominant Sector 1		Dominant Sector 2		Calms	Valid Data
May 2024	3.2 m/s	NNW-NE	60%	SW-WSW	19%	0%	98%
May 2025	3.2 m/s	NW-NE	63%	SSW-WSW	21%	0%	98%

Figure 2.1: Wind roses - monthly.

Typically, there is an increase in light (1 to 3 m/s) to moderate (3 to 6 m/s) wind from the NNW during periods that include autumn and winter conditions 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 winds occur throughout the year and are typically associated with the arrival of coastal lows and cold fronts. Coastal lows are more frequent during the summer, hence the slightly higher proportion of these winds.

Diurnal wind roses for May 2025 are shown in Figure 2.2. ESE to SSE wind primarily consists of sea breezes during the day and early evening, particularly during the warmer spring and summer months. In contrast, WNW to NNW wind is mainly in the form of land breezes at night and early morning, particularly during the colder and more stable autumn and winter months.

Arboretum – May 2025



Period	Wind Speed	Dominant Sector 1		Dominant Sector 2		Calms	Valid Data
00:00-05:59	2.8 m/s	WNW-NNE	75%	WSW	13%	0%	98%
06:00-11:59	3.4 m/s	NW-NNE	64%	SSW-WSW	28%	0%	98%
12:00-17:59	3.7 m/s	NNE-ENE & ESE	64%	SSW-SW	24%	0%	98%
18:00-23:59	2.8 m/s	NW-NE	70%	-	-	0%	97%

Figure 2.2: Wind roses - diurnal.

2.3. Rainfall

Rainfall measured at various locations is presented in Figure 2.3, Figure 2.4, Figure 2.5 and Figure 2.6 (See APPENDIX F for tables).

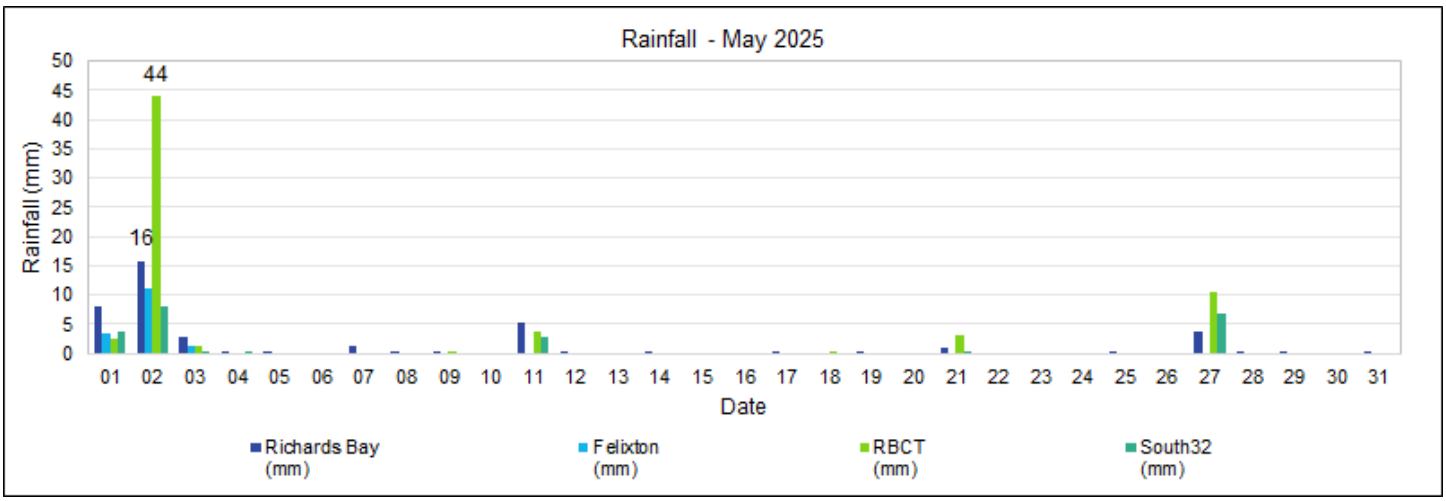


Figure 2.3: Rainfall.

Table 2.2: Rainfall -monthly averages.

Month	Richards Bay (mm)	Felixton (mm)	RBCT (mm)	South32 (mm)	Average (mm)
May 2025	41	16	66	23	36

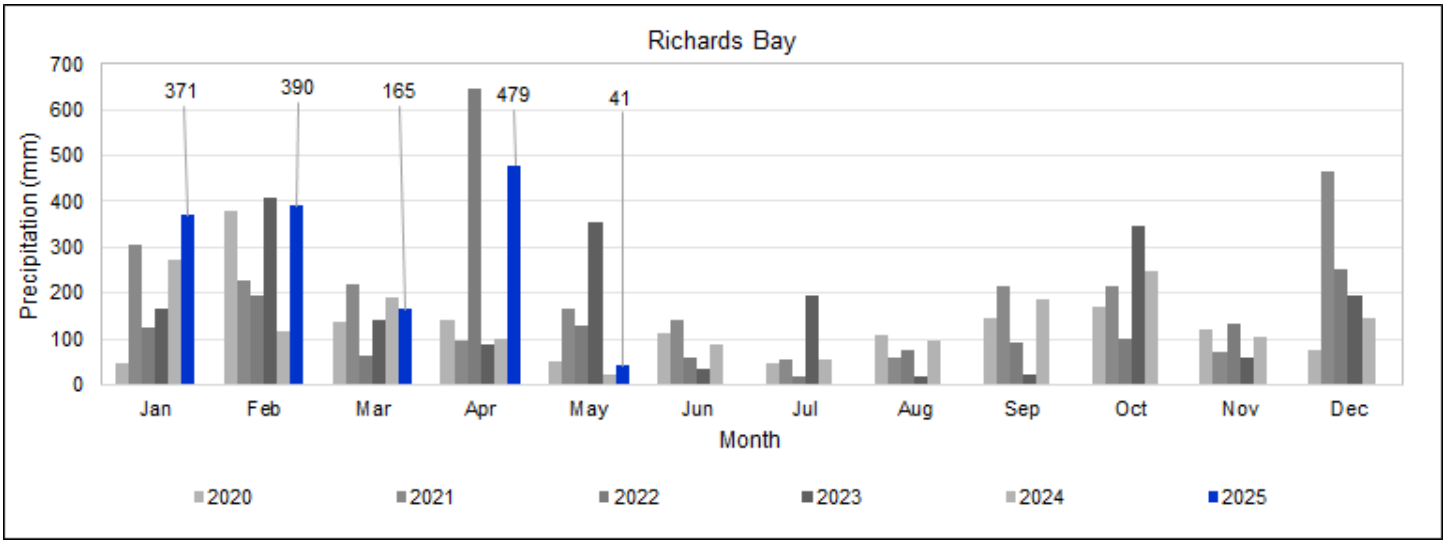


Figure 2.4: Rainfall –Richards Bay.

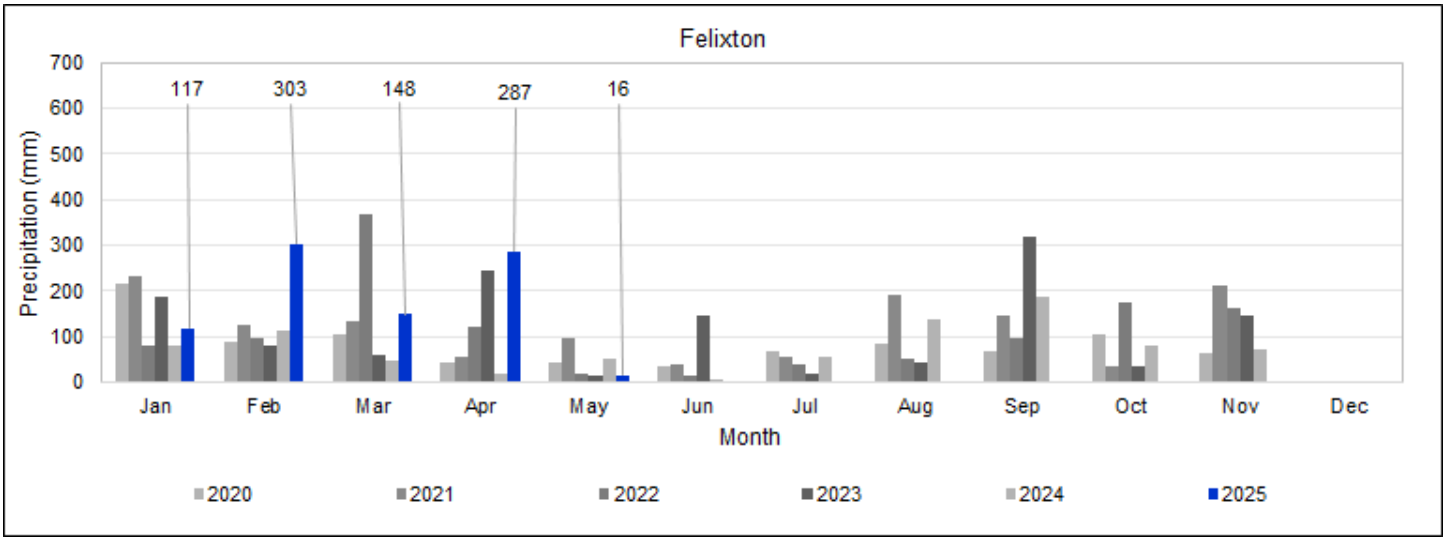


Figure 2.5: Rainfall – Felixton.

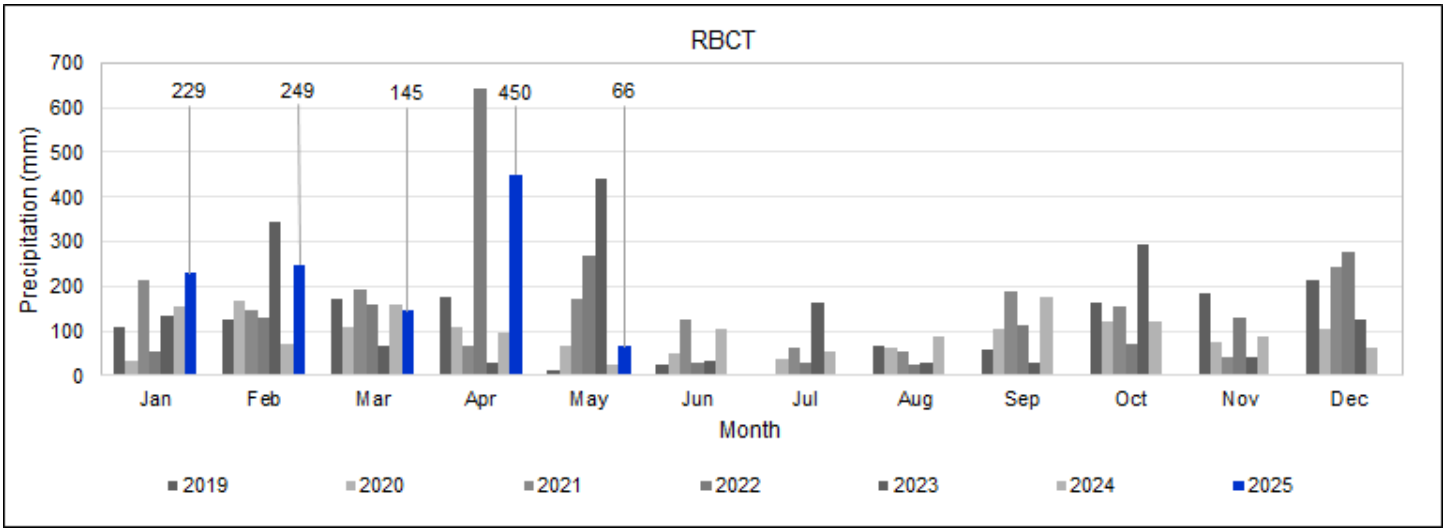


Figure 2.6: Rainfall – RBCT.

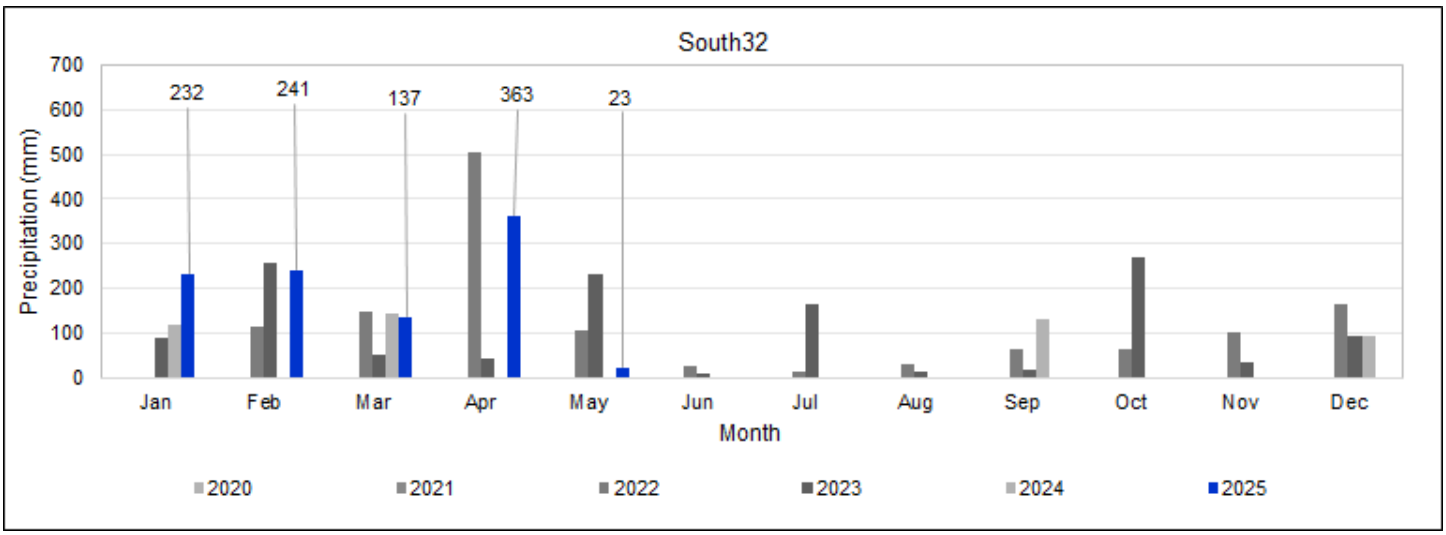


Figure 2.7: Rainfall - South32.
Note: South32 has had issues with its rain gauge in 2024.

3. AIR QUALITY COMPLAINTS

Detailed complaint records are maintained, updated, and distributed weekly to the RBCAA's complaints mailing list. The following sections summarise and analyse the complaints received during May 2025. Please see APPENDIX F for the Complaints Log.

3.1. Field Observations

Twelve (12) air quality complaints were received during May 2025; six (6) were logged in May 2024. The daily complaints and a monthly historical count are reflected below (Figure 3.1 and Figure 3.2).

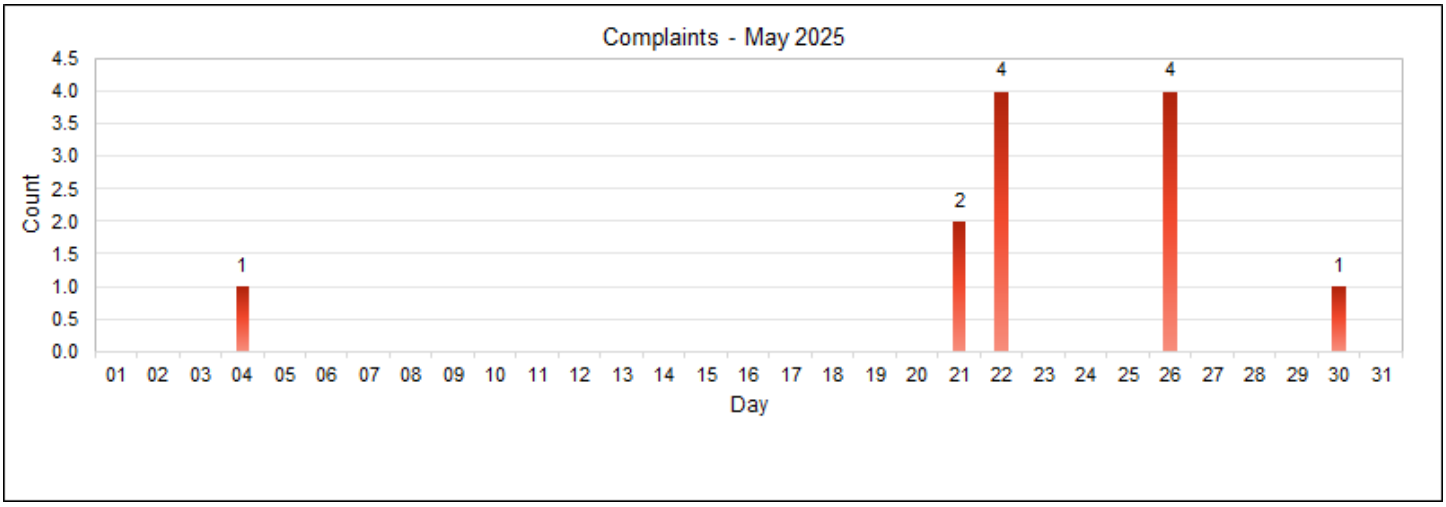


Figure 3.1: Complaints – daily.

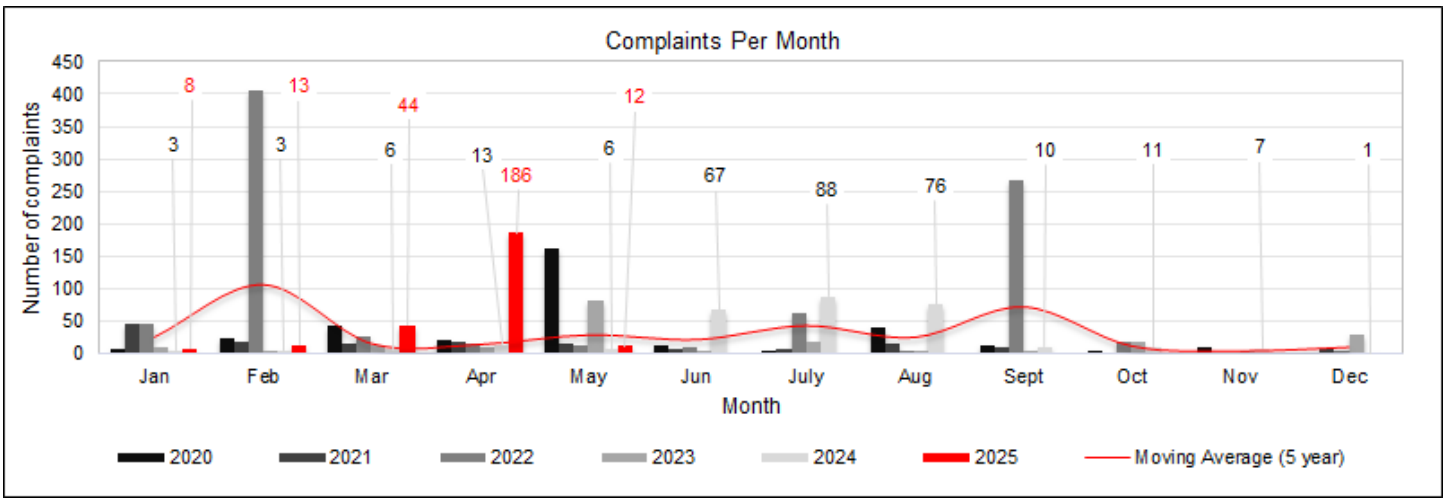


Figure 3.2: Complaints - historical monthly comparison.

3.2. Complaints Distribution

The distribution of complaints in May 2025 by region, source and type is presented in Figure 3.3, Figure 3.4, and Figure 3.5.

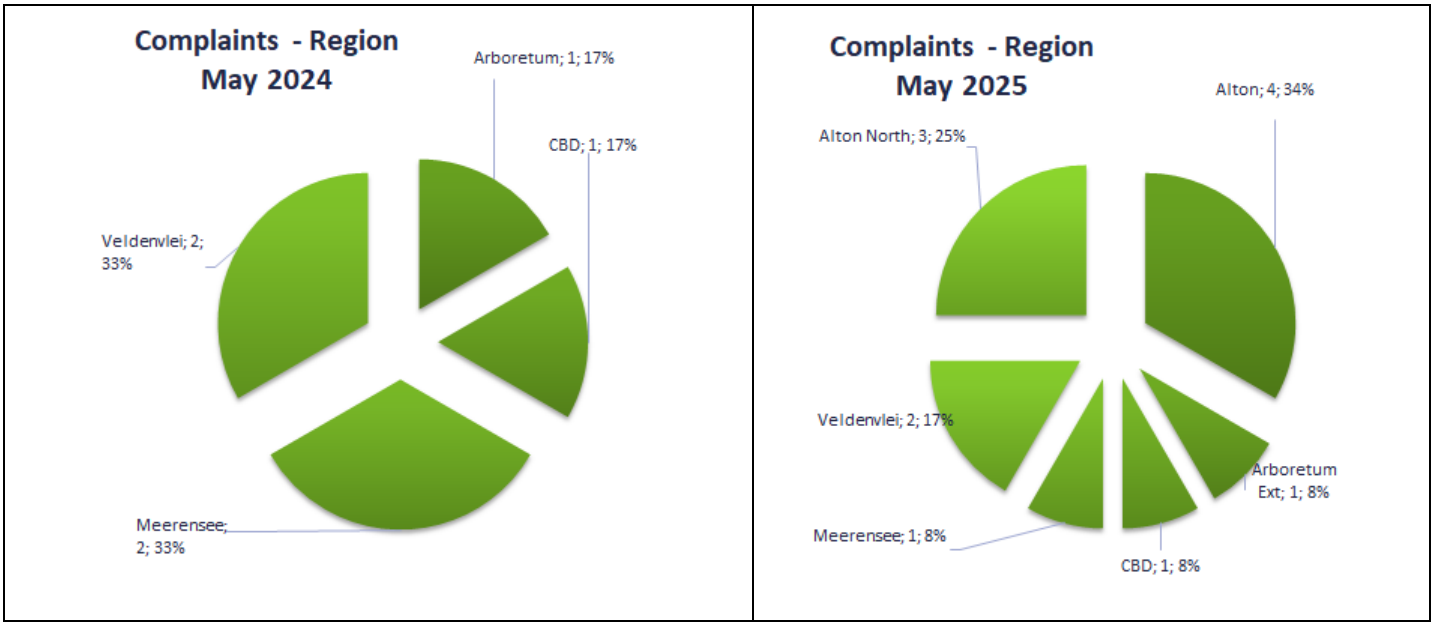


Figure 3.3: Complaints - region.

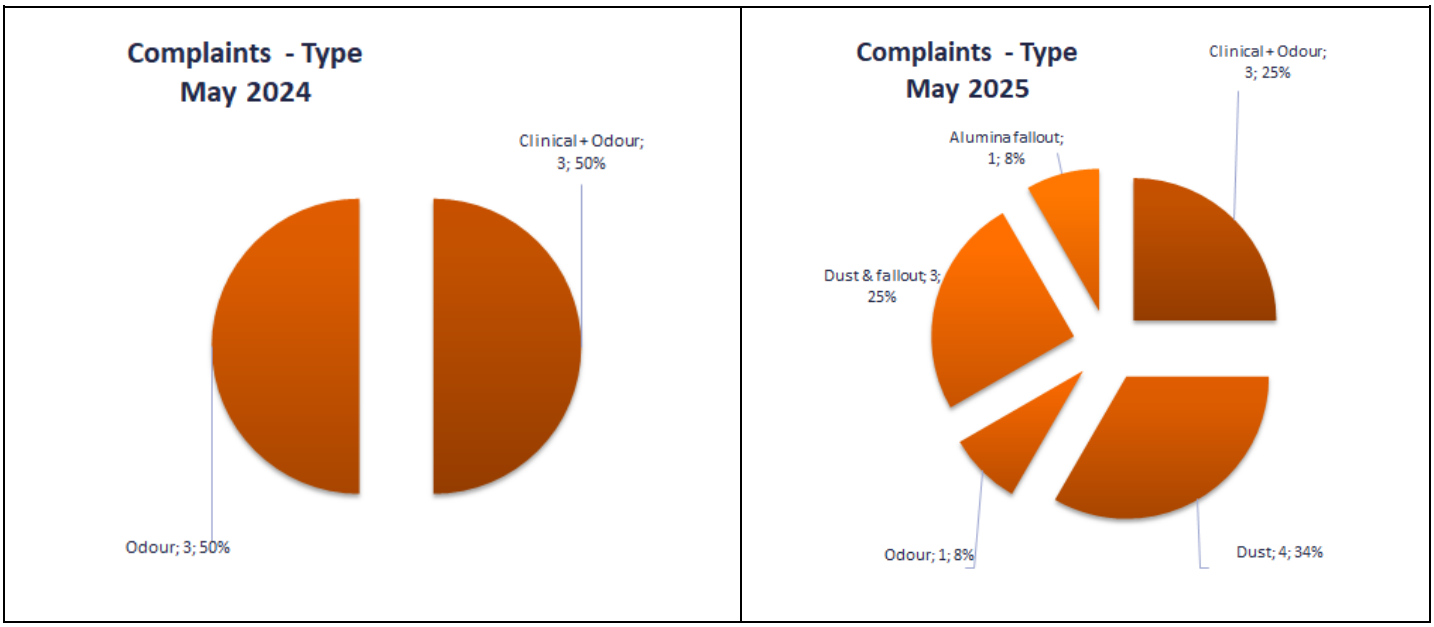


Figure 3.4: Complaints - type.

The complaints received were allocated as follows: Mondi (4, 33%), NIDA (4, 33%), RBIDZ (3, 25%), and South32 (1, 8%).

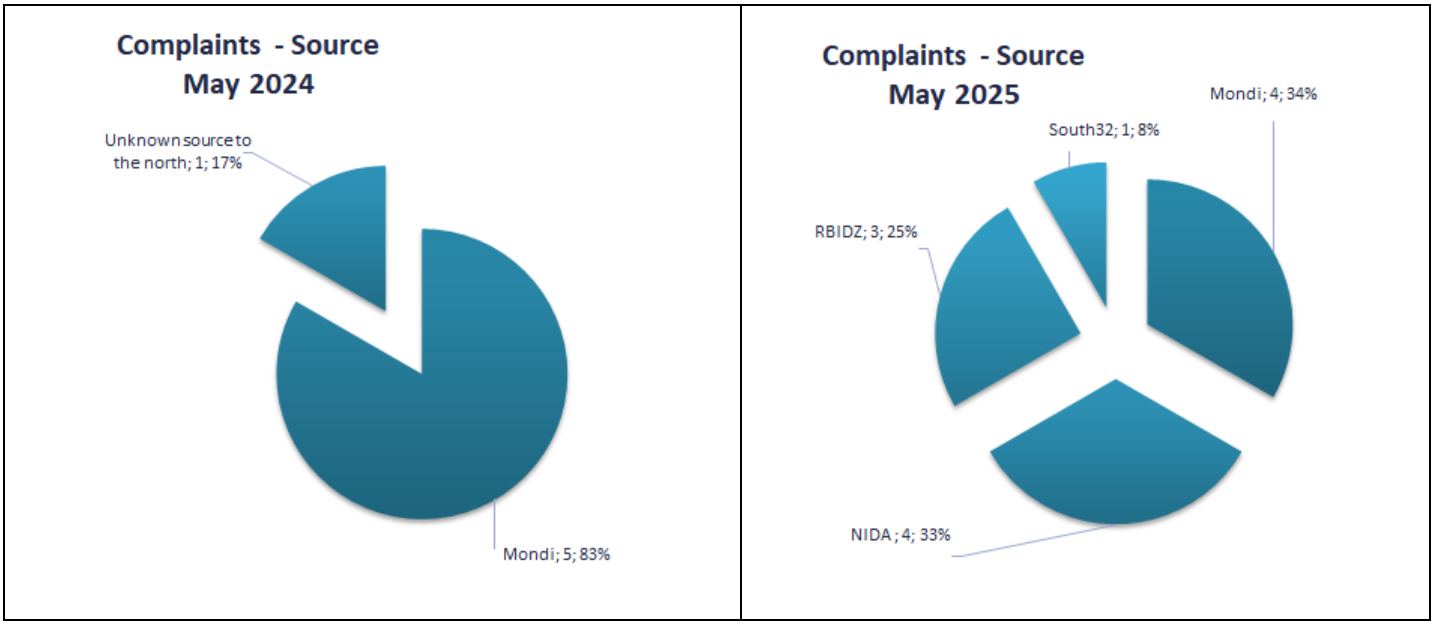


Figure 3.5: Complaints - source.

Table 3.1: Complaint - allocation, region, and type.

Complaint - allocation, region, and type	12
Mondi	**4**
Meerensee	1
Clinical + Odour	1
Arboretum Ext	1
Clinical + Odour	1
Veldenvlei	2
Clinical + Odour	1
Odour	1
NIDA	**4**
Alton	4
Dust	4
RBIDZ	**3**
Alton North	3
Dust & fallout	3
South32	**1**
CBD	1
Alumina fallout	1

4. FINE PARTICULATE MONITORING

Particulate Matter (PM) refers to the atmosphere's solid particles and liquid droplets. Many anthropogenic and natural sources emit PM directly or other pollutants into the atmosphere to form PM. These solid and liquid particles can vary in size. For example, particles less than 10 micrometres (µm) in diameter are classified as PM_{10} and particles less than 2.5 micrometres (µm) in diameter as $PM_{2.5}$.

Fine particulates can be inhaled and accumulate deep within the respiratory system. Therefore, exposure to sustained high concentrations may result in the following:

- 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, a reduction in life expectancy

Particulate matter (PM) monitoring at eSikhaleni and Richardia utilises Tapered Element Oscillating Microbalance (TEOM) devices, which are U.S. EPA-approved for continuous PM measurement. These instruments determine particle mass by detecting frequency changes in a vibrating element as particles accumulate. In contrast, Brackenham, CBD, Felixton, Scorpio, and Harbour West employ E-Samplers, which combine real-time light scattering with filter-based sampling to measure particulate concentrations. The E-Sampler is certified under the UK's Monitoring Certification Scheme (MCERTS) for indicative ambient particulate monitoring.

4.1. Ambient Air Quality Standards

Ambient air quality standards for particulates are listed below (Table 4.1).

Table 4.1: Particulate ambient air quality limits.

Organisation	Limit	PM_{10} Daily Average (µg/m³)	PM_{10} Annual Average (µg/m³)	$PM_{2.5}$ Daily Average (µg/m³)	$PM_{2.5}$ Annual Average (µg/m³)
RSA [a, d]	Standard	75 [b]	40 [c]	40 [b]	20 [c]
WHO [e]	Guideline	45 [c]	15 [c]	15 [c]	5 [c]

Notes:

a) Government Gazette 32816 (24 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 four (4) times in one year
c) Not to be exceeded
d) Government Gazette 35463 (29 June 2009) in terms of the National Environmental Management: Air Quality Act No. 39 of 2004, effective from 2015 (RSA-NEMAQA, 2012)
e) World Health Organisation (WHO, 2021)

4.2. Data Availability

The percentage of valid data received from the PM analysers for May 2025 is shown in Table 4.2.

Table 4.2: PM data capture.

Station	Availability (%)	PM_{10} (%)	$PM_{2.5}$ (%)
Brackenham ES2	100	-	100
CBD ES1	100	100	-
eSikhaleni	100	100	-
Felixton ES1	100	99	-
Felixton ES2	99	-	99
Harbour West ES2	100	-	100
Richardia	99	99	-
Scorpio ES1	97	97	-
Scorpio ES2	97	-	97

Missing Data (PM_{10}):

- *Felixton – power outages, data invalidation (1 day with <80% data capture 15 May 2025).*
- *Scorpio – power outages, data invalidation (1 day with <80% data capture 28 May 2025).*

Missing Data ($PM_{2.5}$):

- *Scorpio – power outages, data invalidation (1 day with <80% data capture 28 May 2025).*

4.3. Monthly

PM_{10} monthly average concentrations did not exceed the RSA Annual Limit; the WHO Annual Limit was exceeded at eSikhaleni, Felixton, Richardia and Scorpio (Figure 4.1). Comparisons to previous months are also provided (Figure 4.2).

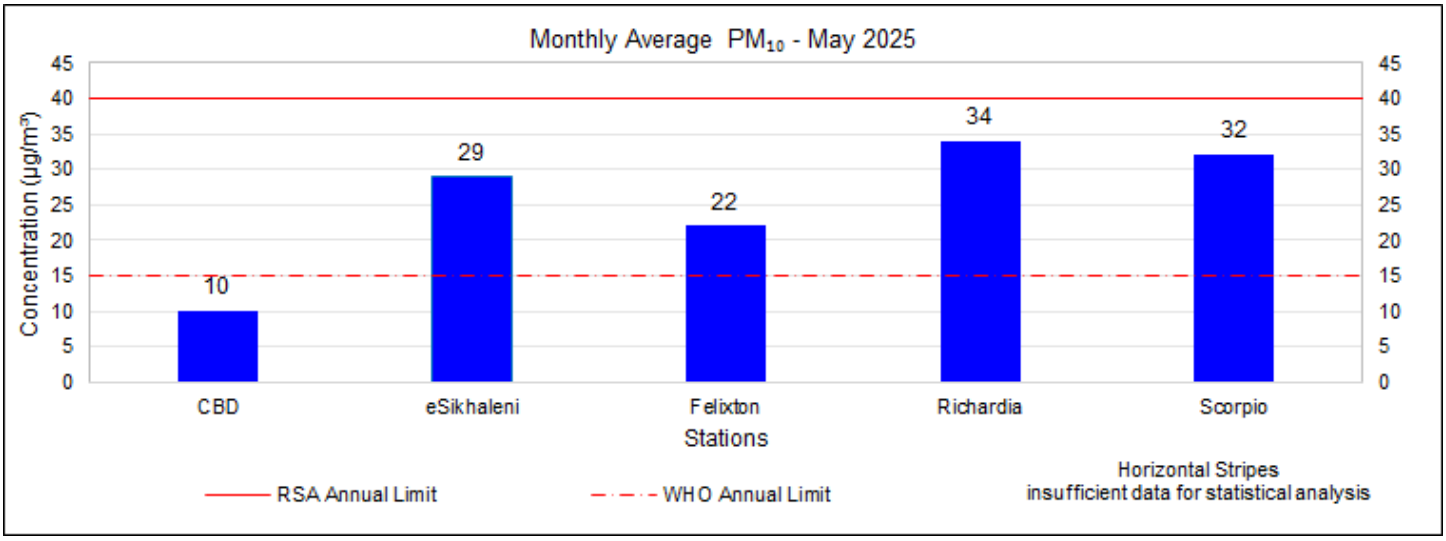


Figure 4.1: PM_{10} monthly concentrations.

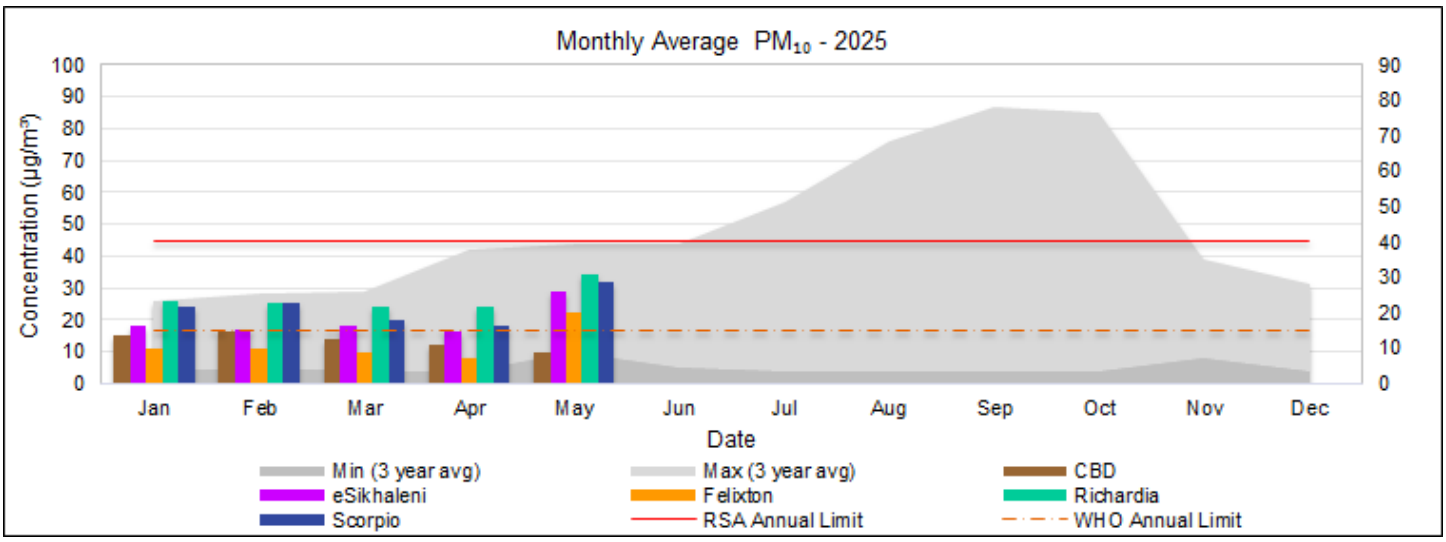


Figure 4.2: PM_{10} monthly comparison.

$PM_{2.5}$ monthly average concentrations did exceed the RSA Annual Limit at Brackenham. The WHO Annual Limit was exceeded at Brackenham, Felixton, Harbour West and Scorpio (all points monitored) (Figure 4.3). Comparisons to previous months are also provided (Figure 4.4).

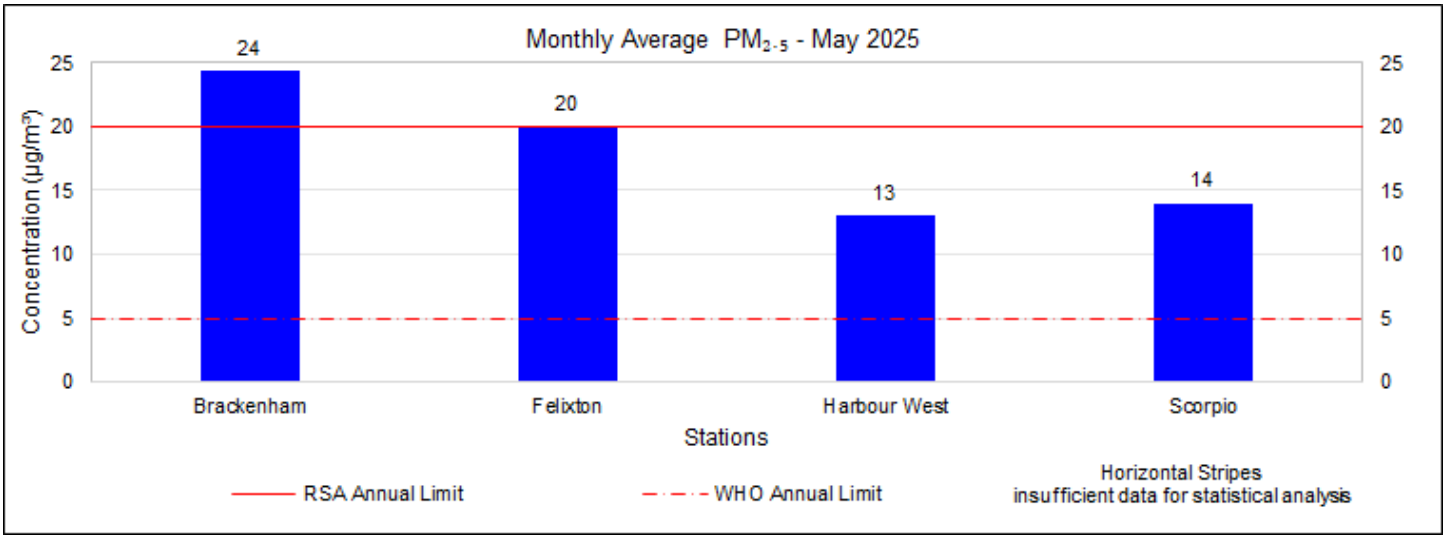


Figure 4.3: $PM_{2.5}$ monthly concentrations.

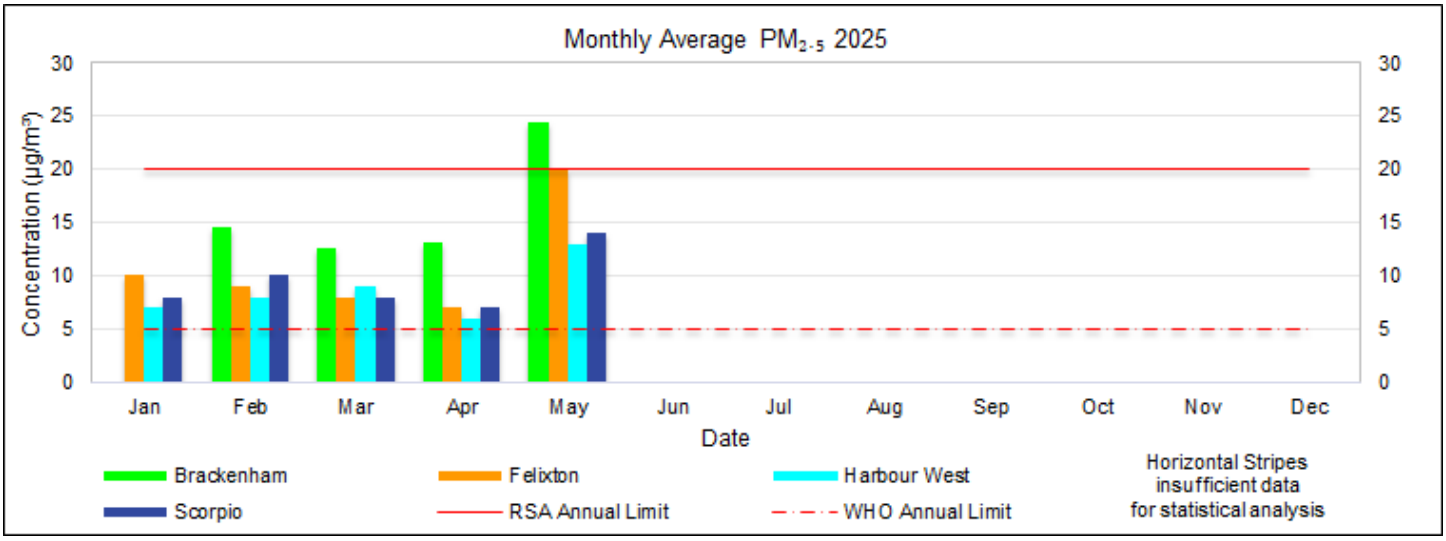


Figure 4.4: $PM_{2.5}$ monthly comparison.

4.4. Diurnal

PM diurnal concentrations are shown below (Figure 4.5 and Figure 4.6). Diurnal concentrations of PM_{10} did not exceed the RSA Daily Limit (75 µg/m³) the WHO Daily Limit (45 µg/m³) was exceeded at eSikhaleni and Richardia. Diurnal concentrations of $PM_{2.5}$ did not exceed the RSA Daily Limit (40 µg/m³); the WHO Daily Limit (15 µg/m³) was exceeded at Brackenham, Felixton, Harbour West and Scorpio.

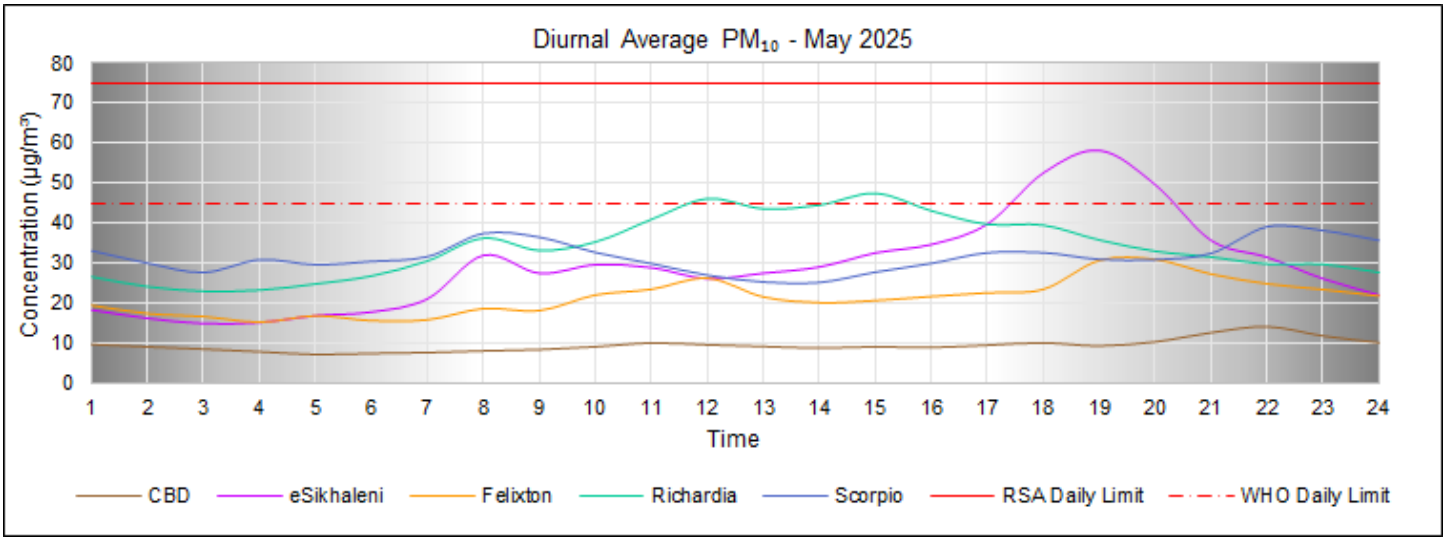


Figure 4.5: PM_{10} diurnal concentrations.

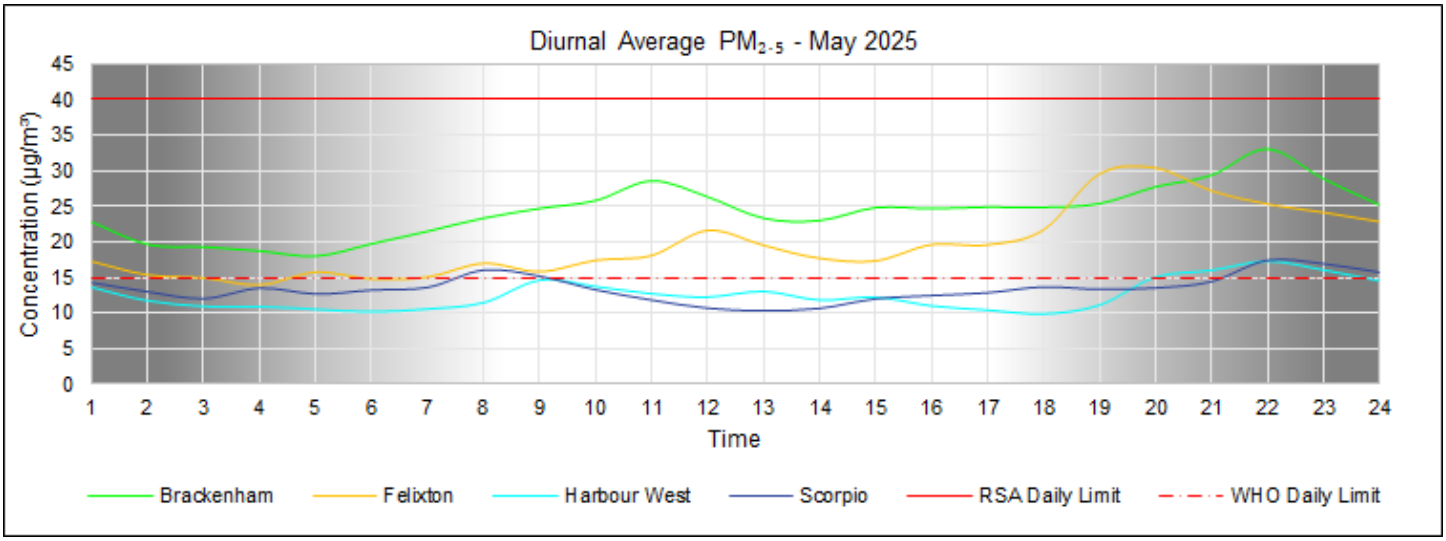


Figure 4.6: $PM_{2.5}$ diurnal concentrations.

4.5. Daily

PM_{10} daily concentrations are shown in Figure 4.7, and exceedances are in Table 4.3. There were:

- No (0) measured exceedance of the RSA Limit (75 µg/m³); and,
- Thirteen (13) measured exceedances of the WHO Limit (45 µg/m³).

Table 4.3: PM_{10} 24-hour exceedances (WHO).

PM_{10} Daily WHO Limit (45 µg/m³)	13
No response required	**13**
eSikhaleni	**3**
No comments	3
Richardia	**6**
No comments	6
Scorpio	**4**
No comments	4

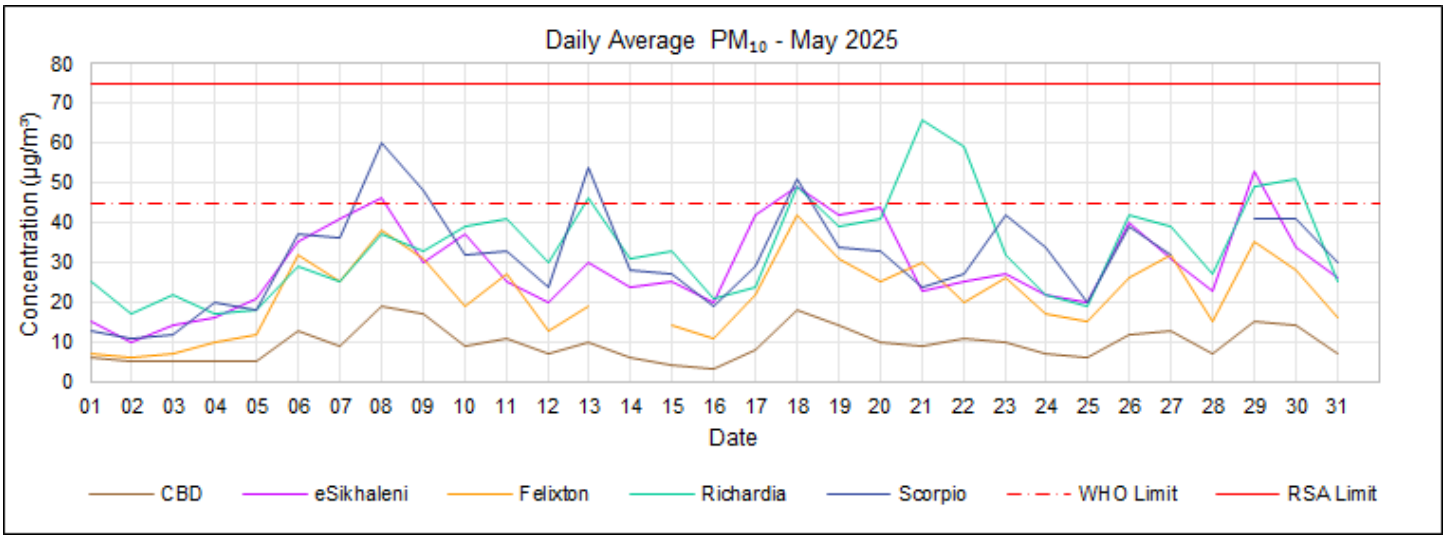


Figure 4.7: PM_{10} 24-hour average concentrations.
Missing Data (PM_{10})

- *Felixton – power outages, data invalidation (1 day with <80% data capture 15 May 2025).*
- *Scorpio – power outages, data invalidation (1 day with <80% data capture 28 May 2025).*

$PM_{2.5}$ daily concentrations are shown in Figure 4.8, and exceedances are in Table 4.4 and Table 4.5. There were:

- Two (2) measured exceedances of the RSA Limit (40 µg/m³); and,
- Sixty-three (63) measured exceedances of the WHO Limit (15 µg/m³).

Table 4.4: $PM_{2.5}$ 24-hour exceedances (RSA).

$PM_{2.5}$ Daily RSA Limit (40 µg/m³)	2
Industry response required	**2**
Brackenham	**2**
Responded: Mondi	2

Table 4.5: $PM_{2.5}$ 24-hour exceedances (WHO).

$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	63
No response required	**63**
Brackenham	**24**
No comments	24
Felixton	**17**
No comments	17
Scorpio	**11**
No comments	11
Harbour West	**11**
No comments	11

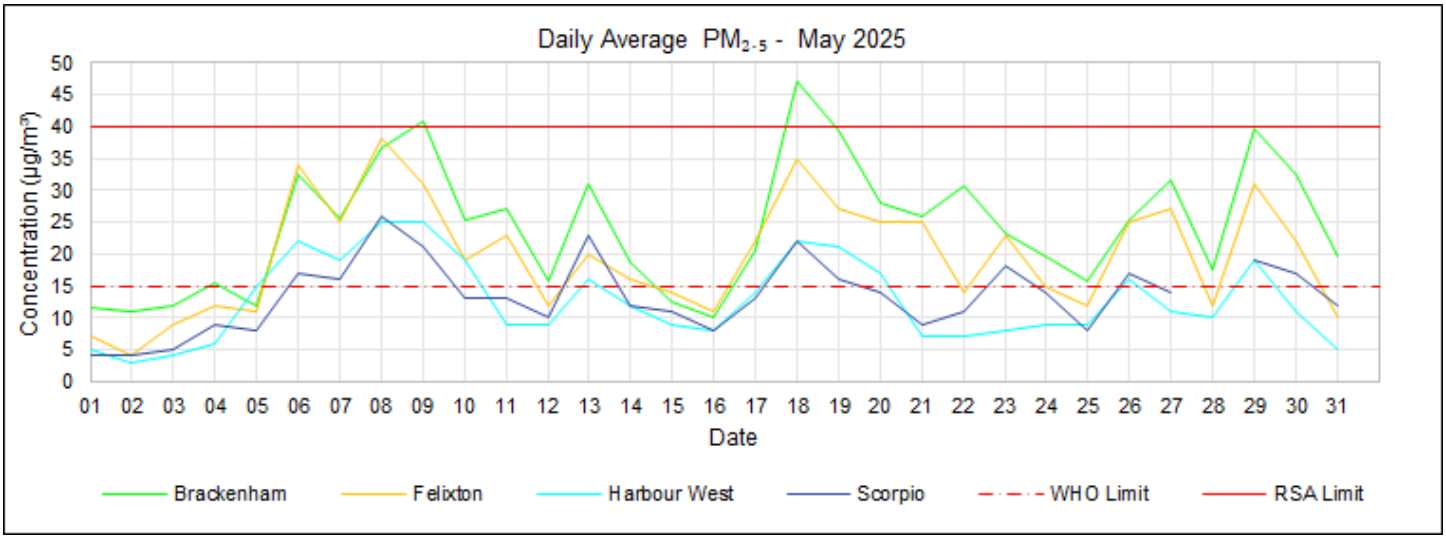


Figure 4.8: $PM_{2.5}$ daily average concentrations.
Missing Data ($PM_{2.5}$):

- *Scorpio – power outages, data invalidation (1 day with <80% data capture 28 May 2025).*

4.6. Exceedances

The number of days on which exceedances occurred, plus comparisons to previous months, are shown in Figure 4.9 and Figure 4.10, and a summary of PM exceedances broken down per station is presented in Table 4.6 and Table 4.7. According to the relevant Air Quality Index (AQI), the areas where no exceedances were measured may be considered good air quality concerning PM.

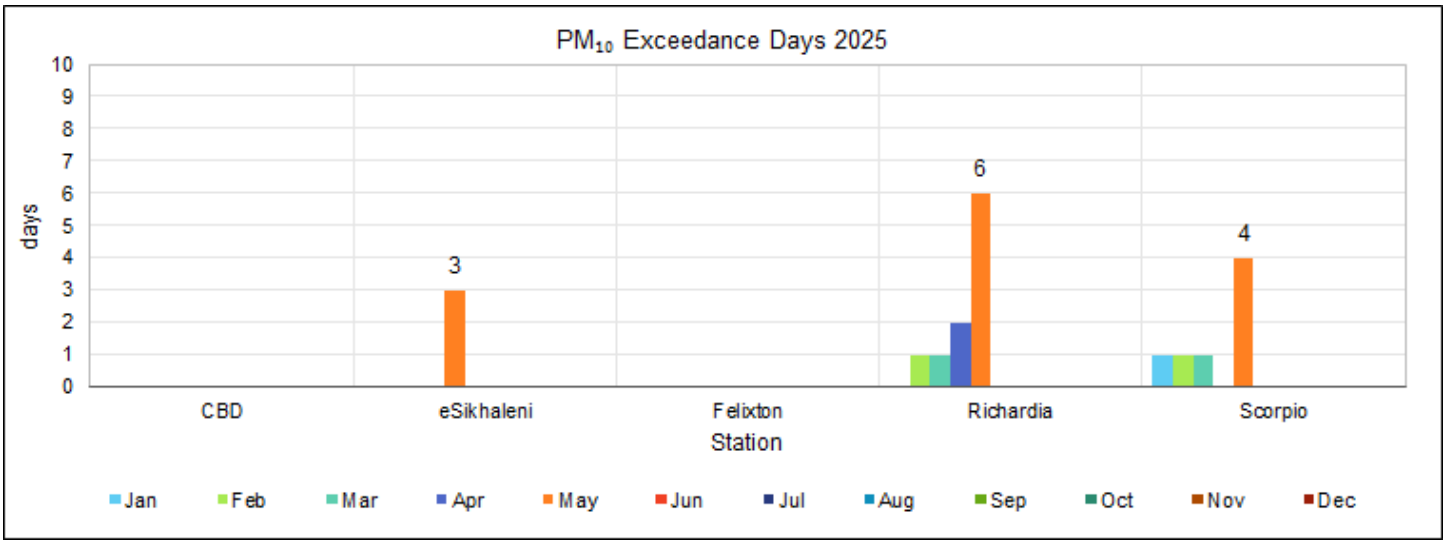


Figure 4.9: PM_{10} exceedance days.

Table 4.6: PM_{10} exceedance summary.

2025	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
PM_{10} Daily RSA Limit (75 µg/m³)													
Brackenham	-	-	-	-	-	-	-	-	-	-	-	-	0
CBD	-	-	-	-	-	-	-	-	-	-	-	-	0
eSikhaleni	-	-	-	-	-	-	-	-	-	-	-	-	0
Felixton	-	-	-	-	-	-	-	-	-	-	-	-	0
Richardia	-	-	-	-	-	-	-	-	-	-	-	-	0
Scorpio	-	-	-	-	-	-	-	-	-	-	-	-	0
PM_{10} Daily WHO Limit (45 µg/m³)													
Brackenham	-	-	-	-	-	-	-	-	-	-	-	-	0
CBD	-	-	-	-	-	-	-	-	-	-	-	-	0
eSikhaleni	-	-	-	-	3		-	-	-	-	-	-	3
Felixton	-	-	-	-	-	-	-	-	-	-	-	-	0
Richardia	-	1	1	2	6	-	-	-	-	-	-	-	**10**
Scorpio	1	1	1	-	4	-	-	-	-	-	-	-	**7**

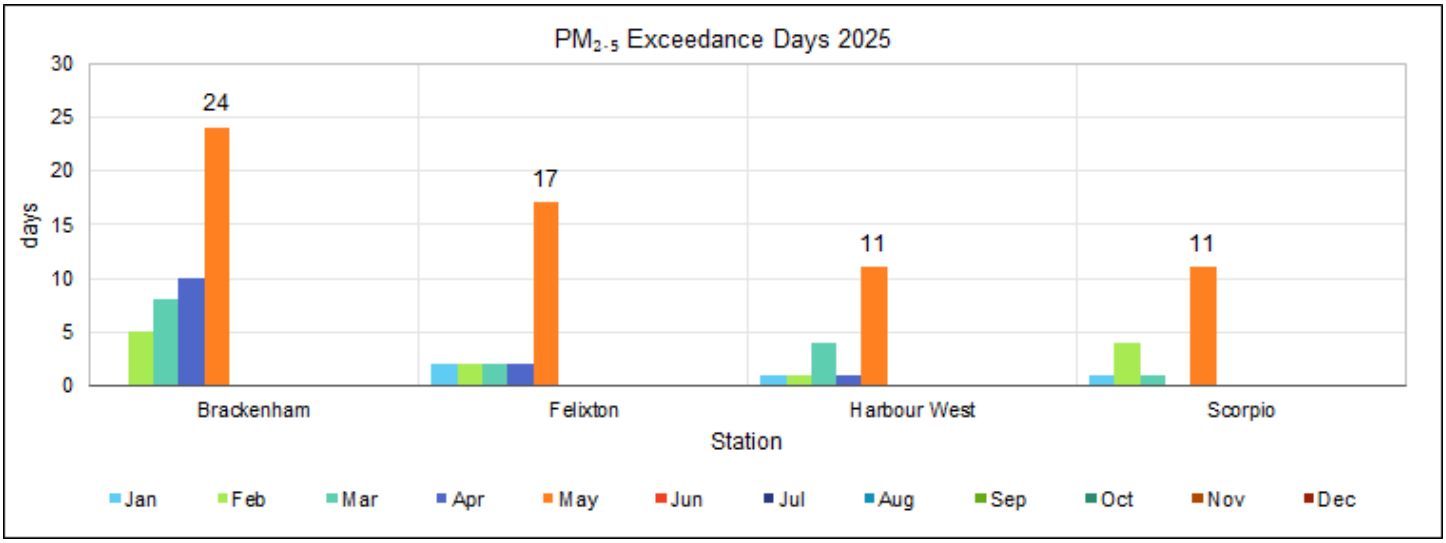


Figure 4.10: $PM_{2.5}$ exceedance days.

Table 4.7: $PM_{2.5}$ exceedance summary.

2025	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
$PM_{2.5}$ Daily RSA Limit (40 µg/m³)													
Brackenham	-	-	-	-	2	-	-	-	-	-	-	-	2
Felixton	-	-	-	-	-	-	-	-	-	-	-	-	0
Harbour West	-	-	-	-	-	-	-	-	-	-	-	-	0
Scorpio	-	-	-	-	-	-	-	-	-	-	-	-	0
$PM_{2.5}$ Daily WHO Limit (15 µg/m³)													
Brackenham	-	5	8	10	24	-	-	-	-	-	-	-	**47**
Felixton	2	2	2	2	17	-	-	-	-	-	-	-	**25**
Harbour West	1	1	4	1	11	-	-	-	-	-	-	-	**18**
Scorpio	1	4	1	-	11	-	-	-	-	-	-	-	**17**

5. SULPHUR DIOXIDE MONITORING

Sulphur dioxide (SO_2) is one gas 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, and 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 the following:

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

5.1. Ambient Air Quality Standards

South African ambient air quality standards for SO_2 are listed below (Table 5.1).

Table 5.1: SO_2 ambient air quality limits.

Organisation	Limit	10-min Average	Hourly Average	Daily Average	Annual Average
RSA [a]	SO_2 Standard	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]
WHO [f]	SO_2 Guideline	500 µg/m³	-	40 µg/m³	-
		191ppb	-	15 ppb	-

Notes:

a) SA Government Gazette 32816 (published 24 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 five hundred and twenty-six (526) times in one year.
c) Not to be exceeded more than eighty-eight (88) times in one year
d) Not to be exceeded more than four (4) times in one year
e) Not to be exceeded
f) World Health Organisation (WHO, 2021)

5.2. Data Availability

The percentage of valid data received from the SO_2 analysers for May 2025 is shown in Table 5.2.

Table 5.2: SO_2 data capture.

Station	Availability (%)	SO_2 (%)
Arboretum	99	98
Brackenham	100	100
CBD	100	98
eSikhaleni	100	100
Felixton	100	99
Harbour West	100	***82***
Richardia	99	98
Scorpio	***85***	***85***

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

Missing Data (SO_2):
- *CBD – power outages, data invalidation (1 day with <80% data capture, 5 May 2025).*
- *Harbour West – power outages, faulty analyser, data invalidation (7 days with <80% data capture, 4-7, 10, 12 May 2025).*
- *Richardia - power outages, data invalidation (1 day with <80% data capture, 8 May 2025).*
- *Scorpio – power outages, datalogger database corrupted, data invalidation (7 days with <80% data capture, 1-5, 27-28 May 2025).*

5.3. Monthly

Monthly average SO_2 concentrations did not exceed the RSA Annual Limit (Figure 5.1). Comparisons to previous months are also provided (Figure 5.2).

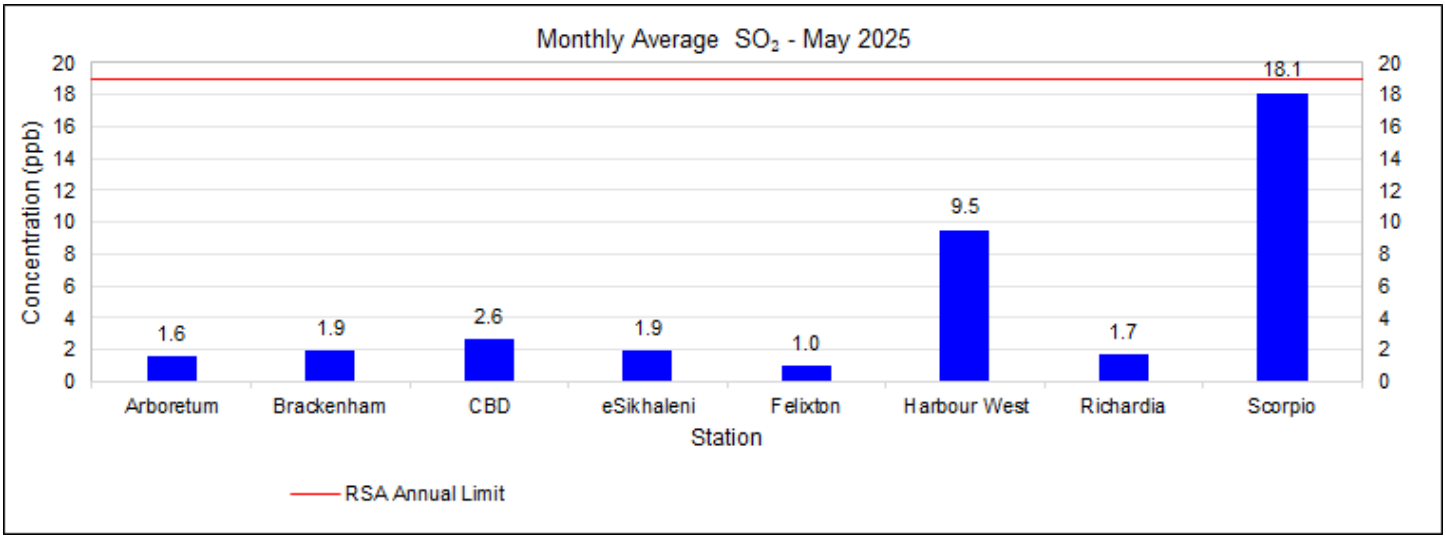


Figure 5.1: SO_2 monthly concentrations.

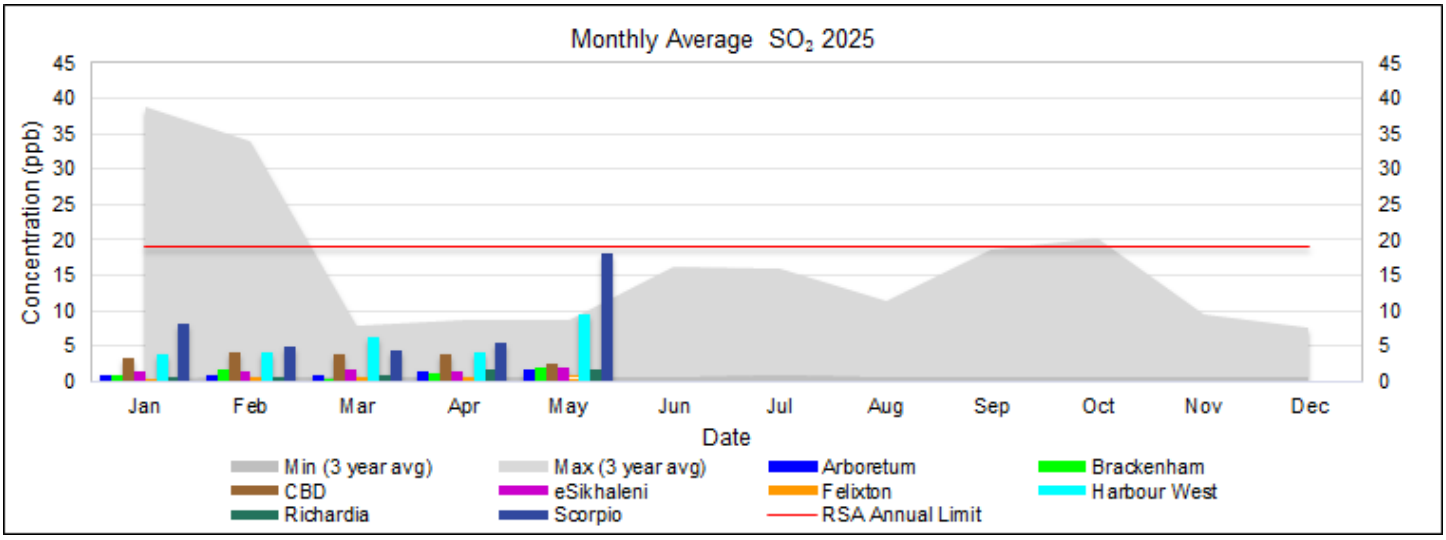


Figure 5.2: SO_2 monthly comparison.

5.4. Diurnal

Diurnal SO_2 concentrations are shown below (Figure 5.3). Diurnal concentrations of SO_2 did not exceed the RSA Daily Limit (48 ppb); the WHO Daily Limit (15 ppb) was exceeded at Harbour West and Scorpio.

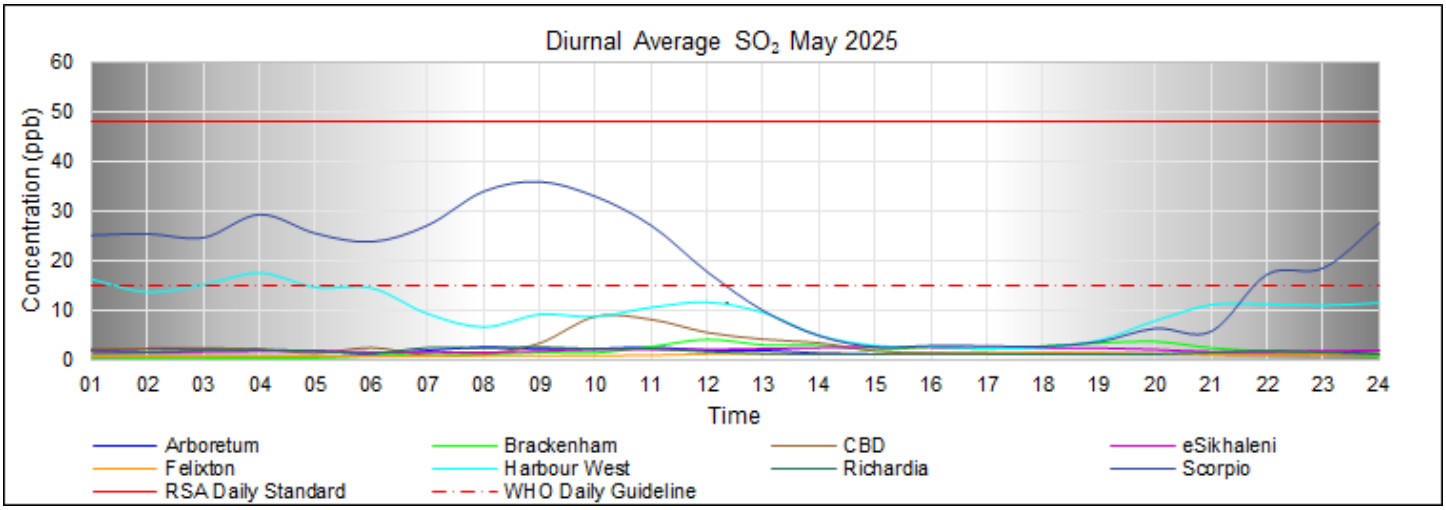


Figure 5.3: SO_2 diurnal concentrations.

5.5. Daily

SO_2 daily average concentrations are shown in Figure 5.4 and exceedances in Table 5.4 and Table 5.4: There were:

- Two (2) measured exceedances of the RSA Limit (48 ppb); and,
- Nineteen (19) measured exceedance of the WHO Limit (15 ppb).

Table 5.3: SO_2 24-hour average exceedance (RSA).

SO_2 Daily RSA Limit (48 ppb)	2
Unresolved	**1**
Scorpio	1
Responded: Foskor, South32, Mondi	1
South32 - meteorology	**1**
Scorpio	1
RBCAA allocation	1

Table 5.4: SO_2 24-hour average exceedance (WHO).

SO_2 Daily WHO Limit (15 ppb)	19
No response required	**19**
Harbour West	**7**
No comments	7
Scorpio	**12**
No comments	12

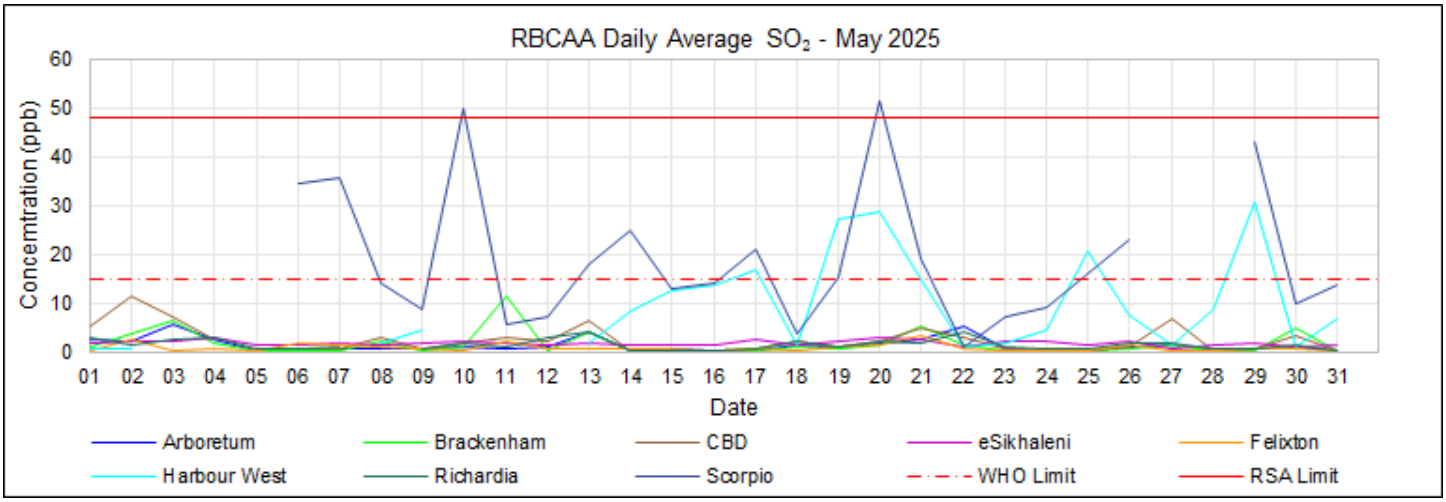


Figure 5.4: SO_2 24-hour average concentrations.
Missing Data (SO_2):

- *CBD – power outages, data invalidation (1 day with <80% data capture, 5 May 2025).*
- *Harbour West – power outages, faulty analyser, data invalidation (7 days with <80% data capture, 4-7, 10, 12 May 2025).*
- *Richardia - power outages, data invalidation (1 day with <80% data capture, 8 May 2025).*
- *Scorpio – power outages, datalogger database corrupted, data invalidation (7 days with <80% data capture, 1-5, 27-28 May 2025).*

5.6. Hourly

SO_2 hourly average concentrations are shown in Figure 5.5. There were no (0) measured exceedances of the RSA Limit (134 ppb).

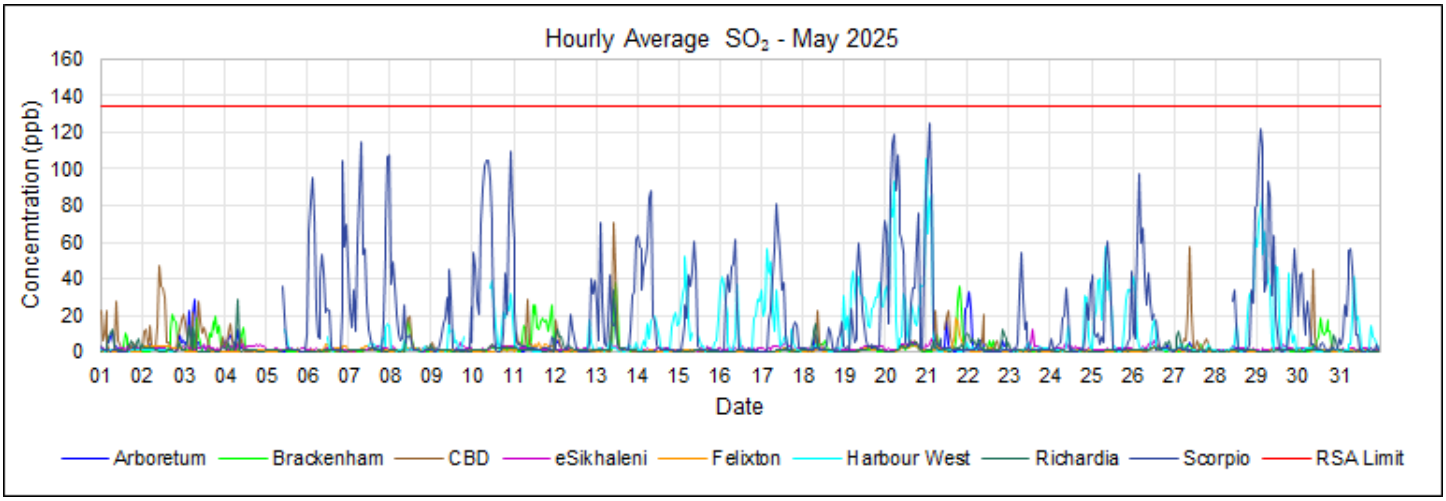


Figure 5.5: SO_2 1-hour average concentrations.

5.7. 10-minute

SO_2 10-minute average concentrations are shown in Figure 5.6. There were no (0) measured exceedances of the RSA and WHO Limit (191 ppb).

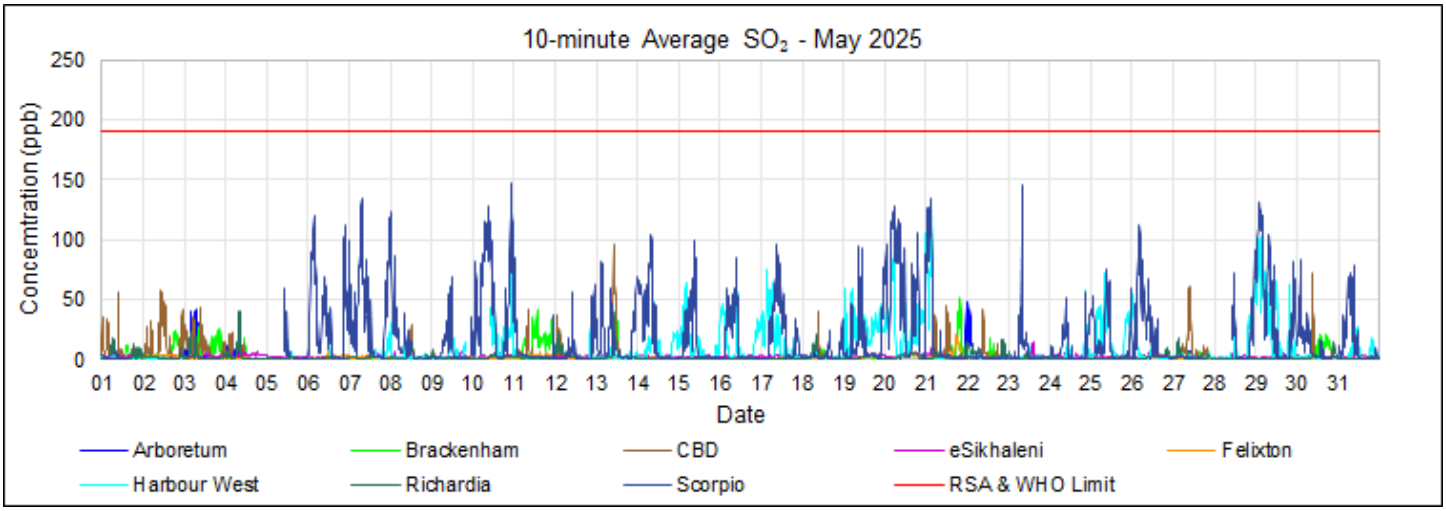


Figure 5.6: SO_2 10-minute average concentrations.

5.8. Exceedances

The number of days on which exceedances occurred, plus comparisons to previous months, are shown in Figure 5.7, and a summary of the SO_2 exceedances broken down per station is presented in Table 5.5 SO_2 exceedances can be associated with emissions because of process upsets (e.g., planned maintenance, plant shutdowns, or start-up), leaks in equipment, pipelines, seals, and valves (fugitive emissions), or an event (e.g., fires or emergency shutdowns). According to the relevant Air Quality Index (AQI), the areas where no exceedances were measured may be considered good air quality concerning SO_2.

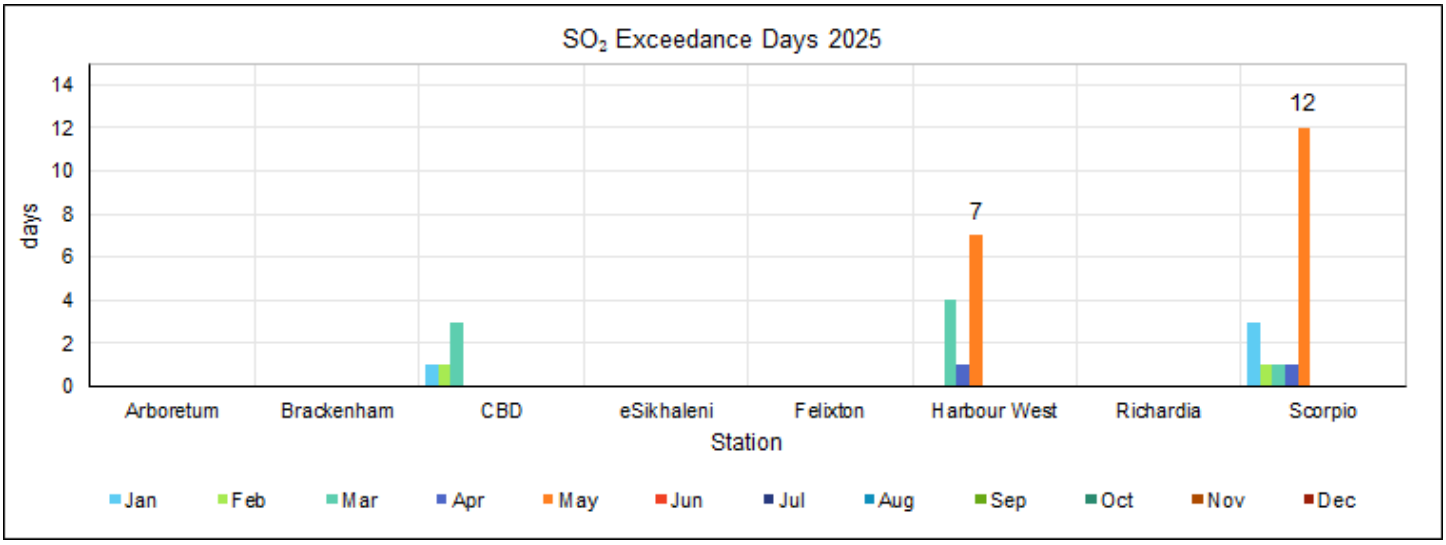


Figure 5.7: SO_2 exceedance days.

Table 5.5: SO_2 exceedance summary.

2025	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
SO_2 Daily WHO Limit (15 ppb)													
CBD	1	1	3	-	-	-	-	-	-	-	-	-	**5**
eSikhaleni	-	-	-	-	-	-	-	-	-	-	-	-	0
Harbour West	-	-	4	1	7	-	-	-	-	-	-	-	**12**
Richardia	-	-	-	-	-	-	-	-	-	-	-	-	0
Scorpio	3	-	1	1	12	-	-	-	-	-	-	-	**17**
SO_2 Hourly RSA Limit (134 ppb)													
CBD	-	-	-	-	-	-	-	-	-	-	-	-	0
eSikhaleni	-	-	-	-	-	-	-	-	-	-	-	-	0
Harbour West	-	-	-	-	-	-	-	-	-	-	-	-	0
Richardia	-	-	-	-	-	-	-	-	-	-	-	-	0
Scorpio	4	-	-	-	-	-	-	-	-	-	-	-	4
SO_2 10-minute RSA & WHO Limit (191 ppb)													
CBD	-	-	-	-	-	-	-	-	-	-	-	-	0
eSikhaleni	-	-	-	-	-	-	-	-	-	-	-	-	0
Harbour West	-	-	-	-	-	-	-	-	-	-	-	-	0
Richardia	-	-	-	-	-	-	-	-	-	-	-	-	0
Scorpio	18	1	-	-	-	-	-	-	-	-	-	-	19

6. TOTAL REDUCED SULPHUR MONITORING

Total reduced sulphur compounds (TRS), 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 generally referred to in TRS discussions. Once released into the atmosphere, oxidation products of TRS compounds, such as sulphuric acid, contribute to the environment's acidity. The most often reported health concerns related to TRS substances are nausea and headaches, although each component has its own characteristics and effects.

6.1. Ambient Air Quality Standards

There are no South African standards for TRS; however, the World Health Organisation (WHO) and the Ontario Ministry for the Environment (OME) have derived guidelines.

Table 6.1: TRS ambient air quality limits.

Organisation	Limit	10-min Average	30-minute Average	24-hour Average	Annual Average
WHO	Guideline	-	7 µg/m³ [a]	-	-
		-	5 ppb [a]	-	-
OME	Standard (pulp and paper)	13 µg/m³ [b]	10 µg/m³ [b]	14 µg/m³ [c]	-
		9.3 ppb [b]	7.2 ppb [b]	10.1 ppb [c]	-
OME	Standard (other industries)	13 µg/m³ [b]	10 µg/m³ [b]	7 µg/m³ [b]	-
		9.3 ppb [b]	7.2 ppb [b]	5.0 ppb [b]	-

Notes:

a) *World Health Organisation recommendation to avoid substantial complaints about odour annoyance among the exposed population* (WHO, 2000).
b) *Based on odour effects* (OME, 1999).
c) *Based on the odour and health effects* (OME, 1999).
d) *Based on the adverse effects on the respiratory system (nasal lesions)* (OME, 1999).

The RBCAA has decided to implement the following:

- 30-minute WHO H_2S Guideline; and the
- Daily and 10-minute OME standards for the Pulp and Paper sector.

6.2. Data Availability

The percentage of valid data received from the TRS analysers for May 2025 is shown in Table 6.2.

Table 6.2: TRS data capture.

Station	Availability (%)	TRS (%)
CBD	100	99
eSikhaleni	100	100
Felixton	100	100
Richardia	99	96

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

Missing Data (TRS):
- *CBD – power outages, data invalidation (1 day with <80% data capture, 5 May 2025).*
- *Richardia - power outages, data invalidation (2 days with <80% data capture, 18-19 May 2025).*

6.3. Monthly

Monthly average TRS concentrations are shown in Figure 6.1. Comparisons to previous months are also provided (Figure 6.2).

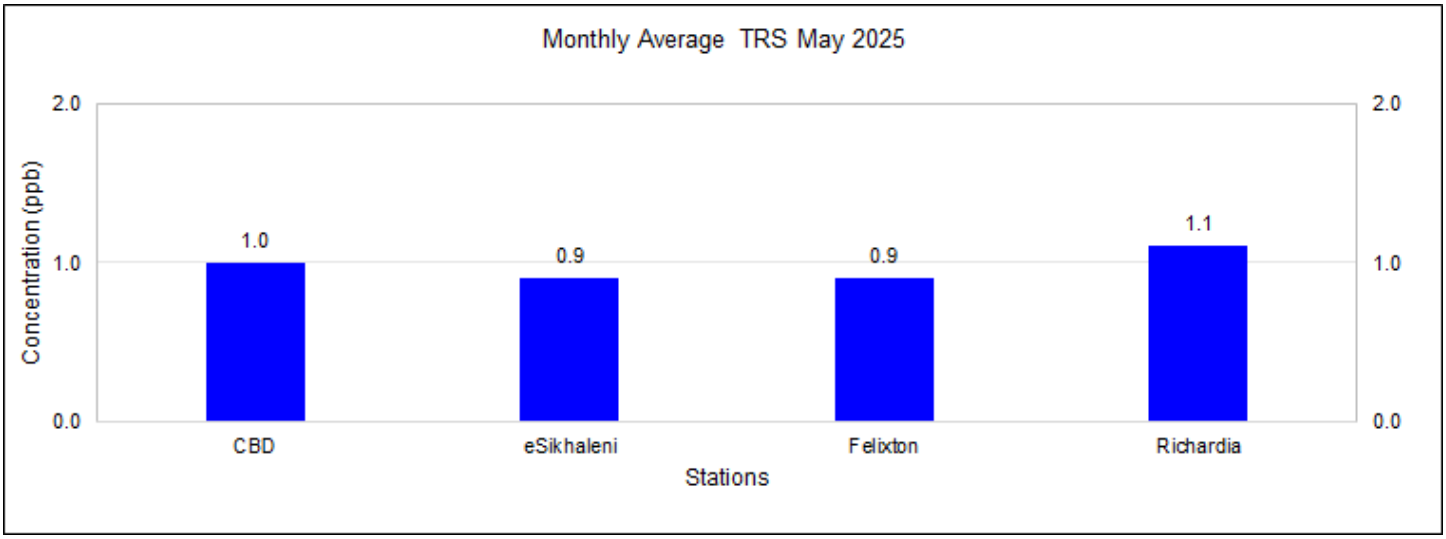


Figure 6.1: TRS monthly concentrations.

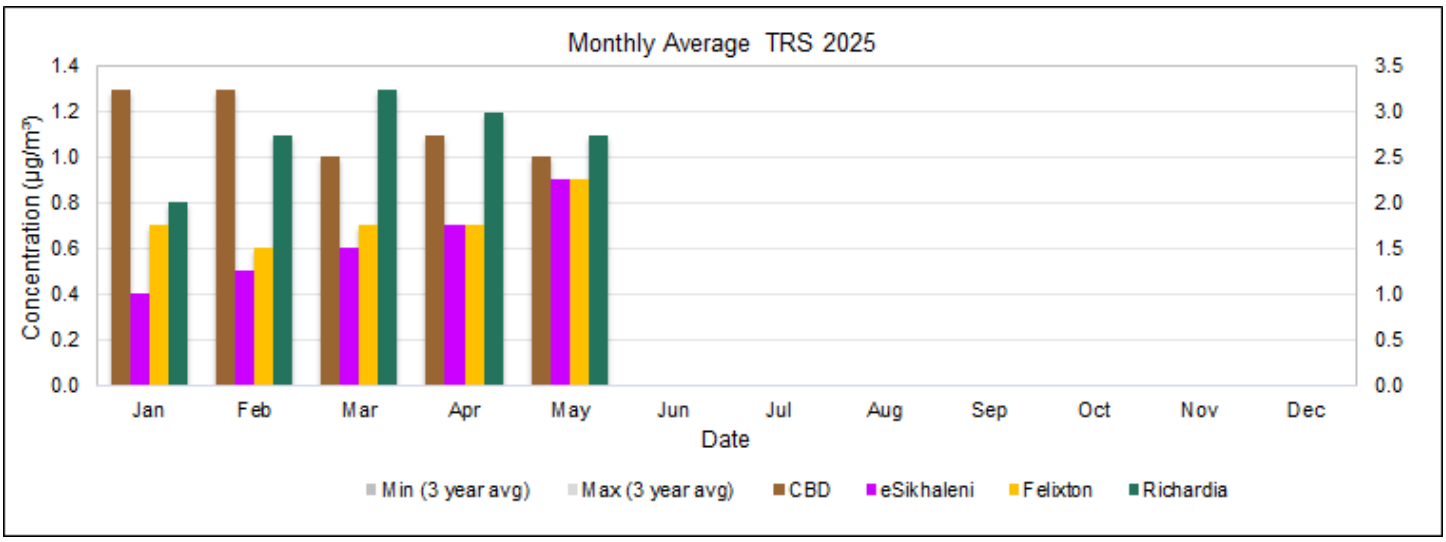


Figure 6.2: TRS monthly comparison.

6.4. Diurnal

The diurnal TRS concentrations are shown below (Figure 6.3). Diurnal concentrations of TRS did not exceed the OME Daily Limit (10.1 ppb).

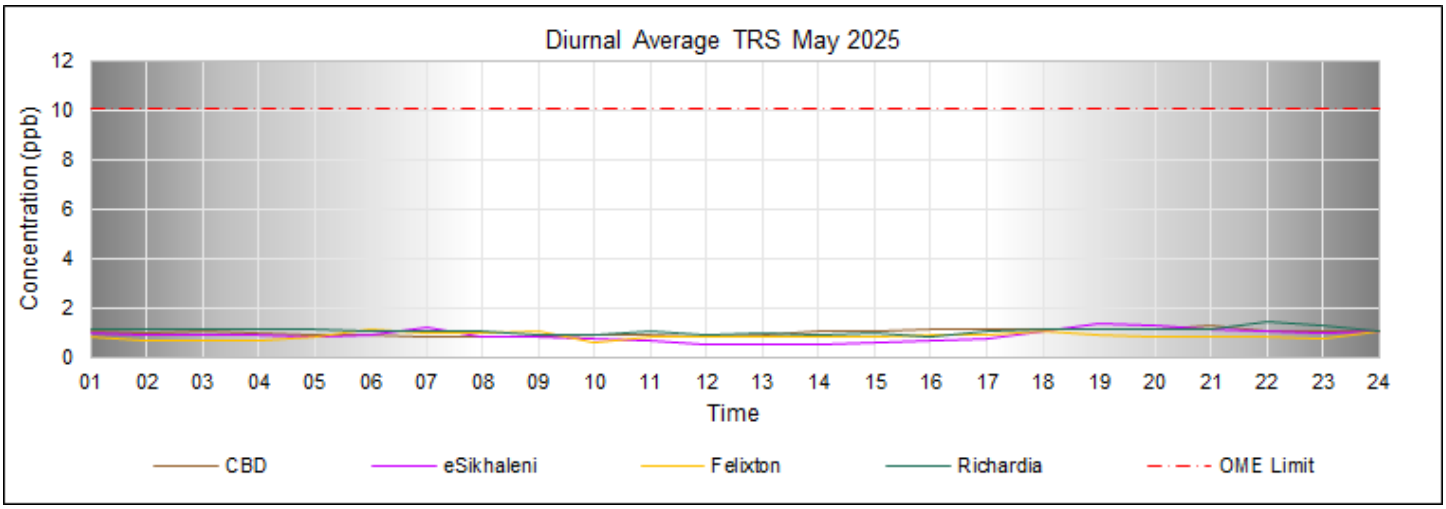


Figure 6.3: TRS diurnal concentrations.

6.5. Daily

The daily average concentrations of TRS are shown in Figure 6.4. No (0) exceedances of the OME Limit (10.1 ppb) were measured.

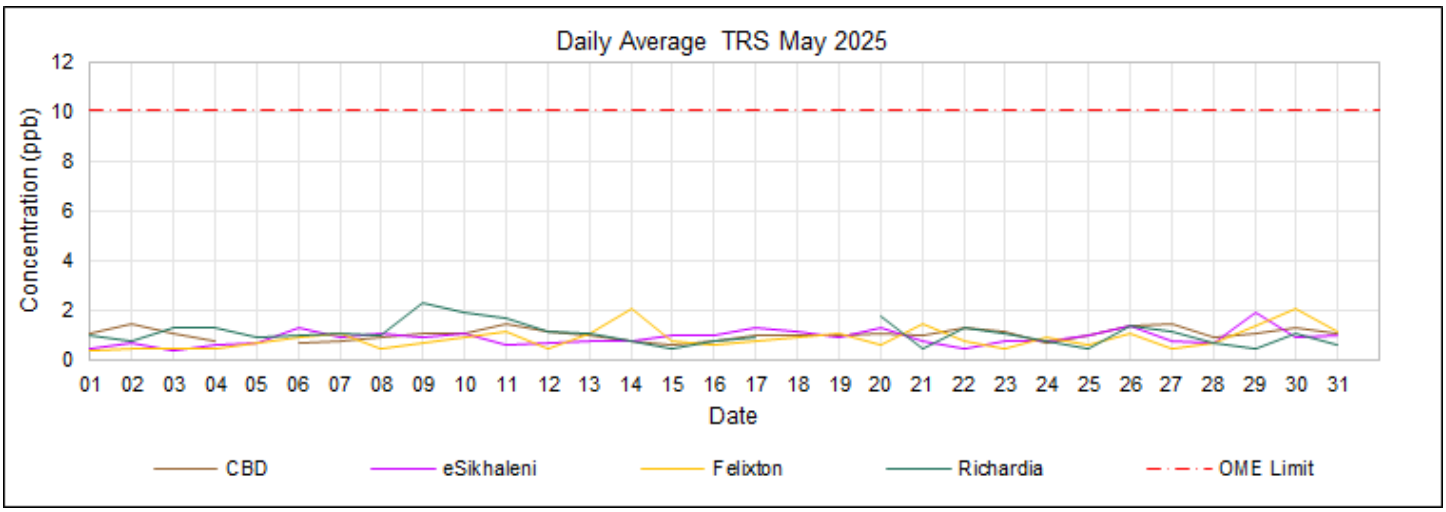


Figure 6.4: TRS daily average concentration.
Missing Data (TRS):

- *CBD – power outages, data invalidation (1 day with <80% data capture, 5 May 2025).*
- *Richardia - power outages, data invalidation (2 days with <80% data capture, 18-19 May 2025).*

6.6. 30-minute

The TRS 30-minute average concentrations are shown in Figure 6.5, and exceedances in Table 6.3. Twenty (20) exceedances of the WHO Limit (5.0 ppb) were measured.

Table 6.3: TRS 30-minute average exceedances (WHO).

TRS 30-minute WHO H_2S Limit (5.0 ppb)	20
Mondi	**8**
CBD	2
The root cause has not yet been confirmed	2
eSikhaleni	3
Secondary Effluent Treatment Plant	1
Mondi - meteorology	2
Richardia	3
The root cause has not yet been confirmed	3
THS	**11**
Felixton	11
Plant start-up. Coal operated	1
Smut plant	10
Unresolved	**1**
eSikhaleni	1
Responded: Mpact, THS, Mondi	1

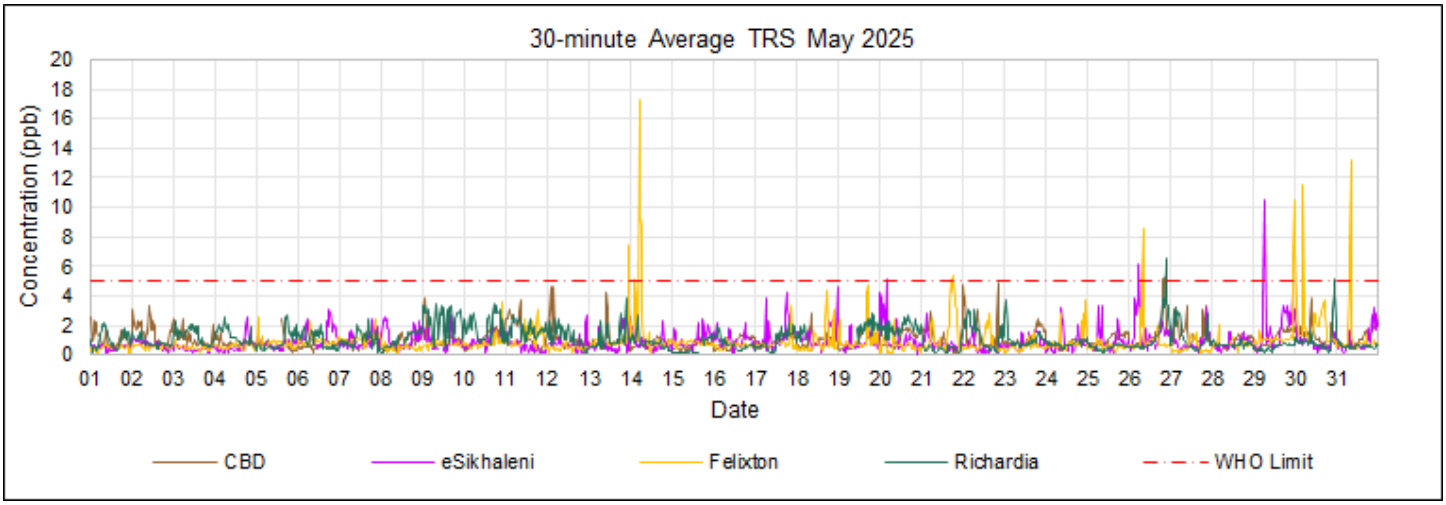


Figure 6.5: TRS 30-minute average concentration.

6.7. 10-minute

The TRS 10-minute average concentrations are shown in Figure 6.6, and exceedances in Table 6.4. Fourteen (14) exceedances of the OME Limit (9.3 ppb) were measured.

Table 6.4: TRS 10-minute average exceedances (OME).

TRS 10-minute OME Limit (9.3 ppb)	14
Mondi	**5**
eSikhaleni	4
Mondi - meteorology	4
Felixton	1
NCGs vented through the carbon filter	1
THS	**9**
Felixton	9
Plant start-up. Coal operated	1
Smut plant	8

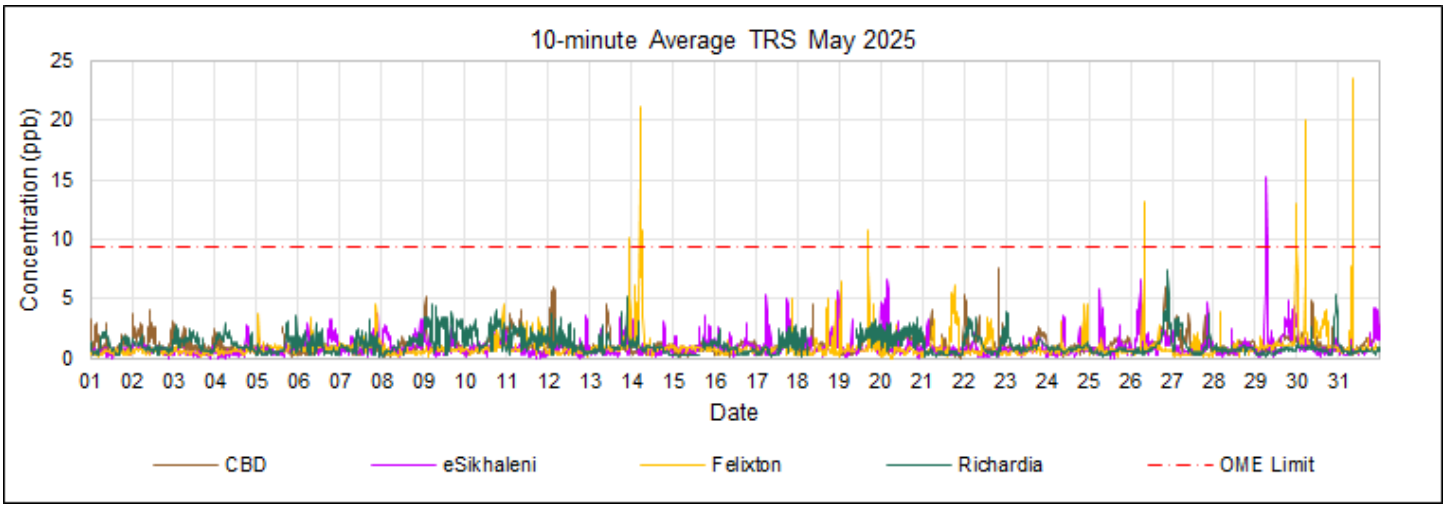


Figure 6.6: TRS 10-minute average concentrations.

6.8. Exceedances

The number of days on which exceedances occurred, plus comparisons to previous months, are shown in Figure 6.7, and a summary of the TRS exceedances, broken down per station, is presented in Table 6.5TRS exceedances can be associated with emissions because of process upsets (e.g., planned maintenance, plant shutdowns, or start-up), leaks in equipment, pipelines, seals, and valves (fugitive emissions), or an event (e.g., fires or emergency shutdowns). According to the relevant Air Quality Index (AQI), the areas where no exceedances were measured may be considered good air quality.

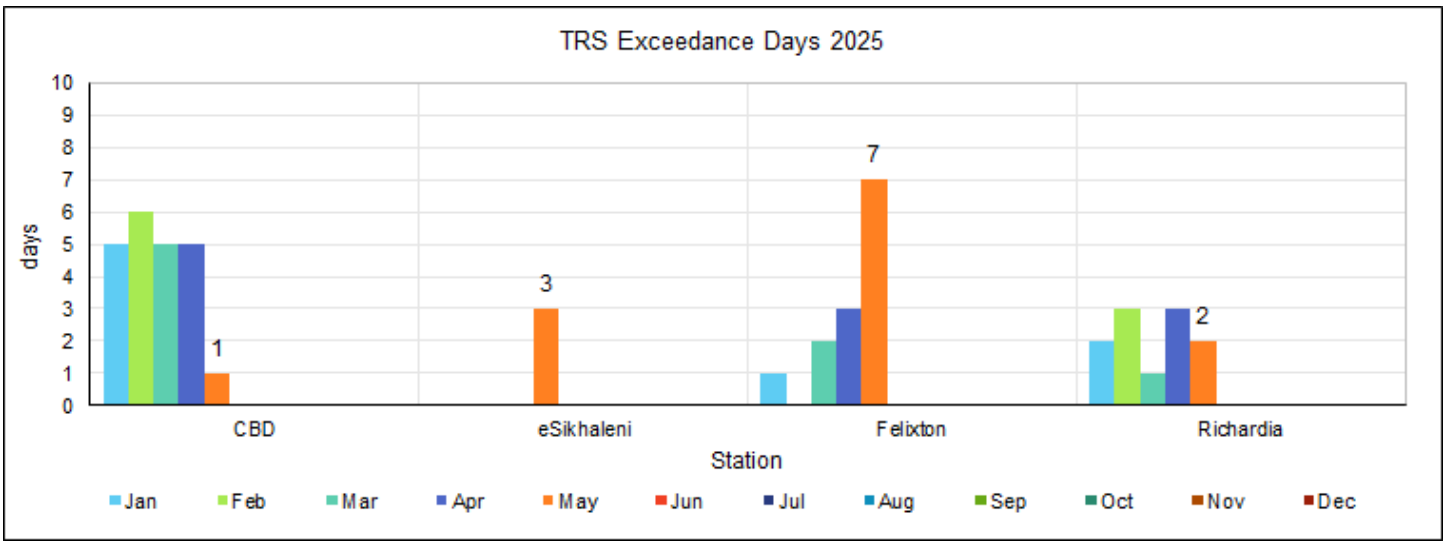


Figure 6.7: TRS exceedance days.

Table 6.5: TRS exceedance summary.

2025	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
TRS 24-hr-OME Limit (10.1 ppb)													
CBD	1	-	-	-	-	-	-	-	-	-	-	-	**1**
eSikhaleni	-	-	-	-	-	-	-	-	-	-	-	-	0
Felixton	-	-	-	-	-	-	-	-	-	-	-	-	0
Richardia	-	-	-	-	-	-	-	-	-	-	-	-	0
TRS 30-minute WHO H_2S Limit (5.0 ppb)													
CBD	34	25	15	10	2	-	-	-	-	-	-	-	**86**
eSikhaleni	-	-	-	-	4	-	-	-	-	-	-	-	**4**
Felixton	1	-	8	7	11	-	-	-	-	-	-	-	**27**
Richardia	5	7	3	7	3	-	-	-	-	-	-	-	**25**
TRS 10-minute OME Limit (9.3 ppb)													
CBD	53	10	8	7	-		-	-	-	-	-	-	**78**
eSikhaleni	-	-	-	-	4	-	-	-	-	-	-	-	**4**
Felixton	2	-	4	10	10	-	-	-	-	-	-	-	**26**
Richardia	3	1	-	9	-	-	-	-	-	-	-	-	**13**

7. MONTHLY 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 and have been developed to support actions to achieve air quality that protects public health in different contexts. On the other hand, air quality standards and local targets are set by each country or region to protect the public health of their citizens and, as such, are an essential component of national risk management and environmental policies. National standards and local targets vary according to the approach adopted for balancing health risks, technological feasibility, economic considerations, and other political and social factors. These factors, in turn, depend on, among other things, the level of development and national capability in air quality management. (WHO, 2005).

7.1. Conclusion

Determining air quality concerning pollutants measured and impacts simulated is based on comparison to and exceedances of short-term (10-minute, 30-minute, 1-hour and 24-hour averages) and long-term (monthly and annual averages) targets, guidelines, and standards.

AIMS concludes that during May 2025, based on the following:

- Measured long-term average concentrations (chronic exposure) and WHO health guidelines of concern are:
  - PM_{10} at eSikhaleni, Felixton, Richardia and Scorpio;
  - $PM_{2.5}$ at Brackenham, Felixton, Harbour West and Scorpio (all points monitored).

- Measured short-term average concentrations (acute exposure) and the WHO health guidelines, ambient air quality was compromised by:
  - PM_{10} at eSikhaleni, Richardia and Scorpio;
  - $PM_{2.5}$ at Brackenham, Felixton, Scorpio and Harbour West (all points monitored).;
  - SO_2 at Harbour West and Scorpio; and
  - TRS at CBD, eSikhaleni, Felixton and Richardia (all points monitored).

8. AIRGRADIENT MONITORING NETWORK

The AirGradient network was established towards the end of 2023 as a co-location study to verify the accuracy of its particulate measurements. It was later expanded in response to an RBCAA objective, adding monitoring capabilities for additional pollutants. Initially, there were only two sites, Harbour West and Richardia and only particulates (PM_{10}, $PM_{2.5}$ and PM_1) were monitored. The network was expanded to Brackenham, CBD, eSikhaleni and Felixton in July 2024, and all the monitors were upgraded to measure volatile organic compounds (TVOC), nitrogen oxides (NO_x), and carbon dioxide (CO_2).

AirGradient monitors are designed to provide accessible and cost-effective air quality monitoring solutions. While they offer valuable insights into environmental conditions, there are notable differences when compared to analysers approved by organisations such as the U.S. Environmental Protection Agency (EPA):

- Accuracy and Precision: Approved analysers are subjected to rigorous testing to ensure high accuracy and precision in measuring specific pollutants. AirGradient monitors utilise sensors like the Plantower PMS5003 for particulate matter and the SenseAir S8 for CO_2, which are dependable but may not match the stringent accuracy levels of certified equipment. For instance, the SenseAir S8 has an accuracy of ±30 ppm ±3% of the reading, which is suitable for general monitoring but may not meet standards for regulatory compliance.
- Calibration and Certification: Approved devices undergo regular calibration and certification processes to maintain compliance with federal standards. AirGradient monitors, particularly the DIY kits, may not come with such certifications, and their accuracy can be influenced by factors like sensor placement and environmental conditions. However, AirGradient offers fully assembled monitors certified for CE, FCC, RoHS, and REACH, providing a higher level of assurance in their performance.
- Data Application: AirGradient monitors are well-suited for educational purposes, personal use, and preliminary air quality assessments. They are beneficial for raising awareness and guiding indoor air quality management decisions. In contrast, approved analysers are employed for regulatory monitoring, research, and enforcement of air quality standards, where data accuracy and reliability are paramount.
- Cost and Accessibility: AirGradient monitors are more affordable and accessible, making them ideal for widespread use in homes, schools, and communities. Approved analysers are significantly more expensive and are typically used by governmental agencies and research institutions.

In summary, while AirGradient monitors provide valuable air quality data for non-regulatory applications, they do not replace the precision and certification of approved analysers required for compliance and enforcement purposes.

The RBCAA AirGradient monitoring network comprises six (6) stations (Figure 8.1).

Figure 8.1: RBCAA monitoring network.

8.1. Data Availability

The percentage of valid data received from the AirGradient network for 2025 is shown in Table 8.1.

Table 8.1: AirGradient network data availability.

Date	Brackenham	CBD	eSikhaleni	Felixton	Harbour West	Richardia
Jan 2025	99	98	97	97	98	97
Feb 2025	***89***	***90***	***89***	***86***	***86***	***90***
Mar 2025	99	100	97	95	100	100
Apr 2025	***86***	96	***93***	***93***	96	96
May 2025	***55***	99	99	***93***	99	99

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

Missing Data:
- *Brackenham*
  - *February '25 –power outages (load shedding).*
  - *April '25 – power outages.*
  - *May '25 –issue with firmware upgrade /Wi-Fi connectivity.*
- *CBD*
  - *February '25 –power outages (load shedding).*
- *eSikhaleni*
  - *February '25 –power outages (load shedding).*
  - *April '25 – power outages.*
- *Felixton*
  - *February '25 –power outages (load shedding).*
  - *April '25 – power outages.*
- *Harbour West*
  - *February '25 –power outages (load shedding).*
- *Richardia*
  - *February '25 –power outages (load shedding).*

8.2. Particulate Monitoring

8.2.1. Monthly

PM_{10}, $PM_{2.5}$ and PM_1 monthly average concentrations are shown in Figure 8.2, Figure 8.3, and Figure 8.4. Comparisons to previous months are also provided (Figure 8.5, Figure 8.6, and Figure 8.7). There are similar seasonal trends, with elevated concentrations during winter.

- PM_{10} monthly average concentrations did not exceed the RSA Annual Limit; the WHO Annual Limit was exceeded at Brackenham, eSikhaleni, Felixton and Richardia.
- $PM_{2.5}$ monthly average concentrations exceed the RSA Annual Limit at eSikhaleni; the WHO Annual Limit was exceeded at all points monitored.

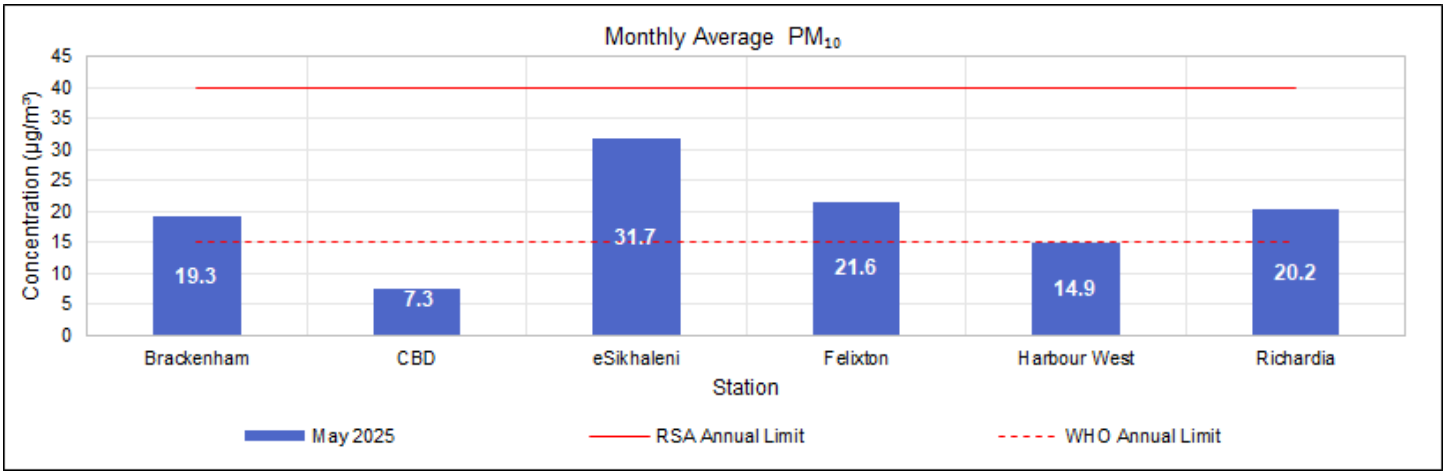


Figure 8.2: PM_{10} monthly concentration.

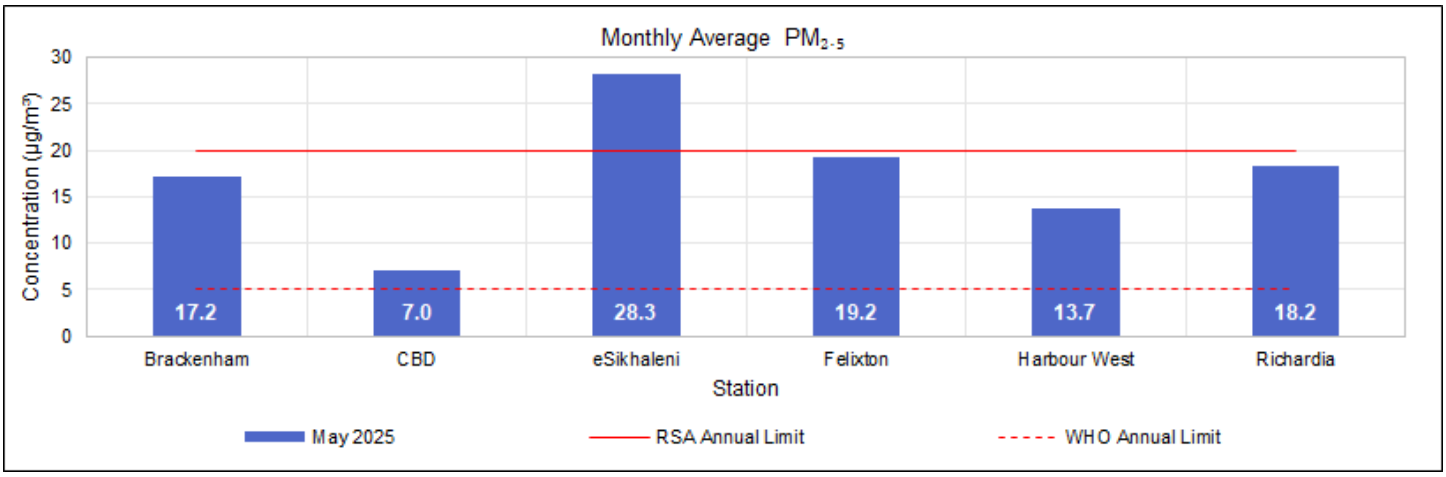


Figure 8.3: $PM_{2.5}$ monthly concentration.

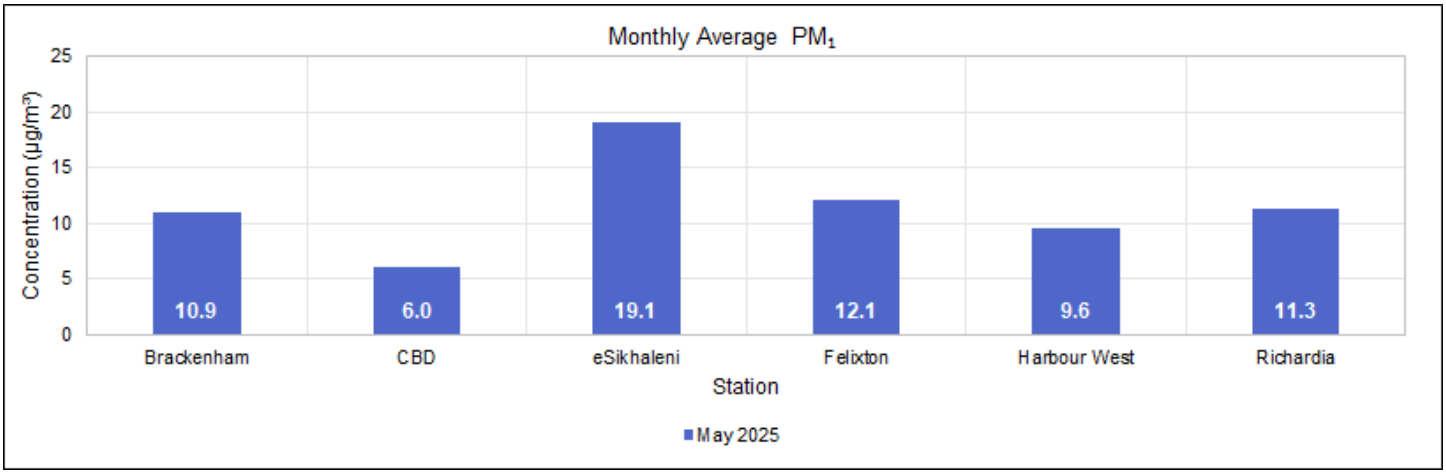


Figure 8.4: PM_{10} monthly concentration.

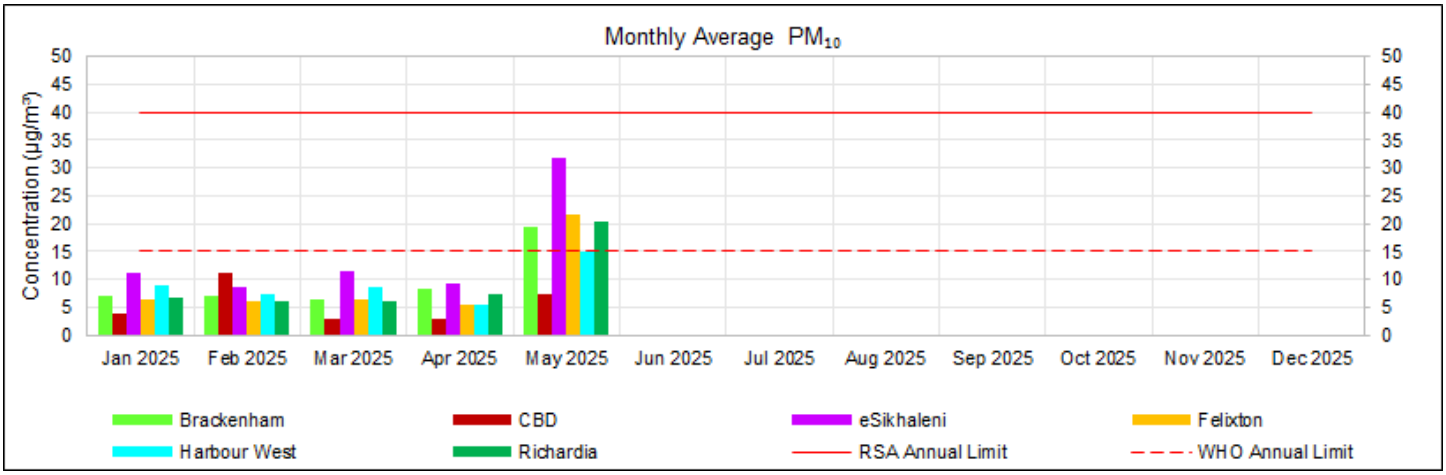


Figure 8.5: PM_{10} monthly comparison.

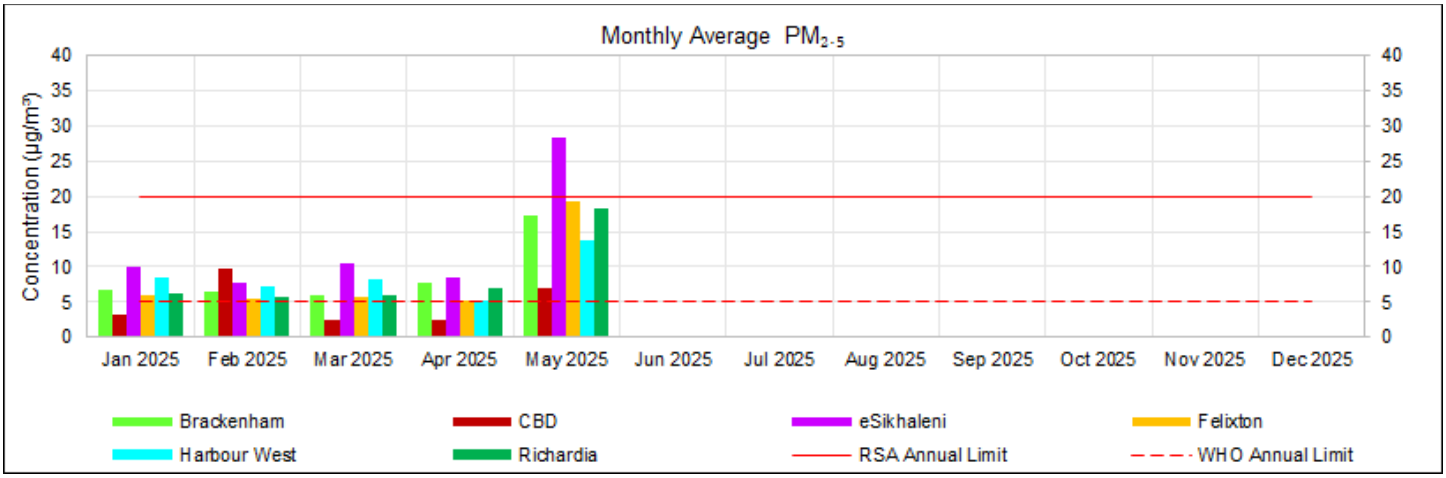


Figure 8.6: $PM_{2.5}$ monthly comparison.

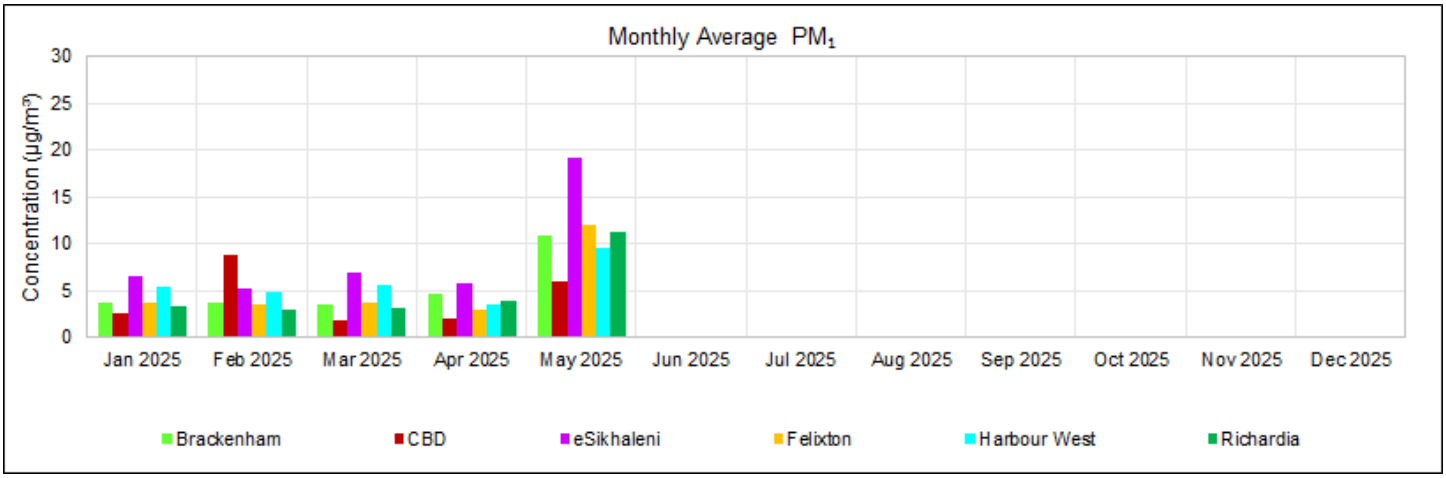


Figure 8.7: PM_1 monthly comparison.

8.2.2. Diurnal

PM diurnal concentrations are shown below (Figure 8.8, Figure 8.9, and Figure 8.10).

- PM_{10} diurnal concentrations did not exceed the RSA daily limit; the WHO daily limit was exceeded at eSikhaleni.
- $PM_{2.5}$ diurnal concentrations exceeded the RSA limit at eSikhaleni, and the WHO daily limit was exceeded at Brackenham, eSikhaleni, Felixton Harbour West and Richardia.

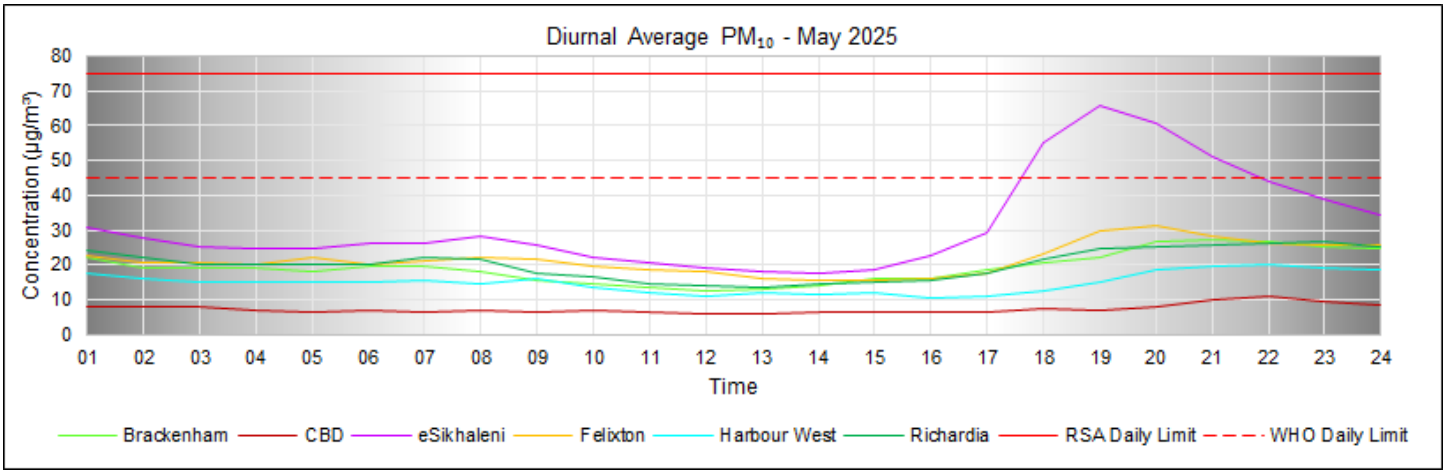


Figure 8.8: PM_{10} diurnal concentrations.

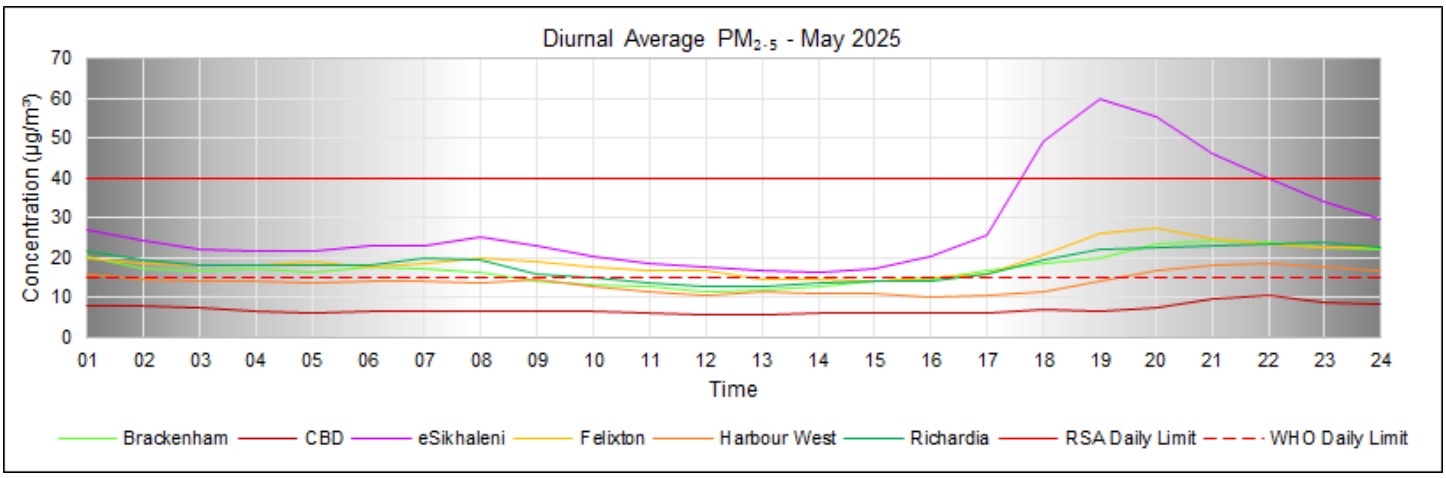


Figure 8.9: $PM_{2.5}$ diurnal concentrations.

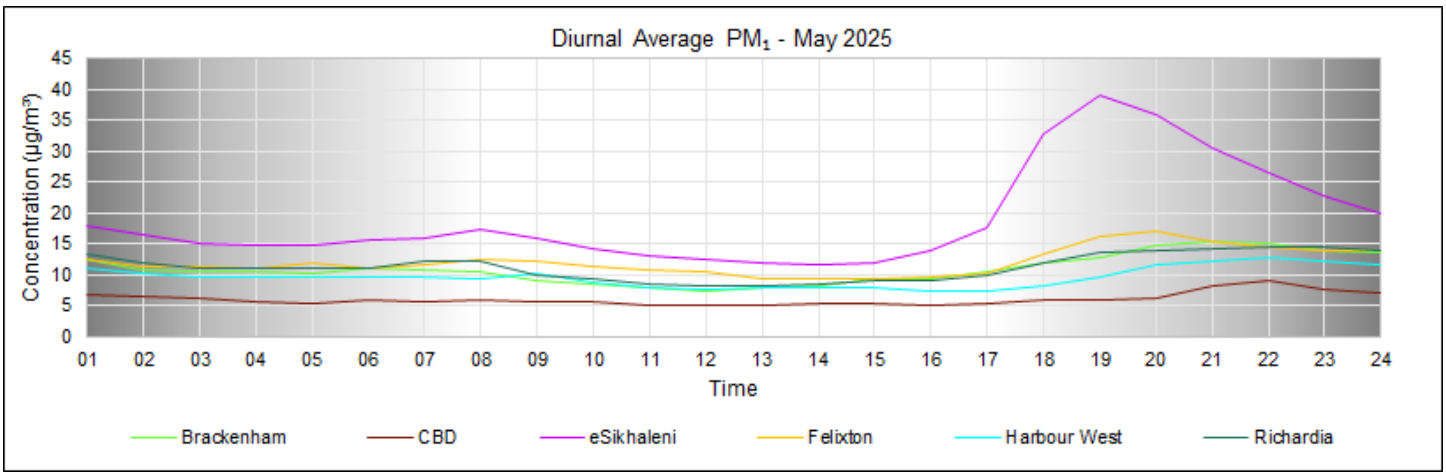


Figure 8.10: PM_1 diurnal concentrations.

8.2.3. Daily

PM daily concentrations are shown below (Figure 8.11, Figure 8.12, and Figure 8.13).

- The PM10 RSA daily limit was exceeded at eSikhaleni, and the WHO limit was exceeded at Brackenham, CBD, eSikhaleni and Richardia.
- The PM2.5 RSA limit was exceeded at Brackenham, eSikhaleni, Felixton and Richardia, and the WHO limit was exceeded at all monitoring stations.

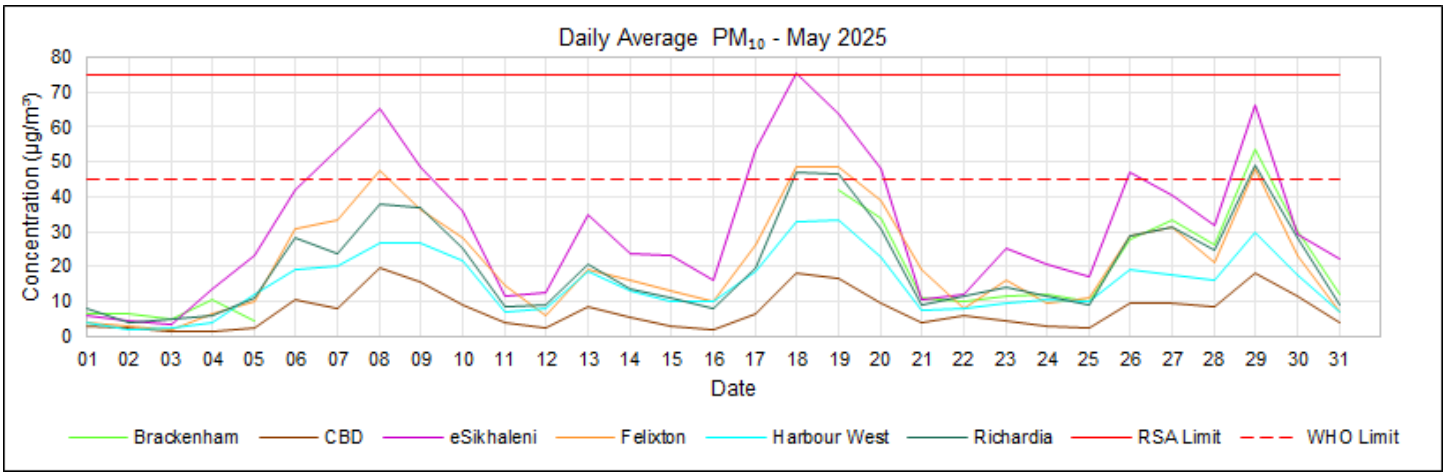


Figure 8.11: PM_{10} daily concentrations.

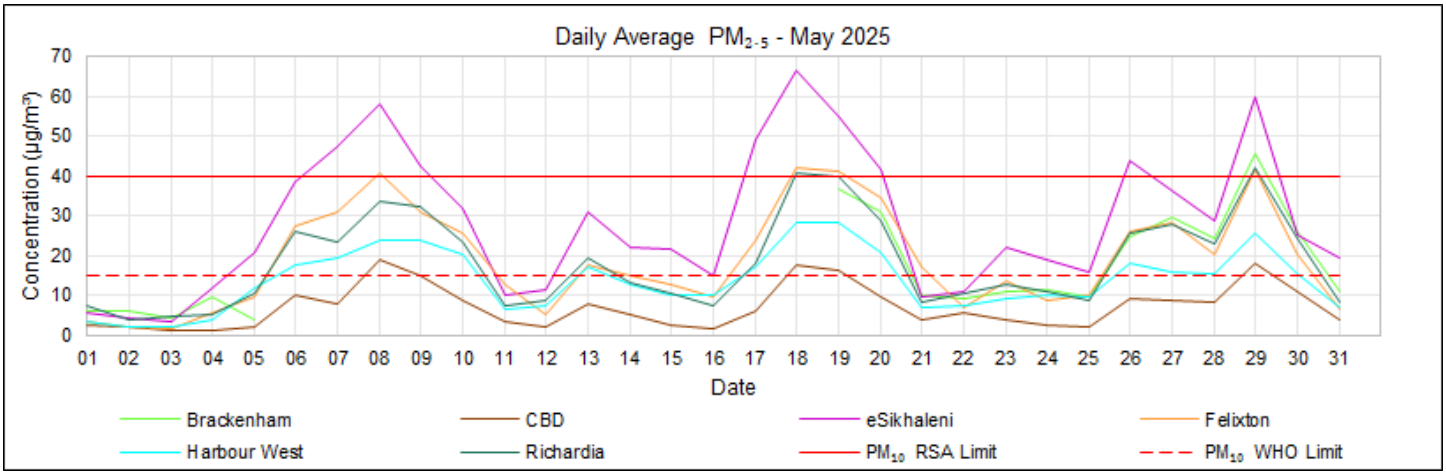


Figure 8.12: $PM_{2.5}$ daily concentrations.

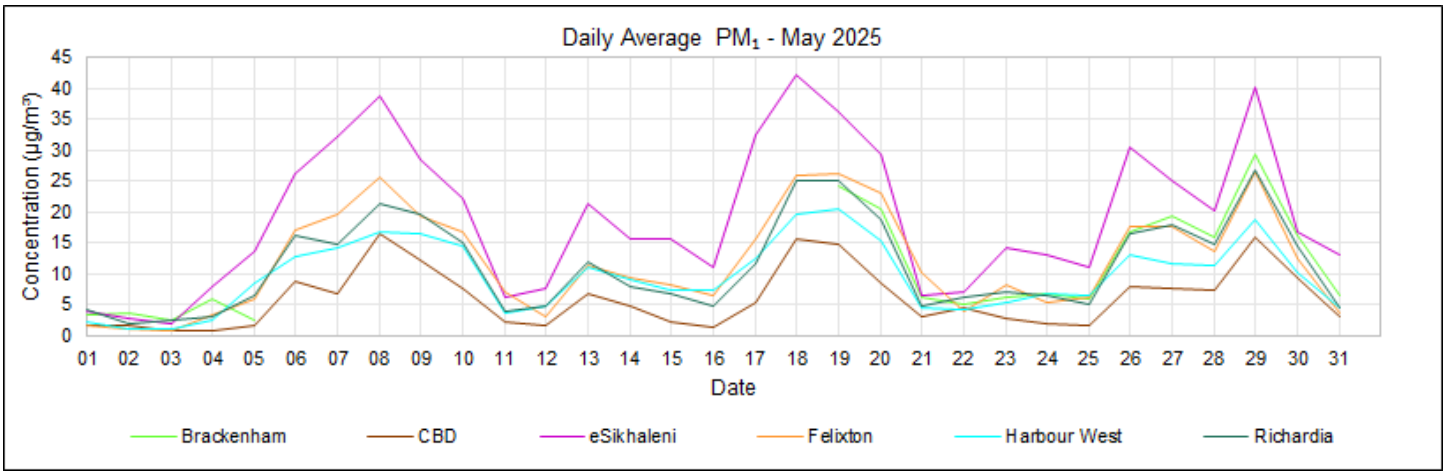


Figure 8.13: PM_1 daily concentrations.

8.3. Total Volatile Organic Compounds Monitoring

Total Volatile Organic Compounds (VOCs) refer to organic chemicals that easily evaporate at ambient temperatures. They are commonly present in outdoor air due to sources like industrial emissions, vehicle exhaust, and the use of chemical products. These compounds can significantly contribute to air pollution and negatively impact human health and the environment. Exposure to high concentrations of TVOCs can cause short-term symptoms such as irritation of the eyes, nose, and throat, as well as headaches and dizziness. Prolonged exposure may lead to more severe health issues, including damage to the liver, kidneys, and central nervous system. The AirGradient TVOC sensors cannot distinguish between harmful and harmless substances and don't measure absolute levels but changes in the concentration (index); this can help identify (and avoid) emission events such as rush hours.

8.3.1. Monthly

TVOC monthly average concentrations are shown in Figure 8.14. Comparisons to previous months are also provided (Figure 8.15).

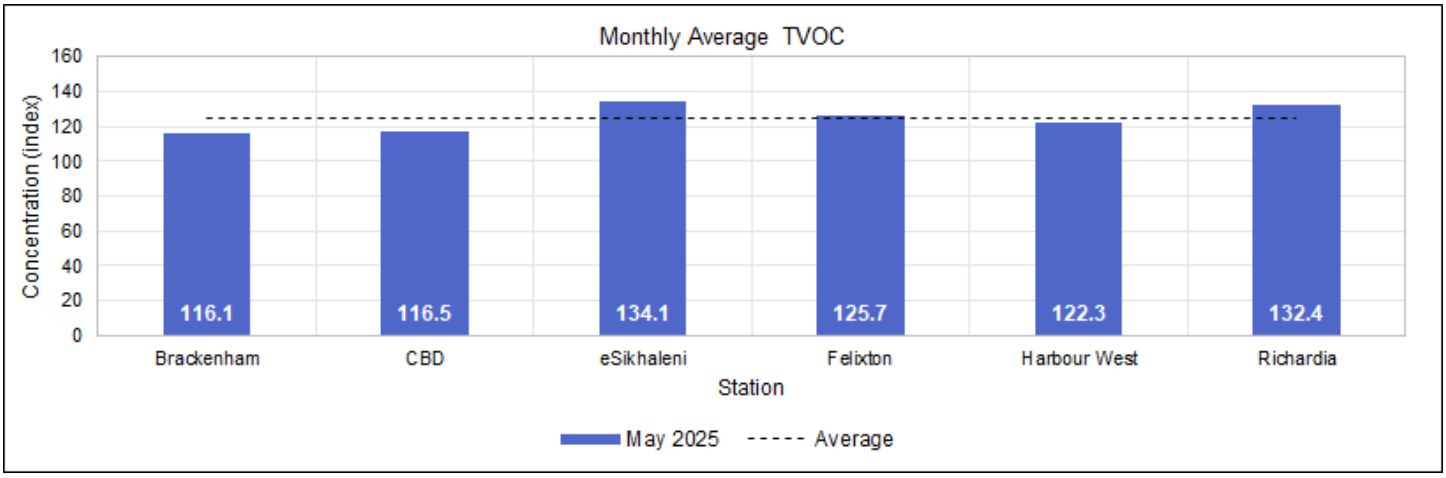


Figure 8.14: TVOC monthly concentration.

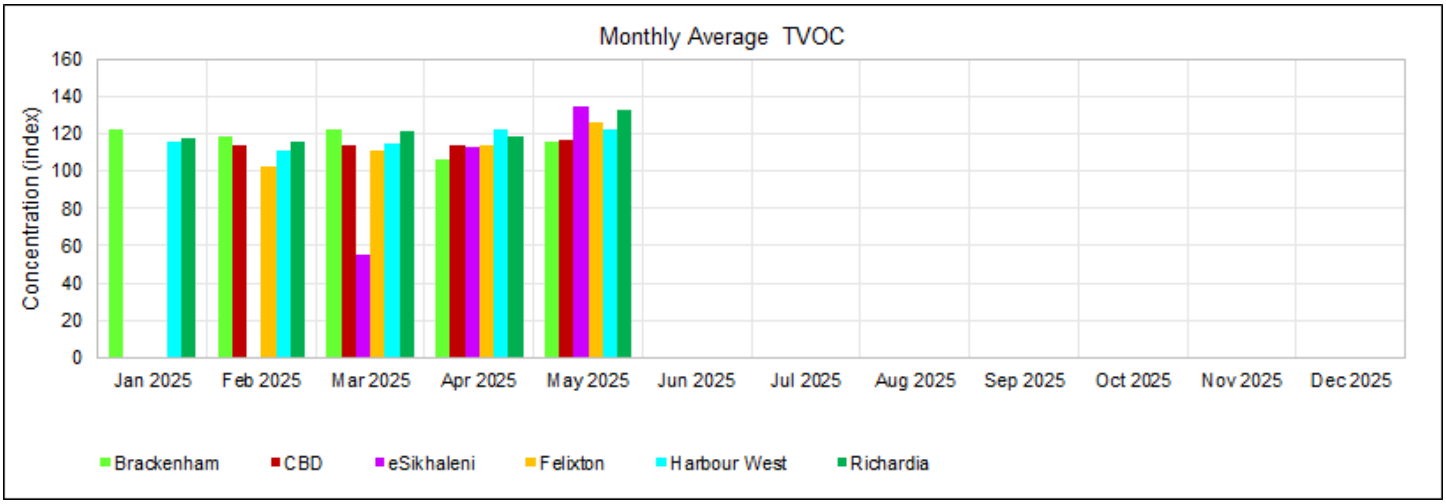


Figure 8.15: TVOC monthly comparison.

8.3.2. Diurnal

TVOC diurnal concentrations are shown below (Figure 8.8, Figure 8.9, and Figure 8.10).

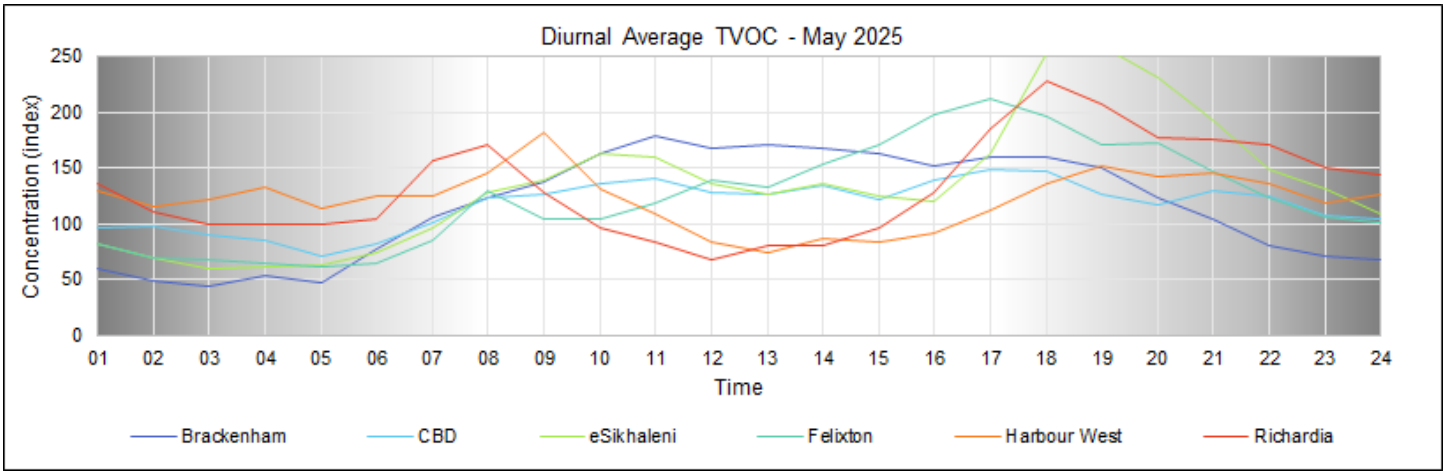


Figure 8.16: TVOC diurnal concentrations.

8.3.3. Daily

TVOC daily concentrations are shown below (Figure 8.17).

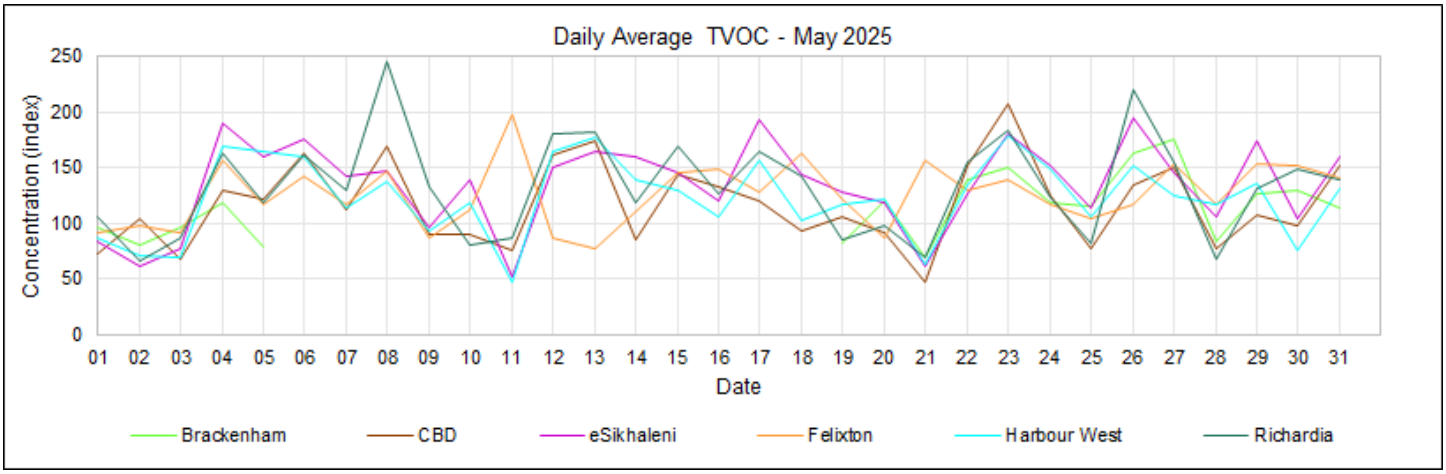


Figure 8.17: TVOC daily concentrations.

8.3.4. Hourly

TVOC hourly concentrations are shown below (Figure 8.18).

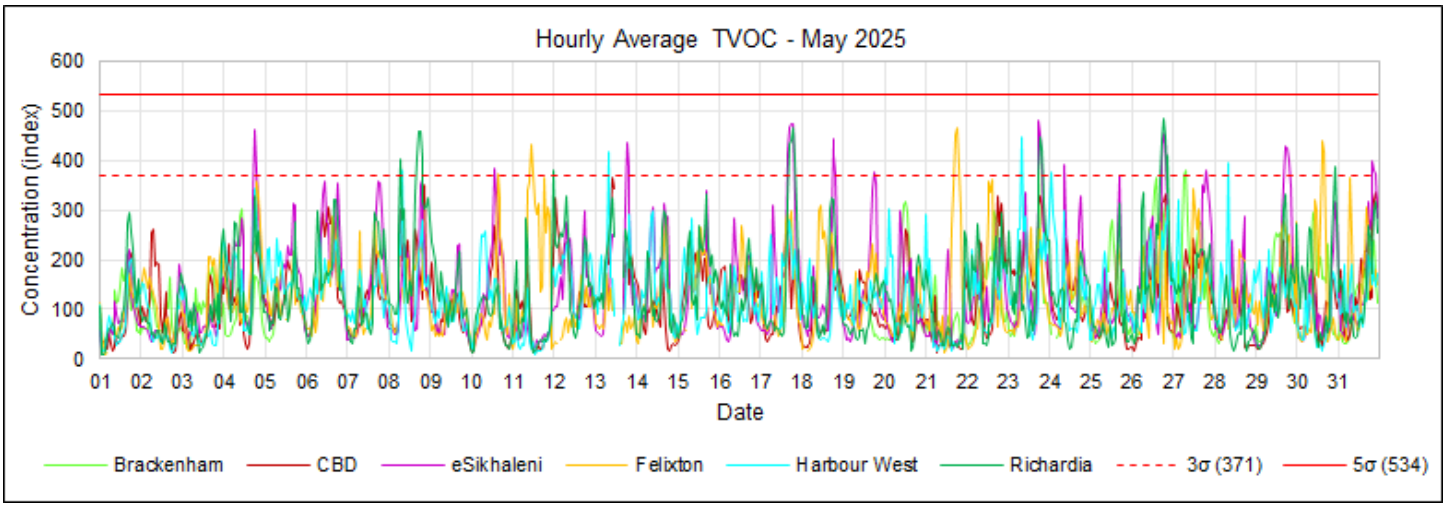


Figure 8.18: TVOC hourly concentrations.

Table 8.2: TVOC exceedances of the 3σ and 5σ limits.

Limit	Brackenham	CBD	eSikhaleni	Felixton	Harbour West	Richardia
3σ	2	0	26	9	5	18
5σ	0	0	0	0	0	0

8.4. Nitrogen Oxides Monitoring

Nitrogen oxides (NO_x) refer to a group of highly reactive gases that are primarily composed of nitrogen dioxide (NO_2) and nitric oxide (NO). These gases are produced through the combustion of fossil fuels in vehicles, power plants, and industrial facilities. NO_x emissions significantly contribute to air pollution, playing a key role in forming ground-level ozone and particulate matter, both harmful to human health and the environment. Exposure to elevated levels of NO_x can lead to respiratory problems, particularly in vulnerable populations such as children, the elderly, and those with pre-existing conditions like asthma. Additionally, NO_x contributes to the formation of acid rain, which can damage ecosystems and infrastructure. Regulatory standards for NO_x vary globally, but efforts to reduce these emissions are critical for improving air quality and mitigating environmental impacts. The AirGradient NO_x sensors don't measure absolute levels but changes in the concentration (index); this can help identify (and avoid) emission events such as rush hours.

8.4.1. Monthly

NO_x monthly average concentrations are shown in Figure 8.19; comparisons to previous months are also provided (Figure 8.20).

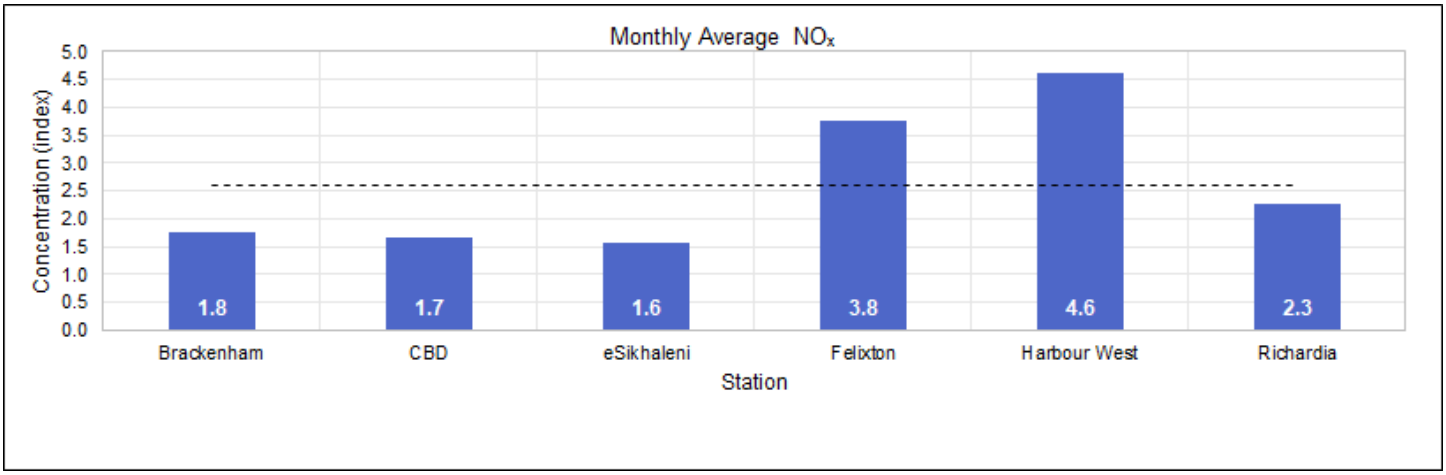


Figure 8.19: NO_x monthly concentration.

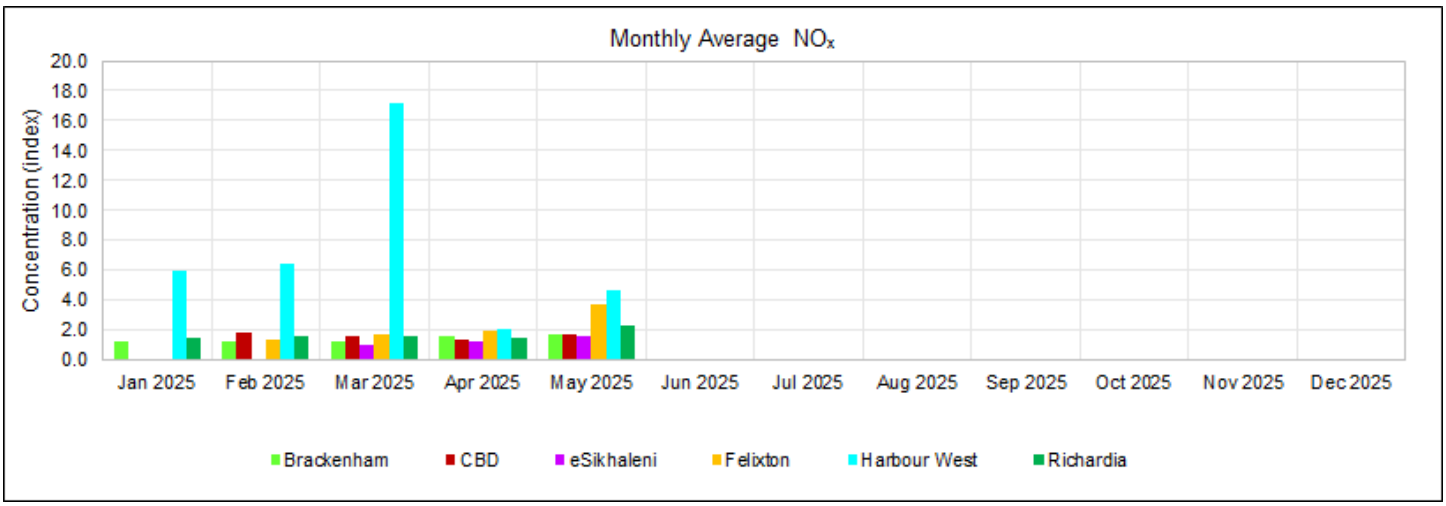


Figure 8.20: NO_x monthly comparison.

8.4.2. Diurnal

NO_x diurnal concentrations are shown below (Figure 8.21).

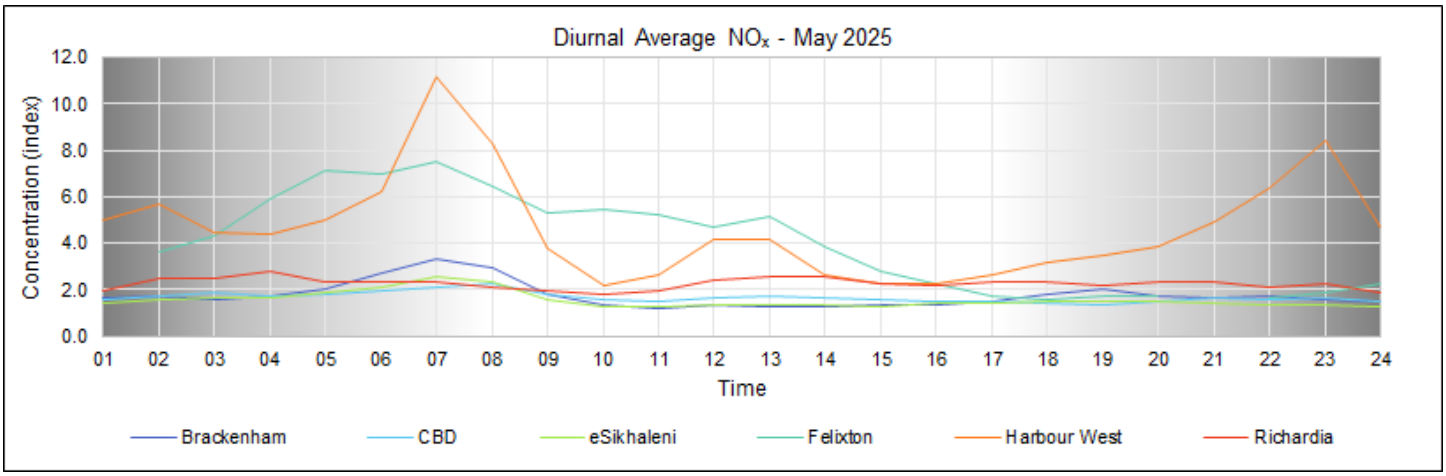


Figure 8.21: NO_x diurnal concentrations.

8.4.3. Daily

NO_x daily concentrations are shown below (Figure 8.22).

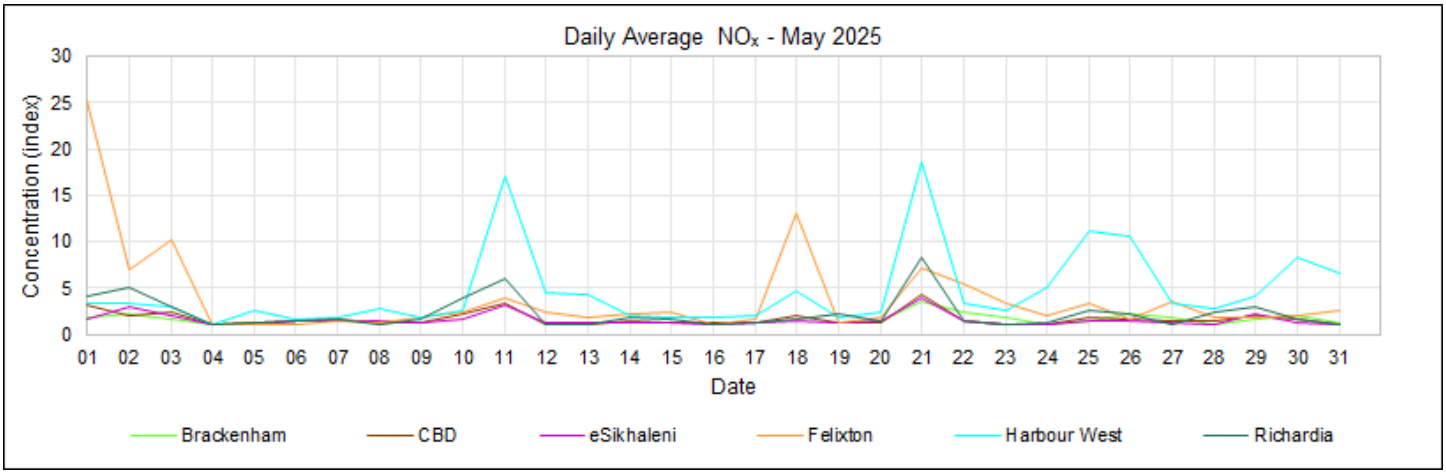


Figure 8.22: NO_x daily concentrations.

8.4.4. Hourly

NO_x hourly concentrations are shown below (Figure 8.23).

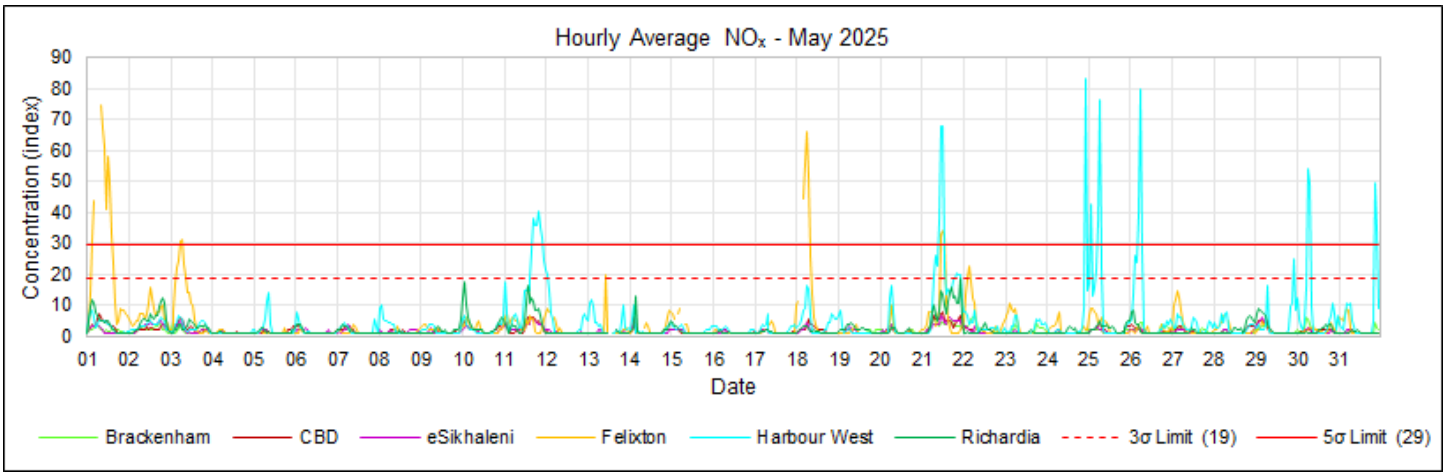


Figure 8.23: NO_x hourly concentrations.

Table 8.3 NO_x exceedances of the 3σ and 5σ limits.

Limit	Brackenham	CBD	eSikhaleni	Felixton	Harbour West	Richardia
3σ	0	0	0	26	36	0
5σ	0	0	0	18	19	0

8.5. Carbon Dioxide Monitoring

In the year 2000, the global background concentration of carbon dioxide (CO_2) was approximately 370 ppm; this marked a significant increase from the pre-industrial level of around 280 ppm and reflected the continued growth in CO_2 emissions from fossil fuel combustion, deforestation, and other human activities during the 20th century. The rate of increase in atmospheric CO_2 had accelerated during the latter half of the century, with an average rise of about 1.5 to 2 ppm per year by the early 2000s.

8.5.1. Monthly

CO_2 monthly average concentrations are shown in Figure 8.24; comparisons to previous months are also provided (Figure 8.25).

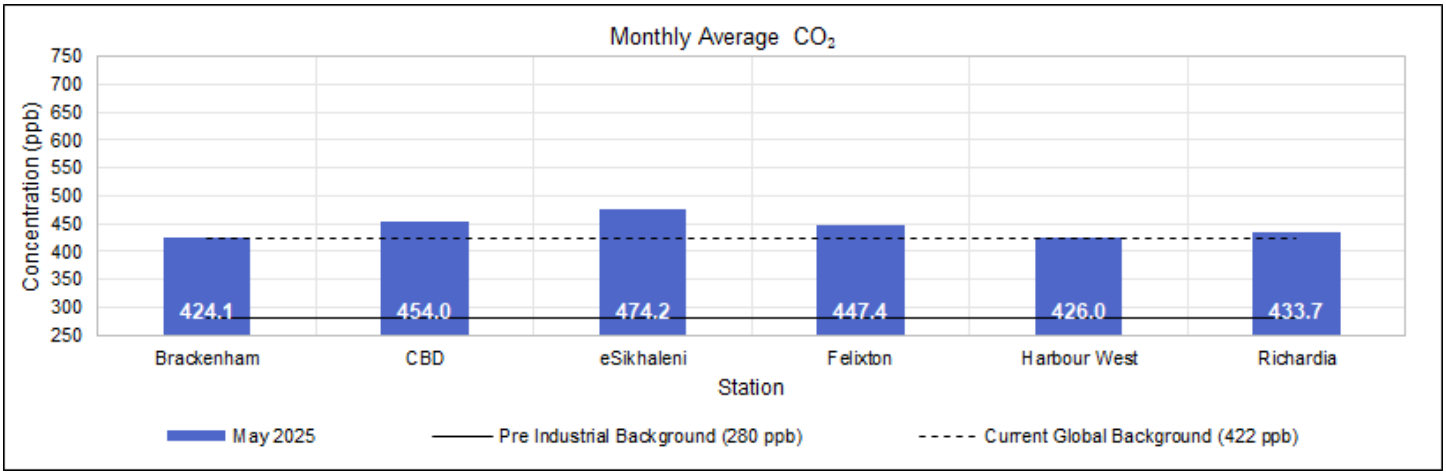


Figure 8.24: CO_2 monthly concentration.

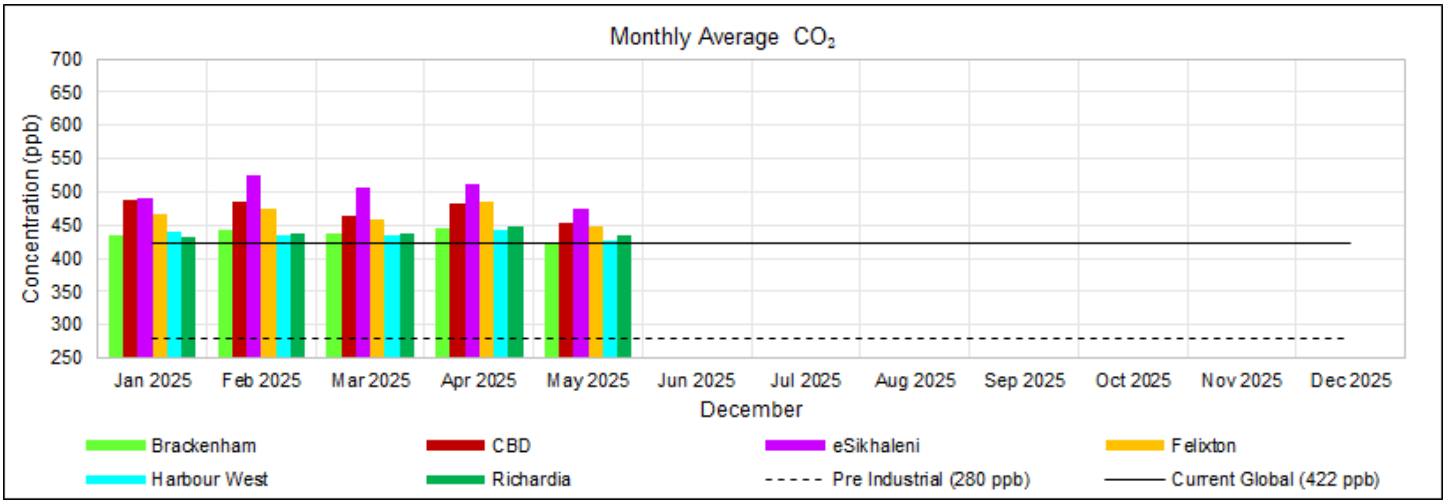


Figure 8.25: CO_2 monthly comparison.

8.5.2. Diurnal

CO_2 diurnal concentrations are shown below (Figure 8.26).

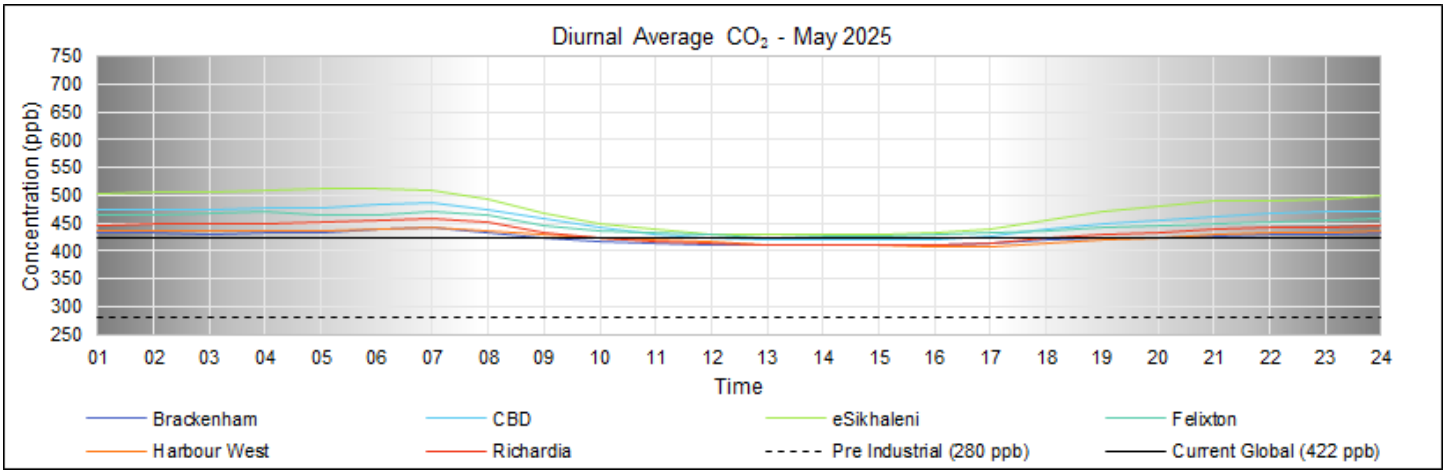


Figure 8.26: CO_2 diurnal concentrations.

8.5.3. Daily

CO_2 daily concentrations are shown below (Figure 8.27).

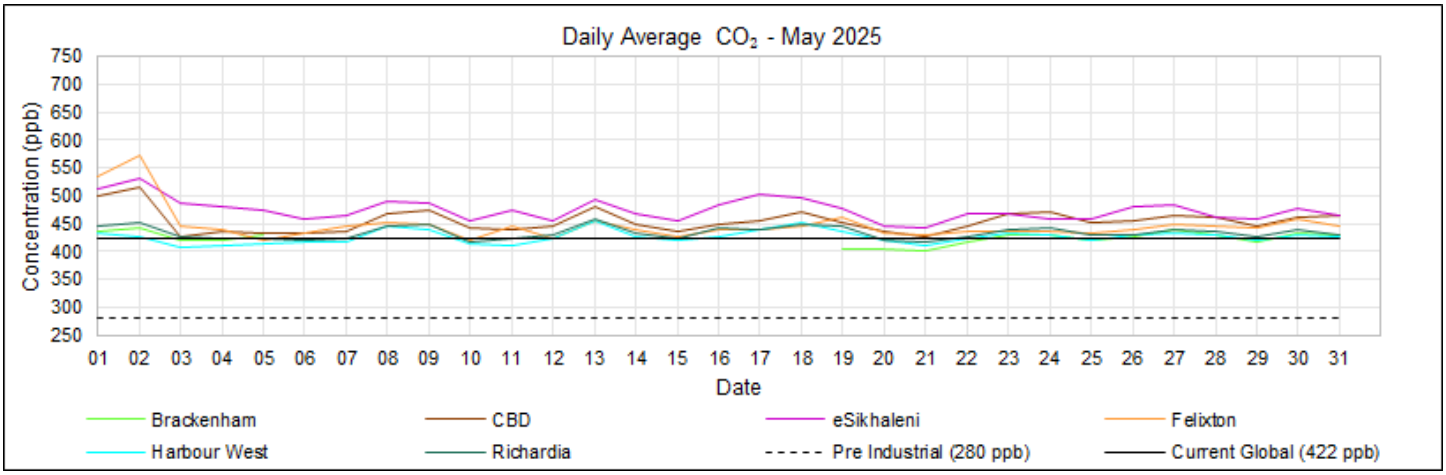


Figure 8.27: CO_2 daily concentrations.

8.5.4. Hourly

CO_2 hourly concentrations are shown below (Figure 8.28).

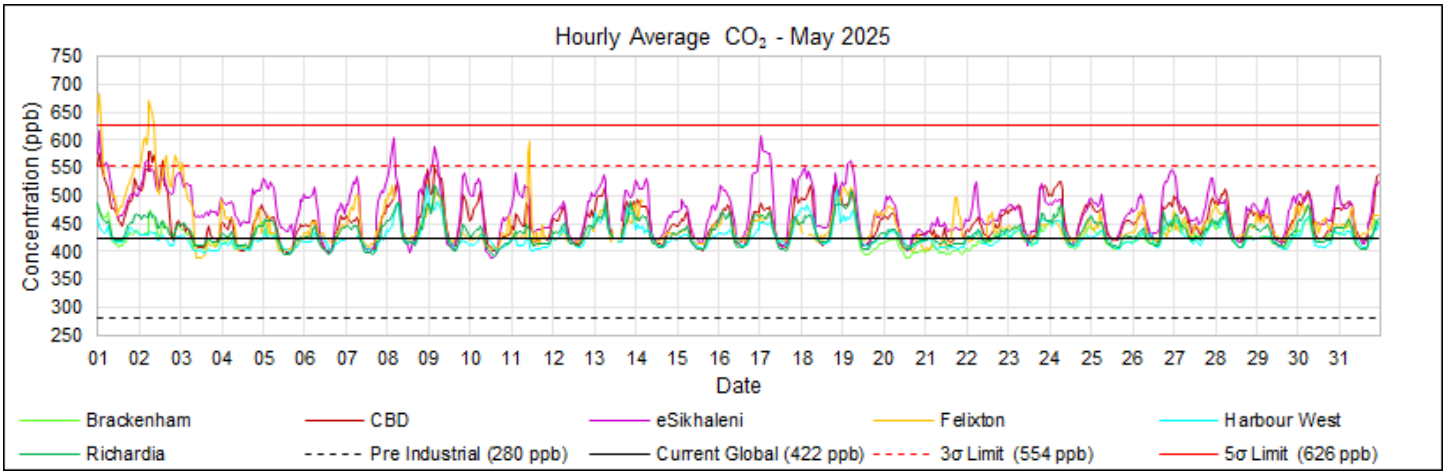


Figure 8.28: CO_2 hourly concentrations.

Table 8.4: CO_2 exceedances of the 3σ and 5σ limits.

Limit	Brackenham	CBD	eSikhaleni	Felixton	Harbour West	Richardia
3σ	0	8	27	23	0	0
5σ	0	0	0	8	0	0

9. ACKNOWLEDGEMENT

Air Impact Measurement Specialists compiled this report for the Richards Bay Clean Air Association; contributors include Alicia Garnica and François Nel.

Signer ID: ABS1DHBUH7...

Lance Coetzee
Director

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APPENDIX A
ABBREVIATIONS AND TERMS

List of Abbreviations and Terms	
Chemical Formulae	
CH_3-S-CH_3	Dimethyl Sulphide
CH_3S-H	Methyl Mercaptan
CH_3-S-S-CH_3	Dimethyl Disulphide
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
FPM	Fine Particulate Matter
H_2S	Hydrogen Sulphide
H_2SO_3	Sulphurous Acid
H_2SO_4	Sulphuric Acid
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
O_3	Ozone
PM_{10}	Particulates with an aerodynamic diameter of less than 10 µm
$PM_{2.5}$	Particulates with an aerodynamic diameter of less than 2.5 µm
SO_2	Sulphur Dioxide
SO_3	Sulphur Trioxide
TRS	Total Reduced Sulphur
TSP	Total Suspended Particulates
TVOCs	Total Volatile Organic Compounds

List of Abbreviations and Terms	
Countries	
EU	European Union
RSA	Republic of South Africa
UK	United Kingdom
US	United States

List of Abbreviations and Terms	
Direction	
N	North
NNE	North-North-East
NE	North-East
ENE	East-North-East
E	East
ESE	East-South-East
SE	South-East
SSE	South-South-East
S	South
SSW	South-South-West
SW	South-West
WSW	West-South-West
W	West
WNW	West-North-West
NW	North-West
NNW	North-North-West

List of Abbreviations and Terms	
Measurement	
°	Degrees
°C	Degrees Celsius
µg	Microgram
µg/m³	Micrograms per cubic meter
BMC	Best Measurement Capabilities
g/s	Grams per second
K	Kelvin
km	Kilometre
km/h	Kilometre per hour
m	Metres
m/s	Metres per second
mg	Milligrams
mg/m²/day	Milligrams per meter squared per day
mg/m³	Milligrams per cubic meter
ppb	Parts per billion
ppm	Parts per million
t/day	Tons per day
t/hr	Tons per hour
tpa	Tons per annum

List of Abbreviations and Terms	
Organisations	
AIMS	Air Impact Measurement Specialists
CASCO	Conformity Assessment Committee
DEFF	Department of Environment Forestry and Fisheries
EA-NPI	Environment Australia - National Pollutant Inventory
EC	European Commission
EU-EA	European Union - Environmental Agency
IEC	International Electrotechnical Commission
IFC	International Finance Corporation
ISO	International Standard Organisation
RBCAA	Richards Bay Clean Air Association
SANAS	South African National Accreditation System
SANS	South Africa National Standard
UK-EA	United Kingdom - Environmental Agency
US-EPA	United States - Environmental Protection Agency
WHO	World Health Organisation

List of Abbreviations and Terms	
Terms	
Analyser	A mechanical-electrical-optical device used to measure the concentration of trace gas pollutants or particulate concentrations.
Calibration	Calibration is a procedure that compares sensor responses to known standards. Deviations between the expected and known concentrations are corrected and reported.
Database	The data structures and attendant software that organise, store, and allow users access to data.
Environment	The organisation's surroundings include air, water, land, natural resources, flora, fauna, humans, and their interactions and relations.
Meteorological Station	A monitoring station capable of monitoring wind speed, direction, and temperature.
Model	The model implements dispersion modelling mathematics software that calculates ambient pollution concentrations based on emission figures and meteorological data.
Network	The network comprises hardware (sensors, data loggers, telemetry, and computers) and software (data handling, storage programs, models, and database).
Precision Check	The precision check is a procedure where a sensor is challenged with a gas of a known concentration within the operating range of the measurement.
Source	A point, line or area from which pollution would be released
Station	A station is a data capture point used for pollutant measurement, meteorological measurement, or data consolidation.
System	The system represents all network components, including the procedures for marshalling and reporting data.

APPENDIX B
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 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. The minimum threshold for statistical analyses is at least 80% valid data to maintain reliability and minimize bias; the South African National Accreditation (SANAS, 2012) requires 90%

Table 1: Quality Assurance

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

APPENDIX C
EMISSION INVENTORY

Table 1: Emission Inventory – 2025.

Industry	Description	SO_2 Emission 2025 (t)	SO_2 Emission 2025 (t)	SO_2 Contribution (%)
Foskor	Acid Plant	2390	2401	13%
	Boiler	11		
Tongaat Hulett	Boiler	185	185	1%
Mondi	Flume 1	1417	3080	17%
	Flume 2	836		
	Power Boiler	795		
	Incinerator	8		
	Bleach Plant	24		
Mpact	Babcock	281	805	5%
	JT Boiler	524		
	Oil Burner	0		
RBM	Char Plant	468	542	3%
	Miscellaneous	34		
	MSP (Drier)	38		
	Smokers	1		
South32	FTC	1885	10561	59%
	GTC 1	1955		
	GTC 2	1680		
	GTC 3	1579		
	GTC 4	1579		
	GTC 5	1630		
	Potrooms	254		
Tronox	Tank 1	251	251	1%
Total		17825	17825	100%

Note: Tongaat Hullet shut down during the year's 1st quarter and last month.

APPENDIX D
OPERATIONAL REPORT

Table 1: Maximum concentrations for PM_{10} and $PM_{2.5}$.

RBCAA: Monthly Report						
PM_{10} daily averages						
Station	*Concentration (µg/m³)*	*% of RSA Standard (75 µg/m³)*	*% of WHO Guideline (45 µg/m³)*	*Time*	*Wind Direction (°)*	*Wind Speed (m/s)*
CBD ES1	19.0	25%	42%	2025/05/08 00:00	1.3	9
eSikhaleni	53.0	71%	**118%**	2025/05/29 00:00	2.3	37
Felixton ES1	42.0	56%	93%	2025/05/18 00:00	2.2	238
Richardia	66.0	88%	**147%**	2025/05/21 00:00	6.1	228
Scorpio ES1	60.0	80%	**133%**	2025/05/08 00:00	1.2	336
$PM_{2.5}$ daily averages						
Station	*Concentration (µg/m³)*	*% of RSA Standard (40 µg/m³)*	*% of WHO Guideline (15 µg/m³)*	*Time*	*Wind Direction (°)*	*Wind Speed (m/s)*
Brackenham ES2	47.1	**118%**	**314%**	2025/05/18 00:00	1.6	335
Felixton ES2	38.0	95%	**253%**	2025/05/08 00:00	1.8	321
Harbour West ES2	25.0	63%	**167%**	2025/05/08 00:00	1.2	336
Scorpio ES2	26.0	65%	**173%**	2025/05/08 00:00	1.2	336

LEGEND
Yellow: = 50% of the guideline/standard
Red: >= 100% of the guideline/standard (i.e. exceedance)
Turquoise: = 10% of the guideline/standard

NOTES
Dates used for time intervals are time beginning.
Wind speeds of < 1 m/s are considered calms; wind directions measured under these conditions cannot be used for incident investigations.
This report is an interim report in terms of AIMS' quality system classification. Final data will be published in the monthly report for the system.

STATUS
Meteorology
Airport, Arboretum, Brackenham, CBD, eSikhaleni, and Harbour West have meteorology.
Scorpio uses meteorology from Harbour West, and Felixton uses meteorology from eSikhaleni.

MISSING DATA
"Data < 80%" - data capture less than 80% (not suitable for statistical analysis)
"No Data" – no data available.

Table 2: Maximum concentrations for SO_2.

RBCAA: Monthly Report						
SO_2 10-minute averages						
Station	*Concentration (ppb)*	*% of RSA Standard & WHO Guideline (500 µg/m³ / 191 ppb)*		*Time*	*Wind Direction (°)*	*Wind Speed (m/s)*
Arboretum	47.9	25%		2025/05/22 00:20	4.0	258
Brackenham	51.3	27%		2025/05/21 20:00	6.5	229
CBD	96.8	51%		2025/05/13 10:00	1.1	343
eSikhaleni	15.4	8%		2025/05/23 14:30	3.1	140
Felixton	21.8	11%		2025/05/21 17:20	7.5	224
Harbour West	125.1	65%		2025/05/21 03:10	4.8	2
Richardia	42.2	22%		2025/05/13 09:50	1.3	284
Scorpio	147.2	77%		2025/05/10 22:50	2.7	9
SO_2 hourly averages						
Station	*Concentration (ppb)*	*% of RSA Standard (350 µg/m³ / 134 ppb)*	*No WHO Guideline*	*Time*	*Wind Direction (°)*	*Wind Speed (m/s)*
Arboretum	33.8	25%	-	2025/05/13 10:00	-	-
Brackenham	38.4	29%	-	2025/05/13 11:00	0.7	279
CBD	70.9	53%	-	2025/05/13 10:00	0.9	-
eSikhaleni	12.4	9%	-	2025/05/23 14:00	2.6	135
Felixton	18.5	14%	-	2025/05/21 17:00	6.8	223
Harbour West	105.2	79%	-	2025/05/21 00:00	6.1	359
Richardia	30.2	23%	-	2025/05/13 10:00	-	-
Scorpio	125.3	94%	-	2025/05/21 02:00	5.1	10
SO_2 daily averages						
Station	*Concentration (ppb)*	*% of RSA Standard (125 µg/m³ / 48 ppb)*	*% of WHO Guideline (40 µg/m³ / 15 ppb)*	*Time*	*Wind Direction (°)*	*Wind Speed (m/s)*
Arboretum	5.9	12%	39%	2025/05/03 00:00	4.6	224
Brackenham	11.4	24%	76%	2025/05/11 00:00	5.0	230
CBD	11.4	24%	76%	2025/05/02 00:00	3.8	233
eSikhaleni	3.0	6%	20%	2025/05/04 00:00	1.4	236
Felixton	3.6	8%	24%	2025/05/21 00:00	4.4	249
Harbour West	30.7	64%	**205%**	2025/05/29 00:00	2.8	8
Richardia	4.3	9%	29%	2025/05/13 00:00	1.9	345
Scorpio	51.5	**107%**	**343%**	2025/05/20 00:00	4.9	8

Table 3: Maximum concentrations for TRS.

RBCAA: Monthly Report						
TRS 10-minute averages						
Station	*Concentration (ppb)*	*No RSA Standard*	*% of OME TRS Guideline (13.0 µg/m³ / 9.3 ppb)*	*Time*	*Wind Direction (°)*	*Wind Speed (m/s)*
CBD	7.6	-	82%	2025/05/22 20:00	2.1	278
eSikhaleni	15.3	-	**165%**	2025/05/29 06:30	1.9	53
Felixton	23.5	-	**253%**	2025/05/31 08:10	0.9	124
Richardia	7.5	-	81%	2025/05/26 21:30	2.0	283
TRS 30-minute averages						
Station	*Concentration (ppb)*	*No RSA Standard*	*% of WHO H_2S Guideline (7.0 µg/m³ / 5.0 ppb)*	*Time*	*Wind Direction (°)*	*Wind Speed (m/s)*
CBD	5.3	-	**106%**	2025/05/26 20:00	1.8	277
eSikhaleni	10.5	-	**210%**	2025/05/29 06:00	1.6	59
Felixton	17.3	-	**346%**	2025/05/14 05:00	0.6	106
Richardia	6.6	-	**132%**	2025/05/26 21:30	2.0	294
TRS daily averages						
Station	*Concentration (ppb)*	*No RSA Standard*	*% of OME TRS Guideline (14.0 µg/m³ / 10.1 ppb)*	*Time*	*Wind Direction (°)*	*Wind Speed (m/s)*
CBD	1.5	-	15%	2025/05/02 00:00	3.8	233
eSikhaleni	1.9	-	19%	2025/05/29 00:00	2.3	37
Felixton	2.1	-	21%	2025/05/14 00:00	2.7	73
Richardia	2.3	-	23%	2025/05/09 00:00	3.0	4

APPENDIX E
RAINFALL

Table 1: Daily Rainfall

Date	Richards Bay (mm)	Felixton (mm)	RBCT (mm)	South32 (mm)
2025/05/01	8	4	3	4
2025/05/02	16	11	44	8
2025/05/03	3	1	1	0
2025/05/04	0	0	0	0
2025/05/05	0	0	0	0
2025/05/06	0	0	0	0
2025/05/07	1	0	0	0
2025/05/08	0	0	0	0
2025/05/09	0	0	0	0
2025/05/10	0	0	0	0
2025/05/11	5	0	4	3
2025/05/12	0	0	0	0
2025/05/13	0	0	0	0
2025/05/14	0	0	0	0
2025/05/15	0	0	0	0
2025/05/16	0	0	0	0
2025/05/17	0	0	0	0
2025/05/18	0	0	0	0
2025/05/19	0	0	0	0
2025/05/20	0	0	0	0
2025/05/21	1	0	3	0
2025/05/22	0	0	0	0
2025/05/23	0	0	0	0
2025/05/24	0	0	0	0
2025/05/25	0	0	0	0
2025/05/26	0	0	0	0
2025/05/27	4	0	11	7
2025/05/28	0	0	0	0
2025/05/29	0	0	0	0
2025/05/30	0	0	0	0

Date	Richards Bay (mm)	Felixton (mm)	RBCT (mm)	South32 (mm)
2025/05/31	0	0	0	0
Total	41	16	66	23

Table 2: Monthly Rainfall Richards Bay

Month	Richards Bay							
	2018	2019	2020	2021	2022	2023	2024	2025
Jan	94	182	47	305	127	167	271	371
Feb	232	195	377	229	193	410	118	390
Mar	139	78	139	217	62	141	192	165
Apr	261	214	141	96	647	87	101	479
May	311	9	53	165	130	356	22	41
Jun	70	78	114	140	60	33	89	
Jul	20	16	48	57	20	196	57	
Aug	100	160	107	59	77	20	97	
Sep	85	43	144	216	93	23	186	
Oct	213	260	171	214	101	345	250	
Nov	119	296	122	72	131	61	103	
Dec	156	320	77	464	253	195	145	
Minimum	20	9	47	57	20	20	22	41
Average	150	154	128	186	158	169	136	289
Maximum	311	320	377	464	647	410	271	479
Total	1798	1850	1540	2234	1893	2034	1630	1446

Table 3: Monthly Felixton

Month	Felixton							
	2018	2019	2020	2021	2022	2023	2024	225
Jan	43	138	71	207	68	57	146	117
Feb	129	138	214	231	78	188	82	303
Mar	89	70	89	126	95	80	113	148
Apr	138	143	106	135	368	58	49	287
May	342	9	42	57	120	245	17	16
Jun	60	53	44	98	20	14	53	
Jul	22	17	37	39	15	146	2.5	
Aug	83	39	67	55	37	18	54	
Sep	53	79	84	191	51	43	137	
Oct	201	144	67	145	98	318	187	
Nov	84	121	106	35	174	34	78	
Dec	111	311	64	212	163	146	74	
Minimum	22	9	37	35	15	14	3	16
Average	113	105	82	127	107	112	83	174
Maximum	342	311	214	231	368	318	187	303
Total	1354	1261	987	1530	1288	1347	992	871

Table 4: RBCT

Month	RBCT							
	2018	2019	2020	2021	2022	2023	2024	2025
Jan	42	110	33	215	54	136	154	229
Feb	137	124	166	146	131	344	72	249
Mar	78	172	109	194	161	69	161	145
Apr	161	174	111	69	642	30	98	450
May	175	14	69	171	268	442	23	66
Jun	59	24	52	124	30	34	104	
Jul	21	5	39	64	30	162	56	
Aug	35	68	64	56	25	30	86	
Sep	41	59	104	187	115	30	177	
Oct	80	164	121	156	71	293	121	
Nov	70	186	77	43	129	42	89	
Dec	104	216	104	245	279	127	65	
Minimum	21	5	33	43	25	30	23	66
Average	84	110	87	139	161	145	100	228
Maximum	175	216	166	245	642	442	177	450
Total	1005	1317	1049	1669	1934	1740	1205	1139

Table 5: South32

Month	South32 (mm)							
	2018	2019	2020	2021	2022	2023	2024	2025
Jan	-	-	-	-	-	91	120	232
Feb	-	-	-	-	115	256	-	241
Mar	-	-	-	-	149	51	144	137
Apr	-	-	-	-	505	43	-	363
May	-	-	-	-	106	230	-	23
Jun	-	-	-	-	25	11	-	
Jul	-	-	-	-	12	165	-	
Aug	-	-	-	-	30	13	-	
Sep	-	-	-	-	64	18	129	
Oct	-	-	-	-	64	271	-	
Nov	-	-	-	-	101	36	-	
Dec	-	-	-	-	163	95	92	
Minimum	-	-	-	-	12	11	92	23
Average	-	-	-	-	121	107	121	199
Maximum	-	-	-	-	505	271	144	363
Total	-	-	-	-	1336	1280	485	996

Please note that the South32 missing rain data for 2024 was due to a faulty rain gauge.

APPENDIX F
COMPLAINTS LOG

Table 1: Complaints.

No	Date	Region	Type	Source	Description	Response
1	2025/05/04 00:00	CBD	Alumina fallout	South32	Alumina fallout noted on vehicle on the morning of 4 May. It is assumed that the fallout occurred between Monday 28 April and Friday 2 May. (vehicle inside garage on the 3 May)	273
2	2025/05/21 00:00	Alton	Dust	NIDA	Coal Dust emanating from the Ni-Da yard in Alton. “This is happening for over 2 years now and nothing has changed. it is very dangerous to health and safety as drivers can't see properly when using this road and it's affecting the health of people in this area.”	283
3	2025/05/21 07:10	Alton North	Dust & fallout	RBIDZ	Significant dust plume emanating from the IDZ site in Alton North. Alton North is covered in a dust plume that is being carried towards the residential area of Brackenham.	278, 281
4	2025/05/22 00:00	Alton	Dust	NIDA	“For the past 18 hours we have been subject to a significant cloud of dust emanating from the NIDA Transport Depot based at Alumina Allee and Guldengracht Intersection. They have made no effort to address this situation and continue to show a total disregard for fellow Businesses in this City. They have continued to do so over the past 5 years. They do not care. We find our expensive electronic and monitoring equipment covered in a layer of dust as a result. This equipment is crucial to the upkeep of the electric fencing energizers used in the Game Reserves to keep dangerous wildlife such as Lion within the confines of the fences and away from adjacent Communities. If these Lions were to escape, we would face a disaster of epic proportions. I understand that we had a very strong wind, but this problem is not new. NIDA have made no attempt to address this at all. It does not help if they wet this area as it soon becomes a quagmire of mud which is then driven onto the road by the trucks which becomes dust when the mud dries out. They need to put down a concrete surface or trade from another area where it does not affect the adjacent businesses. I believe they have a moral obligation to engage in the upkeep of the adjacent roads with an industrial sweeper as they become part of the solution and not part of the problem.”	283
5	2025/05/22 09:22	Alton	Dust	NIDA	Unacceptable levels of dust emanating from the Ni-Da facility. Been allowed to continue for years and it is affecting our health and our business.	283
6	2025/05/22 10:35	Alton	Dust	NIDA	Excessive dust from Ni-Da grounds. Difficulty Breathing, air is thick with dust. “ "I am writing to formally lodge a complaint against NiDA, located in Ceramic Curve, next to Jooste 4x4. The air quality in and around the premises has become a serious concern due to excessive dust emissions. It is unhealthy and unacceptable to breathe in air so saturated with dust. This situation poses a	283

No	Date	Region	Type	Source	Description	Response
					significant health risk, not only to individuals on your premises but also to the surrounding businesses and employees operating in the area. As a company working nearby, we are struggling to maintain normal operations under these conditions. The constant dust infiltration affects our staff, equipment, and overall work environment. It is neither sustainable nor safe to continue business as usual in such circumstances. We urge NiDA to take immediate and effective measures to resolve this issue. Proper dust control systems and adherence to environmental health standards are essential to ensure the well-being of everyone in this area. We expect a prompt response and visible improvement in the situation"	
7	2025/05/22 12:17	Alton North	Dust & fallout	RBIDZ	Dust fallout from IDZ site in Alton North impacting on businesses in Alton North. “This is a 6-month-old vehicle, who can I hold liable in case of any damage”	279, 282
8	2025/05/26 16:00	Veldenvlei	Clinical + Odour	Mondi	(Complaint logged at 19h17), Strange acetone type smell, , like something dead and rotting or like a gas leak.” At 19h40 had to bring dogs in - “one of them vomiting.” At 19h40 the complainant reported that the odour had intensified.	277
9	2025/05/26 19:47	Veldenvlei	Odour	Mondi	“Terrible smell” (near Sports Complex)	277
10	2025/05/26 21:45	Arboretum Ext	Clinical + Odour	Mondi	“Awful strong cat urine smell. Nose and eyes burning.”	277
11	2025/05/26 22:36	Meerensee	Clinical + Odour	Mondi	“Terrible cabbage smell. Headache, sinus and sore throat.”	277
12	2025/05/30 13:26	Alton North	Dust & fallout	RBIDZ	Dust fallout from IDZ site in Alton North impacting businesses in Alton North.	279, 282

Table 2: Responses.	Industry Feedback
1	Unresolved / No Response
267	Sandy Camminga (in behalf of Mondi - Candice Webb) responded (2025/04/16 23:13): Source of odour: Ruptured bursting disc on the non-condensable gas line to the flare.
268	Sandy Camminga (in behalf of CoU) responded (2025/04/21 20:12): The RBCAA notified the Authorities on receipt of the complaint. CoU responded and provided the following response from Clariant; “We had a process upset; the incinerator tripped. The situation was resolved. We will send a forma response during the week when we are back in the office.”Clariant operates under a Scheduled Trade Permit. CoU will monitor and provide feedback. Donny Naidoo (in behalf of Clariant) responded (2025/04/22): The investigation determined that a process upset has occured, causing the incinerator to trip. As a result, the offgas bypassed the standard treatment process normally provided by the incinerator, leading to the visible emission. Note: full report / letter available)
269	Foskor- Silungile Msane responded (2025/04/23 16:47): Noise complaint: around the time of the exceedance, the steam pressure exceeded maximun settings on the relief valve on the 11-bar steam system in Sulphuric acid C plant causing a loud noise. Odour complaint: Based on the SO2 trends around the time of the complaint, there were no abnormalities present in the plant conditions. However it must be noted that the odour complaint was not clear regarding the type of odour experienced.
270	Mondi - Candice Webb responded (2025/04/24 14:55): Source of Odour: Fugitive emissions as a result of unstable mill conditions. "...All point source emissions found to be well within specification. The hardwood and softwood gasses were stable in the Recovery Boiler Flare and the Lime Kiln for incineration. Area operators undertook plant specific odour checks and investigated any possible leaks, no deviations identified were found in the non-condensable gas system. The Mondi Secondary Effluent Treatment Plant (SETP) was offline at the time for odour control. However, based on unstable operating conditions during a difficult start-up of the mill and wind direction, Mondi is the most likely source of the odour."
271	Mondi - Candice Webb responded (2025/04/24 14:55): Source of Odour: Secondary Effluent Plant. "...All point source emissions found to be well within specification. The hardwood and softwood gasses were stable in the Recovery Boiler Flare and the Lime Kiln for incineration. Area operators undertook plant specific odour checks and investigated any possible leaks, no deviations identified were found in the non-condensable gas system. However, based on upset conditions in the mill and poor quality effluent, and elevated TRS at the Alton station, the Secondary Effluent Treatment Plant (SETP) was determined to be the most likely source of the odour. The SETP was switch off until 08:00 the following morning."
272	Mondi - Candice Webb responded (2025/04/24 14:55): Source of Odour: Secondary Effluent Treatment Plant. "...All point source emissions found to be well within specification. The hardwood and softwood gasses were stable in the Recovery Boiler Flare and the Lime Kiln for incineration. Area operators undertook plant specific odour checks and investigated any possible leaks, no deviations identified were found in the non-condensable gas system. However, based on upset conditions in the mill and poor-quality effluent and elevated TRS at the Alton station, the Secondary Effluent Treatment Plant (SETP) was determined to be the most likely source of the odour. The SETP was switch off until 08:00 the following morning."
273	South 32 -Londiwe Molebale responded (2025/05/08 16:58): The cause of the alumina dust is from the Gas Treatment Centre, it was identified that some gaskets were not tighten enough the during HF reduction project.
274	Mondi - Candice Webb responded (2025/05/14 12:36): Mondi Environmental Manager received notification of odour complaint from the RBCAA at 11:45 and an investigation was undertaken. All point source emissions found to be well within specification. The hardwood and softwood gasses were stable in the Lime Kiln for incineration. Area operators undertook plant specific odour checks and investigated any possible leaks, no deviations identified. However, the Mondi Secondary Effluent Treatment Plant (SETP) was identified as a potential source. Consequently, it was taken offline and flushed with clean water.
275	Mondi - Candice Webb responded (2025/05/14 15:33): "...the Mondi Secondary Effluent Treatment Plant (SETP) was identified as a potential source, based on the elevated TRS recorded at the Alton station between 05:00 and 08:00. In addition, area operators undertook plant specific odour checks and investigated any possible leaks, a leak on the CPX system was identified at 10:00 and the plant isolated for repairs. The repair was completed by 15:00."
283	RBCAA - Sandy Camminga responded (2025/05/22 10:12): The Authorities were notified at the time of the complaints, 22 May at 10h12. KCDM and CoU responded and an update was provided at 11h47. City Development - Cllr Botha responded (2025/05/22 17:02): Dear DM, The update on Nida Transport is as follows: First complaint was received on the 10th March 2025. The joint inspection was conducted by CoU and KCDM on the 11th, and the Facility was instructed to institute dust suppression measures. A second complaint was received on the 14th April 2025 and the inspection was conducted on the same day. The compliance notice was issued by KCDM on the 15th April 2025. It can

Table 2: Responses.	Industry Feedback
	be confirmed that the facility has submitted dust management plan detailing short, medium and long term intervention. The plan is currently being reviewed by relevant authorities. 3rd and 4th complaints were received on the 21st and 22nd May 2025. A joint inspection was conducted by CoU, KCDM and DEDTEA on the 22nd (today). The facility has instructed to cease all activities causing dust and implement urgent measures to suppress dust including a water tanker on site. Furthermore, a pre-compliance notice will be issued by DEDTEA addressing all environmental transgressions including dust issues. If the facility fail to adhere to all legislative requirements and notices further actions will be instituted against them.

APPENDIX G
PM_{10} EXCEEDANCE LOG

Table 1: PM_{10} exceedances.

No	Target / Guideline / Standard	Station	Date	Value (ppb)	Wind Direction (°)	Wind Speed (m/s)	Source	Comment	Response
1	PM_{10} Daily WHO Limit (45 µg/m³)	eSikhaleni	2025/05/08 0:00	46.0	12	0.9	No response required	None	2
2	PM_{10} Daily WHO Limit (45 µg/m³)	eSikhaleni	2025/05/18 0:00	49.0	272	1.2	No response required	None	2
3	PM_{10} Daily WHO Limit (45 µg/m³)	eSikhaleni	2025/05/29 0:00	53.0	37	2.3	No response required	None	2
4	PM_{10} Daily WHO Limit (45 µg/m³)	Richardia	2025/05/13 0:00	46.0	345	1.9	No response required	None	2
5	PM_{10} Daily WHO Limit (45 µg/m³)	Richardia	2025/05/18 0:00	50.0	275	2.3	No response required	None	2
6	PM_{10} Daily WHO Limit (45 µg/m³)	Richardia	2025/05/21 0:00	66.0	228	6.1	No response required	None	2
7	PM_{10} Daily WHO Limit (45 µg/m³)	Richardia	2025/05/22 0:00	59.0	246	4.1	No response required	None	2
8	PM_{10} Daily WHO Limit (45 µg/m³)	Richardia	2025/05/29 0:00	50.0	11	3	No response required	None	2
9	PM_{10} Daily WHO Limit (45 µg/m³)	Richardia	2025/05/30 0:00	51.0	254	3.5	No response required	None	2
10	PM_{10} Daily WHO Limit (45 µg/m³)	Scorpio	2025/05/08 0:00	60.0	335	1.2	No response required	None	2
11	PM_{10} Daily WHO Limit (45 µg/m³)	Scorpio	2025/05/09 0:00	48.0	2	2.7	No response required	None	2
12	PM_{10} Daily WHO Limit (45 µg/m³)	Scorpio	2025/05/13 0:00	55.0	322	1.3	No response required	None	2
13	PM_{10} Daily WHO Limit (45 µg/m³)	Scorpio	2025/05/18 0:00	51.0	266	1.5	No response required	None	2

Table 2: PM_{10} responses.

Response	Industry Feedback
2	No response required

APPENDIX H
$PM_{2.5}$ EXCEEDANCE LOG

Table 1:$PM_{2.5}$ Exceedances

No	Target / Guideline / Standard	Station	Date	Value (ppb)	Wind Direction (°)	Wind Speed (m/s)	Source	Comment	Response
1	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/04 00:00	15.5	325	1.4	No response required	None	2
2	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/06 00:00	32.5	31	2.5	No response required	None	2
3	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/07 00:00	25.7	28	2.7	No response required	None	2
4	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/08 00:00	36.6	22	1.5	No response required	None	2
5	$PM_{2.5}$ Daily RSA Limit (40 µg/m³)	Brackenham	2025/05/09 00:00	40.9	24	2.8	Industry response required	Responded: Mondi	35, 1
6	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/09 00:00	40.9	24	2.8	No response required	None	2
7	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/10 00:00	25.3	32	4	No response required	None	2
8	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/11 00:00	27.2	230	5	No response required	None	2
9	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/12 00:00	15.9	9	1.6	No response required	None	2
10	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/13 00:00	31.0	16	1.5	No response required	None	2
11	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/17 00:00	20.6	23	2.4	No response required	None	2
12	$PM_{2.5}$ Daily RSA Limit (40 µg/m³)	Brackenham	2025/05/18 00:00	47.1	334	1.6	Industry response required	Responded: Mondi	36, 1
13	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/18 00:00	47.1	334	1.6	No response required	None	2
14	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/19 00:00	39.3	29	3.3	No response required	None	2
15	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/20 00:00	28.0	30	3.6	No response required	None	2
16	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/21 00:00	25.8	250	4.7	No response required	None	2
17	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/22 00:00	30.7	269	2.6	No response required	None	2
18	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/23 00:00	23.3	7	1.3	No response required	None	2
19	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/24 00:00	19.7	27	1.9	No response required	None	2

20	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/25 00:00	15.7	33	3	No response required	None	2
21	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/26 00:00	25.2	5	1.8	No response required	None	2
22	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/27 00:00	31.7	264	1.7	No response required	None	2
23	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/28 00:00	17.6	20	2.5	No response required	None	2
24	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/29 00:00	39.7	30	3.1	No response required	None	2
25	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/30 00:00	32.6	284	3.2	No response required	None	2
26	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Brackenham	2025/05/31 00:00	19.7	26	2	No response required	None	2
27	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/06 00:00	34.0	32	1.4	No response required	None	2
28	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/07 00:00	25.0	24	1.9	No response required	None	2
29	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/08 00:00	38.0	320	1.8	No response required	None	2
30	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/09 00:00	31.0	293	2.1	No response required	None	2
31	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/10 00:00	19.0	64	1.9	No response required	None	2
32	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/11 00:00	23.0	233	3.8	No response required	None	2
33	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/13 00:00	20.0	203	1.5	No response required	None	2
34	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/17 00:00	22.0	20	1.9	No response required	None	2
35	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/18 00:00	35.0	237	2.3	No response required	None	2
36	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/19 00:00	27.0	56	2	No response required	None	2
37	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/20 00:00	25.0	35	2.7	No response required	None	2
38	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/21 00:00	25.0	249	4.4	No response required	None	2
39	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/23 00:00	23.0	242	2.4	No response required	None	2
40	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/26 00:00	25.0	236	1.6	No response required	None	2
41	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/27 00:00	27.0	253	2.9	No response required	None	2
42	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/29 00:00	31.0	56	1.9	No response required	None	2
43	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Felixton	2025/05/30 00:00	22.0	240	3	No response required	None	2

44	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/06 00:00	22.0	8	2.4	No response required	None	2
45	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/07 00:00	19.0	20	2.4	No response required	None	2
46	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/08 00:00	25.0	335	1.2	No response required	None	2
47	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/09 00:00	25.0	2	2.7	No response required	None	2
48	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/10 00:00	19.0	13	4.8	No response required	None	2
49	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/13 00:00	16.0	322	1.3	No response required	None	2
50	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/18 00:00	22.0	266	1.5	No response required	None	2
51	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/19 00:00	21.0	22	4.1	No response required	None	2
52	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/20 00:00	17.0	8	4.9	No response required	None	2
53	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/26 00:00	16.0	318	1.8	No response required	None	2
54	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Harbour West	2025/05/29 00:00	19.0	7	2.8	No response required	None	2
55	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/06 00:00	17.0	8	2.4	No response required	None	2
56	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/07 00:00	16.0	20	2.4	No response required	None	2
57	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/08 00:00	26.0	335	1.2	No response required	None	2
58	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/09 00:00	21.0	2	2.7	No response required	None	2
59	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/13 00:00	23.0	322	1.3	No response required	None	2
60	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/18 00:00	23.0	266	1.5	No response required	None	2
61	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/19 00:00	16.0	22	4.1	No response required	None	2
62	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/23 00:00	18.0	296	1.6	No response required	None	2
63	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/26 00:00	18.0	318	1.8	No response required	None	2
64	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/29 00:00	19.0	7	2.8	No response required	None	2
65	$PM_{2.5}$ Daily WHO Limit (15 µg/m³)	Scorpio	2025/05/30 00:00	17.0	244	2.7	No response required	None	2

Table 1: $PM_{2.5}$ Responses

Response	Industry Feedback
1	Unresolved / No Response
2	No response required
35	Mondi - Kira Cobbold responded, (2025/05/15 15:55): Mondi has reviewed the exceedance recorded at Brackenham on 09 May 2025. Based on the wind direction at the time, it is unlikely that the mill was the source. Additionally, all PM emissions from Mondi's main sources (Power Boiler, Kiln, Recovery Boilers 1 and 2) were within compliance limits according to the AEL. No abnormal conditions were recorded on site during the visual air emissions inspection that took place at 08:30am that morning.
36	Mondi - Kira Cobbold responded, (2025/05/19 15:35): Mondi has investigated the $PM_{2.5}$ exceedance recorded at the Brackenham station on 18/05/2025. Based on the varying wind direction throughout the day, which did not consistently align with Mondi as a potential source, it is considered unlikely that Mondi contributed to this exceedance. All particulate matter stack emissions from Mondi remained well within their compliance limits, and the mill was operating under stable conditions.

APPENDIX I
SO_2 EXCEEDANCE LOG

Table 1: SO_2 Exceedances.

No	Target / Guideline / Standard	Station	Date	Value (ppb)	Wind Direction (°)	Wind Speed (m/s)	Source	Comment	Response
1	SO_2 Daily WHO Limit (15 ppb)	Harbour West	2025/05/10 00:00	21.9	13	4.8	No response required	None	2
2	SO_2 Daily WHO Limit (15 ppb)	Harbour West	2025/05/17 00:00	17.1	358	2.7	No response required	None	2
3	SO_2 Daily WHO Limit (15 ppb)	Harbour West	2025/05/19 00:00	27.3	22	4.1	No response required	None	2
4	SO_2 Daily WHO Limit (15 ppb)	Harbour West	2025/05/20 00:00	29.0	8	4.9	No response required	None	2
5	SO_2 Daily WHO Limit (15 ppb)	Harbour West	2025/05/21 00:00	15.3	220	5.7	No response required	None	2
6	SO_2 Daily WHO Limit (15 ppb)	Harbour West	2025/05/25 00:00	20.9	16	3.3	No response required	None	2
7	SO_2 Daily WHO Limit (15 ppb)	Harbour West	2025/05/29 00:00	30.7	7	2.8	No response required	None	2
8	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/06 00:00	34.6	8	2.4	No response required	None	2
9	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/07 00:00	35.8	20	2.4	No response required	None	2
10	**SO_2 Daily RSA Limit (48 ppb)**	**Scorpio**	**2025/05/10 00:00**	**50**	**13**	**4.8**	**Unresolved**	Responded: Foskor, South32, Mondi	133, 134, 135, 1
11	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/10 00:00	50.0	13	4.8	No response required	None	2
12	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/13 00:00	18.1	322	1.3	No response required	None	2
13	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/17 00:00	21.1	358	2.7	No response required	None	2
14	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/19 00:00	15.3	22	4.1	No response required	None	2
15	**SO_2 Daily RSA Limit (48 ppb)**	**Scorpio**	**2025/05/20 00:00**	**51.5**	**8**	**4.9**	**South32 - meteorology**	RBCAA Allocation	136, 137, 160, 162
16	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/20 00:00	51.5	8	4.9	No response required	None	2
17	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/21 00:00	19.5	220	5.7	No response required	None	2

No	Target / Guideline / Standard	Station	Date	Value (ppb)	Wind Direction (°)	Wind Speed (m/s)	Source	Comment	Response
18	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/25 00:00	16.0	16	3.3	No response required	None	2
19	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/26 00:00	23.1	318	1.8	No response required	None	2
20	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/28 00:00	16.3	356	2.6	No response required	None	2
21	SO_2 Daily WHO Limit (15 ppb)	Scorpio	2025/05/29 00:00	43.1	7	2.8	No response required	None	2

Table 2: SO_2 Responses.

Response	Industry Feedback
1	Unresolved / No Response
2	No response required
133	Foskor - Silungile Msane responded (Tue 2025/05/15 07:37): There was no root cause identified as there were no abnormalities in the plant, furthermore the wind direction was northerly which was blowing towards the Harbour.
134	South32 - Molebale, Londiwe responded (Tue 2025/05/15 10:34): There is no root cause as there were no plant upsets.
135	Mondi - Kira Cobbold responded, (2025/05/16 12:08): Mondi has reviewed the 24-hour SO_2 exceedance recorded at Scorpio station on 10 May 2025. Given the strong north-easterly winds during the period, it is unlikely that Mondi was the source. Additionally, all SO_2 emissions from Mondi's permitted stacks were well within compliance limits according to the AEL.
136	Mondi - Kira Cobbold responded, (2025/05/22 11:54): Mondi has investigated the SO_2 exceedance on 20 May 2025 at the Scorpio station where the strong N/NE winds recorded on the day do not support Mondi as the likely source. Additionally, all Mondi's SO_2 stack emissions were within compliance, with no abnormalities reported.
137	Foskor - Silungile Msane responded (Tue 2025/05/26 10:53): There was no root cause identified as there were no abnormalities the plant furthermore the wind direction was JMortherly which was blowing towards the Harbour.
160	South32 - Molebale, Londiwe responded (Tue 2025/07/23 12:12): Based on the GTC's daily trend's above, no plant upsets were noted for SO2 on the days leading up to the 20th May. Based on the FTC daily trend's above, no plant upsets were noted for SO2 on the days leading up to the 20th May. Hillside remains committed in ensuring that its operations have no or minimal impact on the environment, based on the investigation conducted on the SO2 trends and shift reports South32 did not attribute to the SO2 exceedance on the 20th of May 2025.
162	RBCAA Allocation - Sandy Camminga (2025/07/29 08:40) The attached exceedance reports from S32 refer. As discussed with S32 in our quarterly interface meeting, S32 cannot base their investigation responses solely on online data and the absence of process upsets, as these do not automatically absolve S32 of responsibility. Meteorological data plays a significant role. Based on wind direction S32 would have contributed to the exceedances recorded at Scorpio. The RBCAA will therefore be allocating these exceedances to S32. S32 is kindly requested to include the original notification from AIMS in their responses. I have attached these for your ease of reference. Please amend the attached reports to include this information, and title the reports "Exceedances" not complaints for reference purposes. In view of the above S32 is kindly requested to revisit their findings.

APPENDIX J
TRS EXCEEDANCE LOG

Table 1: TRS Exceedances

No	Target / Guideline / Standard	Station	Date	Value (ppb)	Wind Direction (°)	Wind Speed (m/s)	Source	Comment	Response
1	TRS 30-minute WHO H_2S Limit (5.0 ppb)	CBD	2025/05/26 19:30	5.2	254	1.7	Mondi	Root cause has not yet been confirmed	655
2	TRS 30-minute WHO H_2S Limit (5.0 ppb)	CBD	2025/05/26 20:00	5.3	277	1.8	Mondi	Root cause has not yet been confirmed	655
3	TRS 30-minute WHO H_2S Limit (5.0 ppb)	eSikhaleni	2025/05/20 04:00	5.1	24	1.6	Mondi	Secondary Effluent Treatment Plant	645, 651
4	**TRS 30-minute WHO H_2S Limit (5.0 ppb)**	**eSikhaleni**	**2025/05/26 05:30**	**6.1**	**98**	**1.2**	**Unresolved**	Responded: Mpact, THS, Mondi	653, 687, 655
5	TRS 10-minute OME Limit (9.3 ppb)	eSikhaleni	2025/05/29 06:00	13.5	20	1.9	Mondi	Mondi - meteorology	654, 660
6	TRS 30-minute WHO H_2S Limit (5.0 ppb)	eSikhaleni	2025/05/29 06:00	10.5	59	1.6	Mondi	Mondi - meteorology	654, 660
7	TRS 10-minute OME Limit (9.3 ppb)	eSikhaleni	2025/05/29 06:20	12.2	95	1.8	Mondi	Mondi - meteorology	654, 660
8	TRS 10-minute OME Limit (9.3 ppb)	eSikhaleni	2025/05/29 06:30	15.3	53	1.9	Mondi	Mondi - meteorology	654, 660
9	TRS 30-minute WHO H_2S Limit (5.0 ppb)	eSikhaleni	2025/05/29 06:30	8.9	49	1.7	Mondi	Mondi - meteorology	654, 660
10	TRS 10-minute OME Limit (9.3 ppb)	eSikhaleni	2025/05/29 06:40	9.7	49	1.8	Mondi	Mondi - meteorology	654, 660
11	TRS 10-minute OME Limit (9.3 ppb)	Felixton	2025/05/13 23:00	10.2	165	0.6	THS	Plant start up. Coal operated	637, 638, ~~670~~, **687**
12	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/13 23:00	7.4	144	0.5	THS	Plant start up. Coal operated	637, 638, ~~670~~, **687**
13	TRS 10-minute OME Limit (9.3 ppb)	Felixton	2025/05/19 16:50	10.8	91	1.3	Mondi	NCGs vented through the carbon filter	642, 650
14	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/21 17:00	5.2	223	6.7	THS	Smut plant	647, 648, ~~670~~, **687**
15	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/21 18:00	5.4	224	6.2	THS	Smut plant	647, 648, ~~670~~, **687**
16	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/26 07:30	5.3	174	1.1	THS	Smut plant	652, 655, ~~670~~, **687**
17	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/26 08:00	8.6	214	0.9	THS	Smut plant	652, 655, ~~670~~, **687**

No	Target / Guideline / Standard	Station	Date	Value (ppb)	Wind Direction (°)	Wind Speed (m/s)	Source	Comment	Response
18	TRS 10-minute OME Limit (9.3 ppb)	Felixton	2025/05/26 08:10	13.1	188	0.6	THS	Smut plant	652, 655, ~~670~~, **687**
19	TRS 10-minute OME Limit (9.3 ppb)	Felixton	2025/05/26 08:20	9.4	252	1.3	THS	Smut plant	652, 655, ~~670~~, **687**
20	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/29 23:00	6.9	202	1.1	THS	Smut plant	654, 660, ~~670~~, **687**
21	TRS 10-minute OME Limit (9.3 ppb)	Felixton	2025/05/29 23:20	9.7	231	1.1	THS	Smut plant	654, 660, ~~670~~, **687**
22	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/29 23:30	10.5	193	0.6	THS	Smut plant	654, 660, ~~670~~, **687**
23	TRS 10-minute OME Limit (9.3 ppb)	Felixton	2025/05/29 23:40	9.9	185	0.5	THS	Smut plant	654, 660, ~~670~~, **687**
24	TRS 10-minute OME Limit (9.3 ppb)	Felixton	2025/05/29 23:50	13.0	164	0.5	THS	Smut plant	654, 660, ~~670~~, **687**
25	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/30 00:00	6.9	239	1.6	THS	Smut plant	657, 663, ~~670~~, **687**
26	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/30 04:30	11.5	206	1.3	THS	Smut plant	657, 663, ~~670~~, **687**
27	TRS 10-minute OME Limit (9.3 ppb)	Felixton	2025/05/30 04:40	20.1	122	1.0	THS	Smut plant	657, 663, ~~670~~, **687**
28	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/31 07:30	7.5	206	1.2	THS	Smut plant	659, 662, ~~670~~, **687**
29	TRS 10-minute OME Limit (9.3 ppb)	Felixton	2025/05/31 08:00	10.3	170	0.9	THS	Smut plant	659, 662, ~~670~~, **687**
30	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Felixton	2025/05/31 08:00	13.2	126	1.1	THS	Smut plant	659, 662, ~~670~~, **687**
31	TRS 10-minute OME Limit (9.3 ppb)	Felixton	2025/05/31 08:10	23.5	124	0.9	THS	Smut plant	658, ~~670~~, **687**
32	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Richardia	2025/05/26 21:00	6.3	281	2.3	Mondi	Root cause has not yet been confirmed	655
33	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Richardia	2025/05/26 21:30	6.6	294	2.0	Mondi	Root cause has not yet been confirmed	655
34	TRS 30-minute WHO H_2S Limit (5.0 ppb)	Richardia	2025/05/30 22:30	5.2	283	2.6	Mondi	Root cause has not yet been confirmed	657, 663

Table 2: TRS Responses

Response	Industry Feedback
1	Unresolved / No Response
637	Mpact -Traven Chetty responded, (2025/05/15 07:49): The plant shift reports for the 13th of May 2025 confirms that no upset conditions occurred that could have contributed to the exceedances of TRS. Wind directions at the time were not in favour of emissions from Mpact.
638	Mondi - Kira Cobbold responded, (2025/05/16 12:44): Mondi has investigated the TRS exceedance recorded on 13 May 2025 at 23:00 at the Felixton monitoring station and believes it is unlikely that Mondi was the source. At the time of the exceedance, wind speeds were below 1 m/s and the recorded wind direction does not align with Mondi as a likely source. All point source emissions were within their specifications, and TRS levels at all Mondi monitoring stations remained low throughout the day.
642	Mpact -Traven Chetty responded, (2025/05/20 12:22): As per below exceedance, we have investigated this, and our plant shift reports confirm that no upset conditions occurred on the 19/05/25 that could have contributed to the TRS exceedance. The wind direction at the time was not in favour of emissions from Mpact.
645	Mpact -Traven Chetty responded, (2025/05/21 15:50): "... we have investigated this, and our shift reports confirm no upset conditions were experienced at the plant on 20/05/25 that could have contributed to this TRS exceedance. Furthermore, the wind direction at the time was not in favour of emissions from Mpact. "
647	Mondi - Kira Cobbold responded, (2025/05/22 12:54):Mondi has investigated the TRS exceedances recorded at Felixton on 21 May 2025 where the strong south-westerly wind direction indicates Mondi is unlikely the source. All Mondi stack emissions were also found to be well within specification.
648	Mpact -Traven Chetty responded, (2025/05/22 14:33): We have investigated this, and our daily shift reports confirm no upset conditions were experienced at the plant on 21/05/25 which could have contributed to this TRS exceedance. The wind direction was also not in favour of emissions from Mpact.
650	Mondi - Kira Cobbold responded, (2025/05/23 11:33): Mondi has investigated the TRS exceedance recorded at Felixton on 19/05/2025. Based on the wind speed and easterly/north easterly wind direction, Mondi is the likely source. At 12:26pm, a trip in the Lime Kiln burning zone resulted in NCGs being temporarily vented through the carbon filter. Gases were redirected to the RB1 flare and, once stable, routed back to the Lime Kiln for incineration. The carbon filter vent would have been a high-level odour source, which may explain why no Mondi ambient TRS monitoring stations recorded an increase. Mondi is currently developing a new burning zone management plan to reduce switching between NCG burning zones.
651	Mondi - Kira Cobbold responded, (2025/05/23 11:57): Mondi investigated the TRS exceedance recorded at eSikhaleni on 20/05/2025 and based on the wind speed and northerly wind direction, Mondi is a likely source. Increased H_2S levels were recorded at the effluent stack prior to the incident which suggests that odour may have been released from the Secondary Effluent Treatment Plant (SETP) causing the exceedance at eSikhaleni.
652	Mpact -Traven Chetty responded, (2025/05/27 15:12): Mpact has conducted an investigation into this exceedance and based on shift report and plant conditions, there were no abnormal activities on 26/05/25 and operation were stable. It is thus unlikely that Mpact is the source of this TRS exceedance.
653	Mpact -Traven Chetty responded, (2025/05/27 15:20): Mpact has conducted an investigation into this exceedance and based on shift reports and plant conditions, there were no abnormal activities/conditions on 26/05/25 and operation were stable during the time of this exceedance. It is thus unlikely that Mpact is the source of this TRS exceedance at the Felixton and eSikhaleni stations
654	Mpact -Traven Chetty responded, (2025/05/30 11:16): Our process plant shift reports indicated that the plant was running well and under stable conditions yesterday 29th of May 2025. Furthermore the wind direction was not in favour of emissions from Mpact for eSikhaleni and Felixton stations. Mpact -Traven Chetty responded, (2025/05/30 11:17): Based on our investigation, our process plant shift reports indicated that the plant was running well and under stable conditions yesterday 29th of May 2025. Furthermore the wind direction was not in favour of emissions from Mpact for eSikhaleni and Felixton stations.
655	Mondi - Kira Cobbold responded, (2025/06/02 11:22): Mondi has investigated the TRS exceedances recorded on 26 May 2025. The exceedances at Richardia and CBD are accepted based on wind direction data and alignment with four odour complaints received that evening. As a precaution, the Secondary Effluent Treatment Plant (SETP) was switched off, and all odour checklists were completed. However, the root cause of the odour has not yet been confirmed. Following a detailed investigation, Mondi suspects the odour may be due to a leak on the non-condensable gas (NCG) line. Although no evidence of a leak has been found so far, Mondi continues to monitor odour-generating plants and conduct regular walk-throughs of gas lines to locate any potential leaks. A full investigation report covering these complaints has been submitted to the RBCAA. Regarding the eSikhaleni and Felixton exceedances, Mondi believes it is unlikely to be the source due to the very low wind speeds and varying wind direction that does not favour Mondi as the likely source. Additionally, all point source parameters were found to be within specification before the exceedances occurred.
657	Mpact -Traven Chetty responded, (2025/06/02 14:14): Our process plant shift reports indicated that the plant was running well and under stable conditions on 30th of May 2025. Furthermore the wind direction was not in favour of emissions from Mpact.

Response	Industry Feedback
658	Mpact -Traven Chetty responded, (2025/06/02 14:47): Our process plant shift reports indicated that the plant was running well and under stable conditions on 31st of May 2025. Based on our investigations, it is highly unlikely that Mpact would have contributed to the spike in TRS values.
659	Mpact -Traven Chetty responded, (2025/06/03 07:22): Our process plant shift reports indicated that the plant was running well and under stable conditions on 31st of May 2025. Based on our investigations, it is unlikely that Mpact would have contributed to this exceedance as the wind direction was also not in favour of emissions from Mpact.
660	Mondi - Kira Cobbold responded, (2025/06/02 14:58): Mondi has investigated the TRS exceedances recorded on 29 May 2025. Based on wind direction at the time, Mondi is considered a likely source of the eSikhaleni exceedances. However, no root cause has been identified as all Mondi weather stations remained on low levels and all point source parameters were within specification. Mondi is unlikely to be the source of the Felixton exceedances, as the wind direction at the time does not support Mondi as the origin. Mondi continues to conduct regular walk-throughs along the non-condensable gas (NCG) lines to check for possible leaks and is working closely with the odour abatement task team to improve odour management at the mill.
662	Mondi - Kira Cobbold responded, (2025/06/02 14:58): Mondi has investigated the exceedances that took place in Felixton on 31/05/25 and based on low wind speeds and westerly/north westerly wind direction blowing prior to the exceedances, believe that Mondi is unlikely the source. Additionally, all Mondi monitoring stations remained on low levels and all stack emissions remained well within their compliance limits.
663	Mondi - Kira Cobbold responded, (2025/06/03 12:00): The TRS exceedances that occurred in Felixton on 30/05/25 were unlikely due to Mondi based on wind direction. The exceedance that occurred in Richardia on 30/05/25 was likely due to Mondi based on wind speed and direction, as well as elevated TRS levels recorded at the Alton and portable Mondi stations prior to the exceedance. Mondi has not identified a root cause for these exceedances as yet but continues to monitor our stations and dashboards closely in order to determine potential odour sources throughout the mill. Plant walks have also been conducted in order to locate any leaks on the non-condensable gas line.
670	~~Tongaat Hulett - Nicolas Govender responded (2025/06/10 15:41): Hi Sandy kindly see feedback below;~~ ~~Line 2576 - Effluent plant was withing normal operations, pH was within specs, therefore it is unlikely that TH contributed to the exceedance. There was also an East wind direction on the day.~~ ~~Line 2583 – 2584 ; Effluent was stable, the Factory was starting up with crushing season. There was no abnormal activities that may have caused these exceedances.~~ ~~Line 2586 to 2603; Effluent plant has been stable and trending very well with good pH's during this period, it is unlikely that TH contributed to these exceedances.~~ ~~Lines 2622 to 2631; Effluent plant has been stable and trending very well with good pH's during this period, it is unlikely that TH contributed to these exceedances. Wind direction was also noted to be N / NE.~~ ~~Lines 2632 to 2659; Boilers did experience abnormal conditions which included using more coal, this created an upset condition in the clarifiers. It is likely that TH contributed to these exceedances. If there is any further clarity required kindly contact us.~~
687	Tongaat Hulett - Nicolas Govender responded (2025/06/23 11:21): Kindly see responses below: Line 2576 – No abnormalities were noted at the effluent plant during this period, highly unlikely that TH contributed. Line 2583 to 2584 – The factory had just started up using coal, challenges were expected, TH may have contributed to exceedances. Line 2586 to 2603 – High volumes of smuts water was being generated, this may have contributed to the exceedances. Lines 2622 to 2631 – High volumes of smuts water was being generated, this may have contributed to the exceedances. Lines 2632 to 2659 – The high volumes from clarifiers have impacted the effluent dams and caused the exceedances.


AIMS