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ARGOS Scientific

# Ambient Air Quality Monitoring Report for Saldanha Bay and Vredenburg Sites – Q3 2025

July to September 2025

Prepared for

**Saldanha Bay Municipality**

## EXECUTIVE SUMMARY

This report covers data from the Saldanha Bay and Vredenburg Air Quality Monitoring stations which have been commissioned and operated throughout the Saldanha Bay Municipality Area by Argos Scientific Africa (Pty) Ltd since 2015 and by Skyside South Africa (Pty) Ltd since September 2024.

This report covers activities during Q3 (July to September) of 2025.

The average data collection for Q3 at the Saldanha Bay Site was >95% for all pollutants during the Q3 period. There was no PM analyser data due to damaged equipment.

The average data collection for Q3 at the Vredenburg Site was >99% for Ozone, while the SO2 and NOx analysers are pending air conditioner replacement.

Meteorological conditions were only available for August and September 2025 and were characterised by moderate to strong southerly (S) winds with light to moderate north-westerly (NW) bias, especially during August with an occurrence of 3% to 5% calm conditions..

## REPORT DETAILS

| | |
|---|---|
| Reference | AQ344/SBM/2025Q3 |
| Report Title | Ambient Air Quality Monitoring Report for Saldanha Bay and Vredenburg Sites – Q3 2025 : July to September 2025 |
| Date Submitted | 24 October 2025 |
| Client | René Toesie<br>Saldanha Bay Municipality<br>Pick and Pay Centre<br>VREDENBURG<br><br>E-mail: rene.toesie@sbm.gov.za |
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| Signed | *DR* |
| Technical signatory | Grant Ravenscroft (Technical Signatory)<br>Signed:  |
| Status | Final |
| Notice | |

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# 1 INTRODUCTION AND BACKGROUND

## 1.1 SCOPE OF WORK

This project covers the communications, data processing and reporting for two Air Quality Monitoring (AQM) Stations in the Saldanha Bay Municipality Area. Argos Scientific's understanding of the scope of work is as follows:

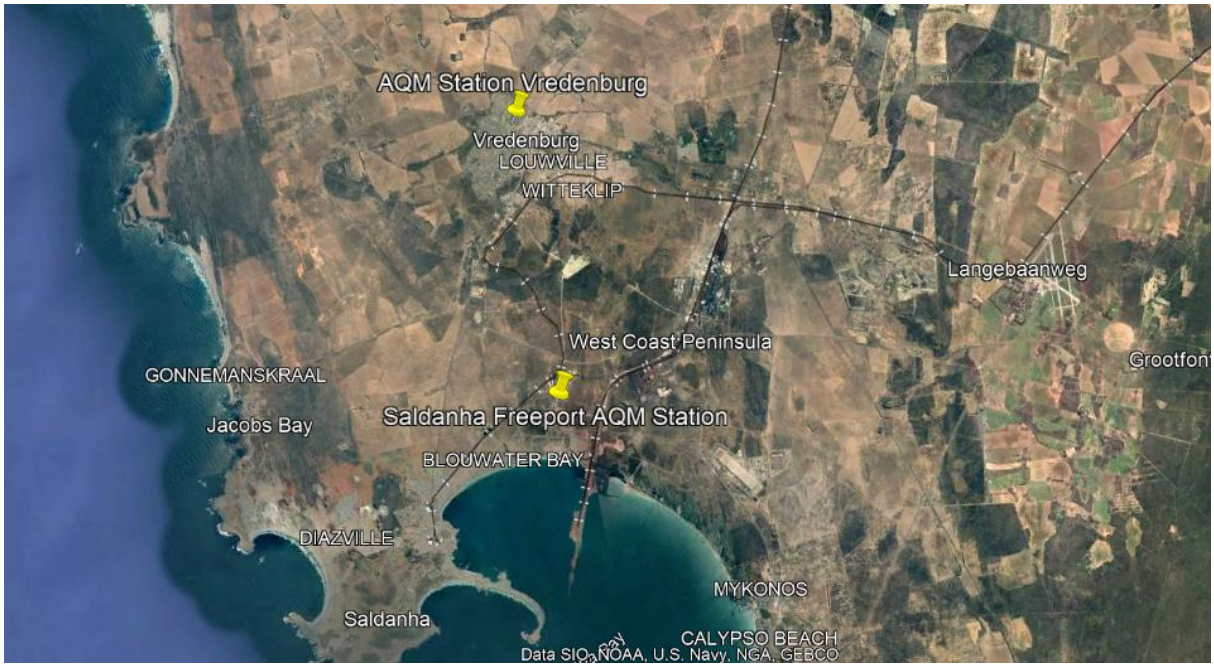
- Establish 3G communications from ambient air quality monitoring station loggers (PC with Linux Operating System) via 2G/3G modem to a centralised server.
- Provide SIM cards for 2G/3G modems.
- Ensure communication support stations and server.
- Provide real-time access to raw data and validated data from SBM offices.
- Provide real-time downloading of raw data and validated data from SBM offices.

Submission of monthly reports for each monitoring station, including data graphs, exceedance graphs, meteorology, analysis and station status.

## 1.2 PROJECT DESCRIPTION

This report evaluates data collected from the Saldanha Bay and Vredenburg Air Quality Monitoring Station. The Saldanha Bay station is located at 32°58'56.16"S, 17°59'21.57"E, at Freeport Saldanha to the north-east (NE) of the town of Saldanha and the Vredenburg station is located at 32°54'6.20"S, 17°59'31.94"E, to the north-east (NE) of the town of Vredenburg. These sites meet all the requirements as outlined in the US EPA's "Quality Assurance Handbook for Air Pollution Measurement Systems" and "SANS 1929" report.

**Figure 1.2-1 Location of the Air Quality Monitoring Stations at Saldanha Bay & Vredenburg**



# 2 GUIDELINES AND AIR QUALITY STANDARDS

The National Department of Forestry, Fisheries and the Environment (DFFE)) standards for air pollutants as listed in the Government Gazette No.32816, published 24 December 2009 and subsequent revisions, are listed in Table 2-1 below.

**Table 2.1 National Ambient Air Quality Standards for $SO_2$, $NO_2$, $O_3$ and PM-10**

| Pollutant | $SO_2$ | $SO_2$ | $NO_2$ | $O_3$ | PM-10 | PM-2.5 |
|---|---|---|---|---|---|---|
| Period | 10 minute | 1 hour | 1 hour | 8 hour | 1 day | 1 day |
| RSA AQ Standard | 191ppb | 48ppb | 106ppb | 61ppb | 75 µg/m$^3$ | 40 µg/m$^3$ |

# 3 METHODOLOGY

## 3.1 AMBIENT AIR QUALITY

Ambient concentrations of sulphur dioxide, oxides of nitrogen (NO, $NO_2$ and $NO_X$), ozone, and particulates less than 10 µm in diameter (PM-10 & PM-2.5) are measured at the Saldanha Bay monitoring site and Vredenburg monitoring site in accordance with the latest National Ambient Air Quality Standards (as above) and SANS standard methods.

## 3.2 DATA CAPTURE

Data is analysed for completeness against a required standard of 90% and presented in table form below.

**Table 3.2-1 Percentage Data Capture at Saldanha Bay from July to September 2025**

| Pollutant\Station | Saldanha Bay | Vredenburg |
|---|---|---|
| Nitrogen Dioxide | 95.3% | 0% |
| Ozone | 95.2% | 99.8% |
| PM-10 | 0% | 0% |
| PM-2.5 | 0% | 0% |
| Sulphur Dioxide | 95.0% | 0% |

# 4 RESULTS

## 4.1 AMBIENT AIR QUALITY TRENDS (SALDANHA BAY)

A graphical summary of pollutants at Saldanha Bay for July to September 2025, is provided in Figure 4-1-1 to Figure 4.1-5 below.

**Figure 4.1-1 Daily mean $SO_2$ concentrations during the 3rd Quarter of 2025 - Saldanha**

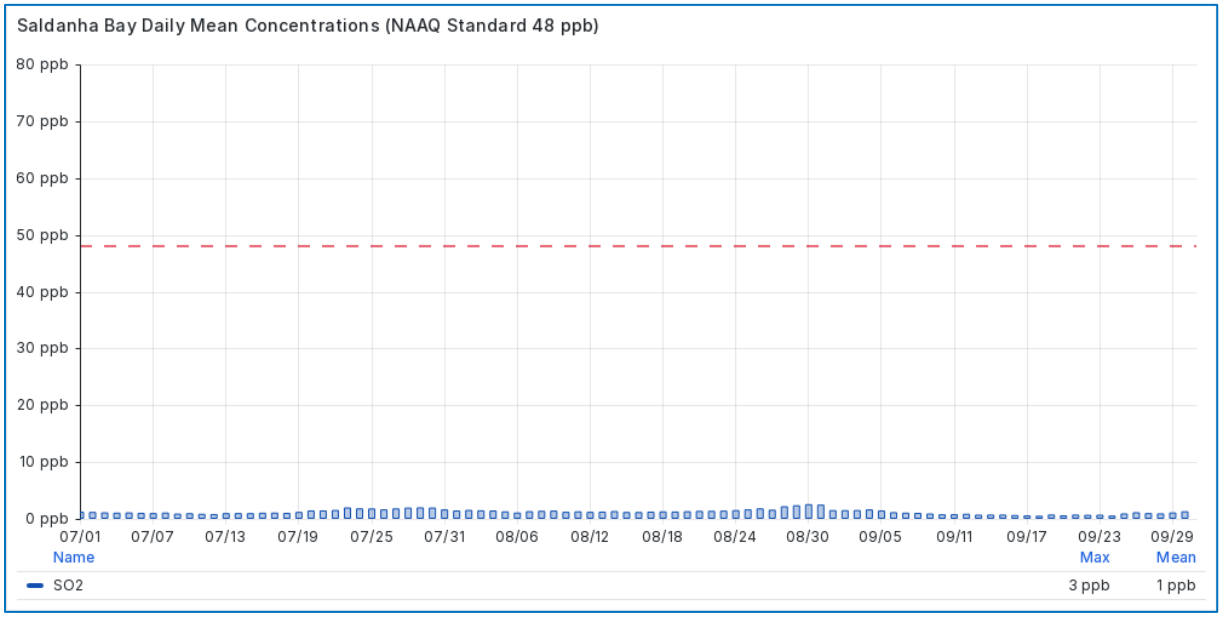



**Figure 4.1-2 Hourly Mean $SO_2$ concentrations during the 3rd Quarter of 2025 - Saldanha**

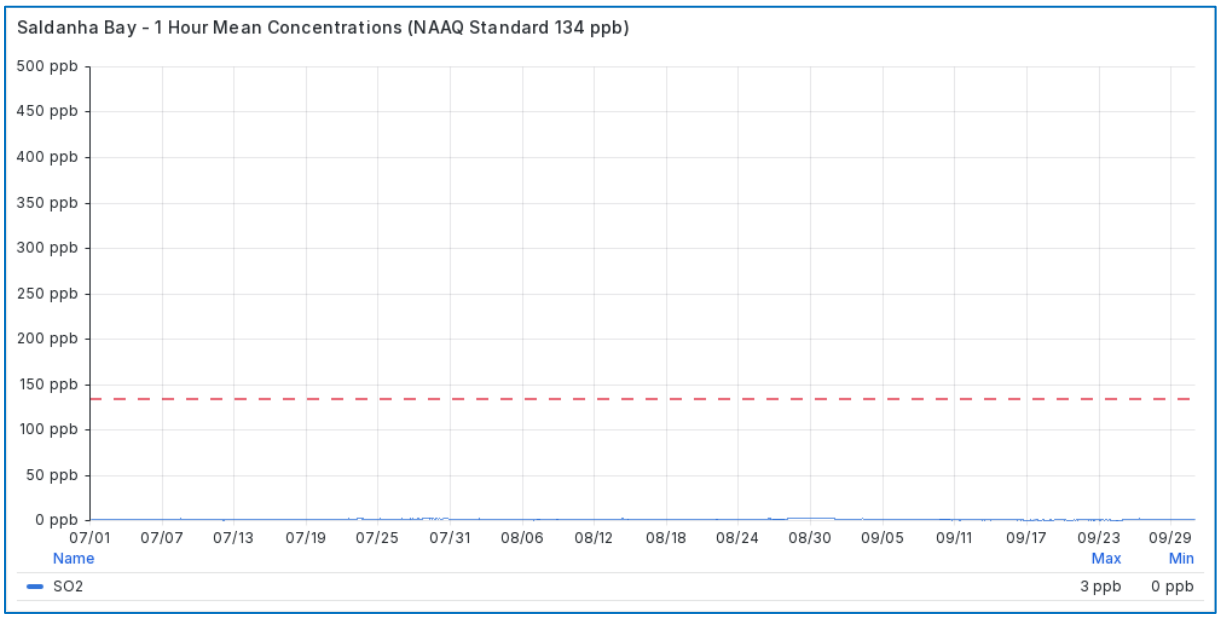


**Figure 4.1-3 Daily Mean $NO_x$ concentrations during the 3rd Quarter of 2025 - Saldanha**

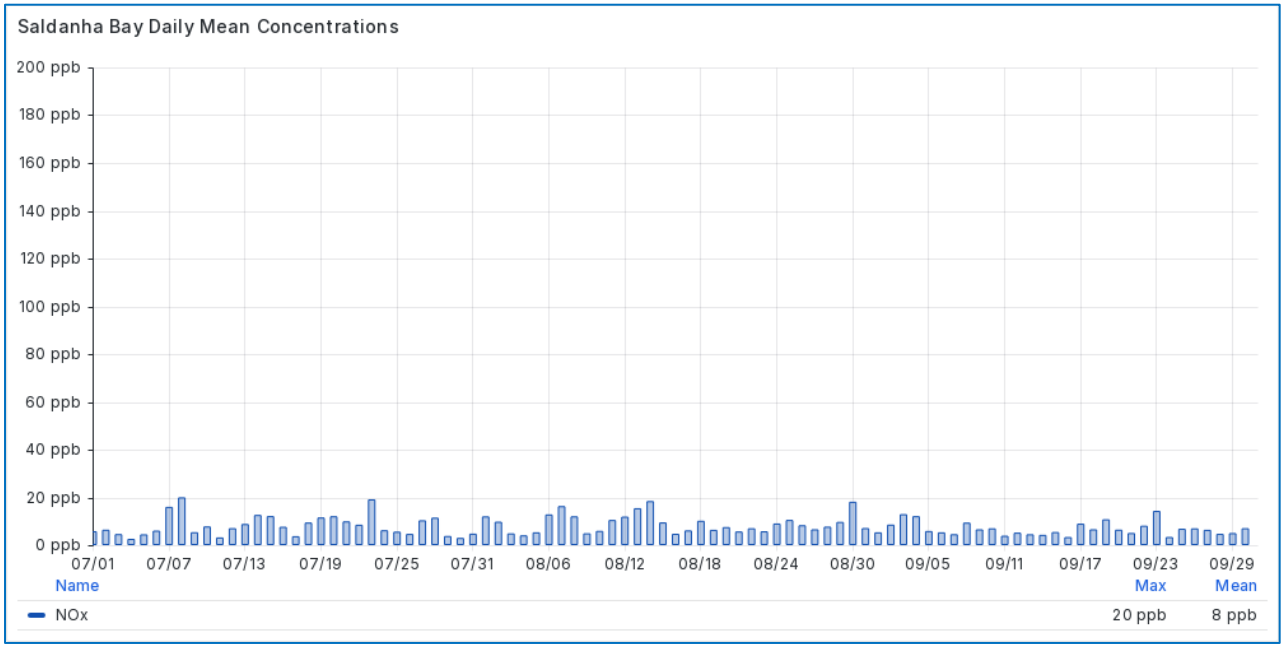



**Figure 4.1-4 Hourly $NO_2$ concentrations during the 3rd Quarter of 2025 – Saldanha**

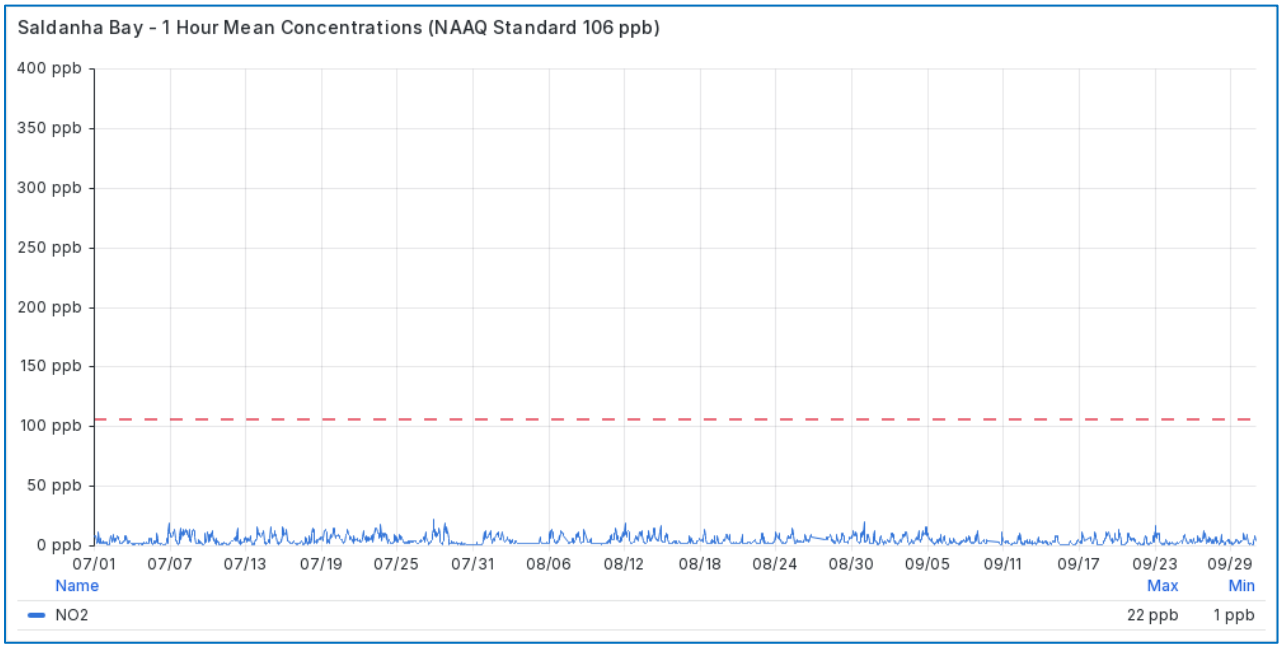
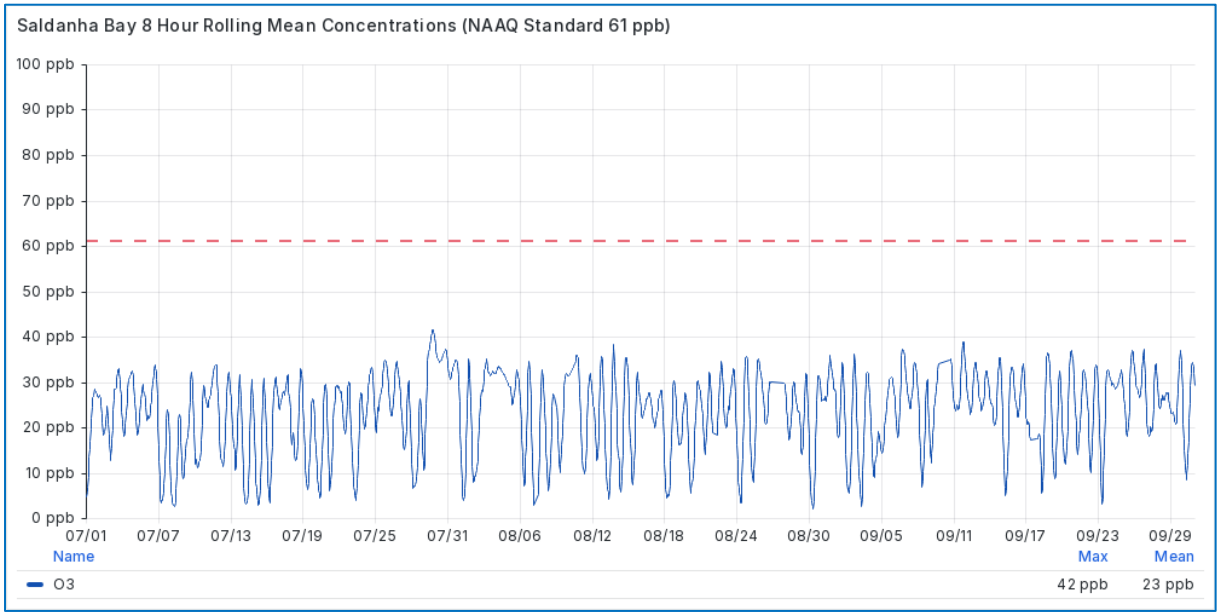


**Figure 4.1-5 Running Eight Hourly $O_3$ concentrations during the 3rd Quarter of 2025 - Saldanha**



## 4.2 AMBIENT AIR QUALITY TRENDS (VREDENBURG)

A graphical summary of pollutants at Vredenburg for July to September 2025 is provided in Figure 4.2-1 to Figure 4.2-3 below.

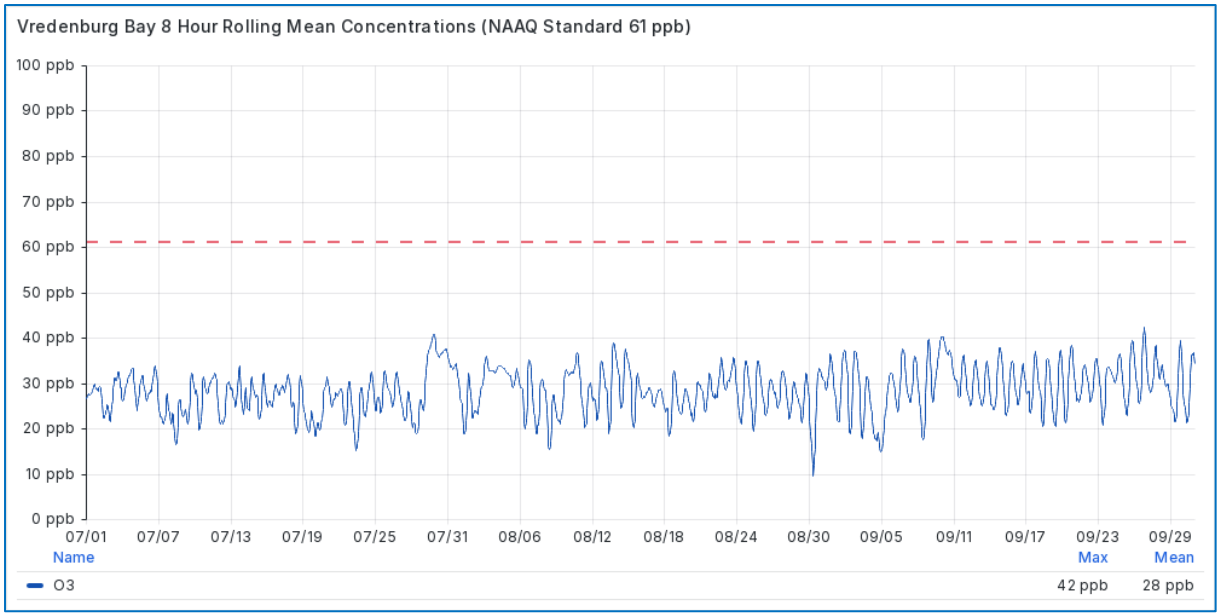
**Figure 4.2-1 Daily mean $SO_2$ concentrations during the 3rd Quarter of 2025**

No data for Q3 due to equipment being under repair

**Figure 4.2-2 Daily maximum $NO_2$ concentrations during the 3rd Quarter of 2025**

No data for Q3 due to equipment being under repair

**Figure 4.2-3 Running Eight Hourly O3 concentrations during the 3rdQuarter of 2025 - Vredenburg**



## 4.3 COMPLIANCE

**Table 4.3-1 Compliance with National Ambient Air Quality Standards**

| Pollutant | Saldanha | Vredenburg | Averaging Period | NAAQ Standard |
|---|---|---|---|---|
| Sulphur Dioxide | 0 | 0 | 10 minutes | 191 |
| Sulphur Dioxide | 0 | 0 | 1 hour | 134 |
| Sulphur Dioxide | 0 | 0 | 24 hour | 48 |
| Nitrogen Dioxide | 0 | 0 | 1 hour | 106 |
| Ozone | 0 | 0 | 8 hour | 61 |
| PM-10 | 0 | 0 | 24 hour | 75 |
| PM-2.5 | 0 | 0 | 24 hour | 40 |

## 4.4 MEAN AND MAXIMUM CONCENTRATIONS

**Table 4.4-1 Mean and Max Pollutant Concentrations at Saldanha Bay & Vredenburg for the Q3 period 2025**

| Pollutant | Saldanha | Vredenburg | Averaging Period |
|---|---|---|---|
| Sulphur Dioxide | 1 | - | Monthly Mean (ppb) |
| Sulphur Dioxide | 3 | - | 24 Hour Avg Maximum (ppb) |
| Sulphur Dioxide | 3 | - | 1 Hour Avg Maximum (ppb) |
| Nitrogen Dioxide | 5 | - | Monthly Mean (ppb) |
| Nitrogen Dioxide | 10 | - | 24 Hour Avg Maximum (ppb) |
| Nitrogen Dioxide | 22 | - | 1 Hour Avg Maximum (ppb) |
| Ozone | 23 | 28 | Monthly Mean (ppb) |
| Ozone | 37 | 38 | 24 Hour Avg Maximum (ppb) |
| Ozone | 44 | 49 | 1 Hour Avg Maximum (ppb) |
| PM-10 | - | - | Monthly Mean (µg/m³) |
| PM-10 | - | - | 24 Hour Avg Maximum (µg/m³) |
| PM-10 | - | - | 1 Hour Avg Maximum (µg/m³) |
| PM-2.5 | - | - | Monthly Mean (µg/m³) |
| PM-2.5 | - | - | 24 Hour Avg Maximum (µg/m³) |
| PM-2.5 | - | - | 1 Hour Avg Maximum (µg/m³) |

## 4.5 DIURNAL TRENDS

Diurnal trends are indicated in Figure 4.5-1 and Figure 4.4-2 below. Trends are only shown for those stations where overall data capture was above 50%, which is considered representative enough for providing an indication of diurnal trends.

**Figure 4.5-1 Diurnal trend for Saldanha Bay during the 3rd Quarter of 2025**

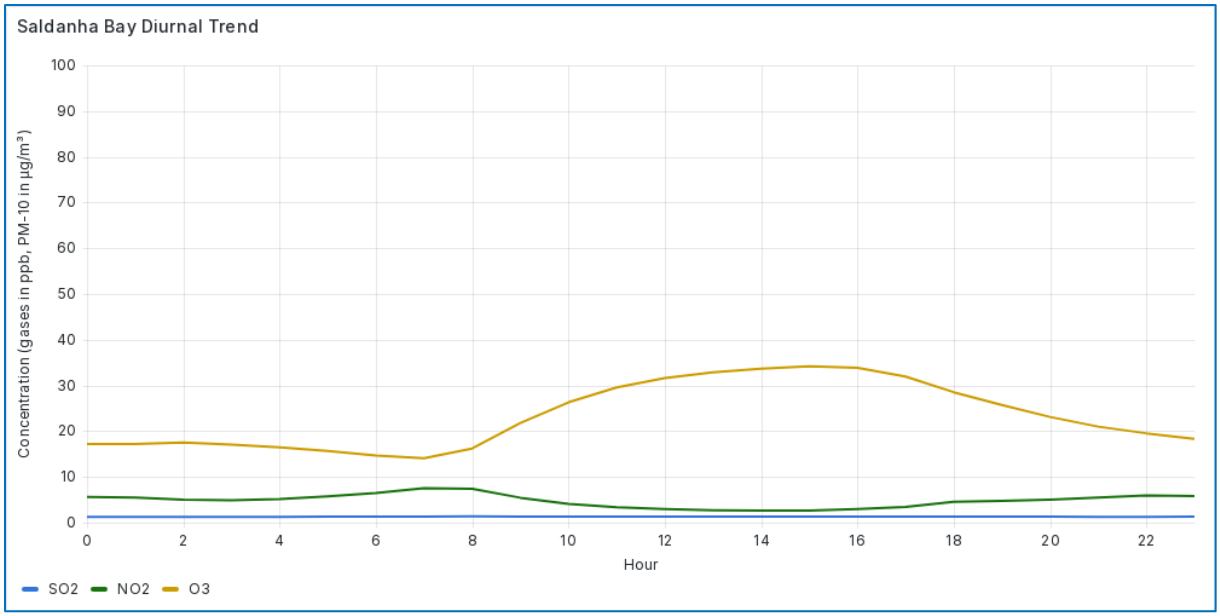
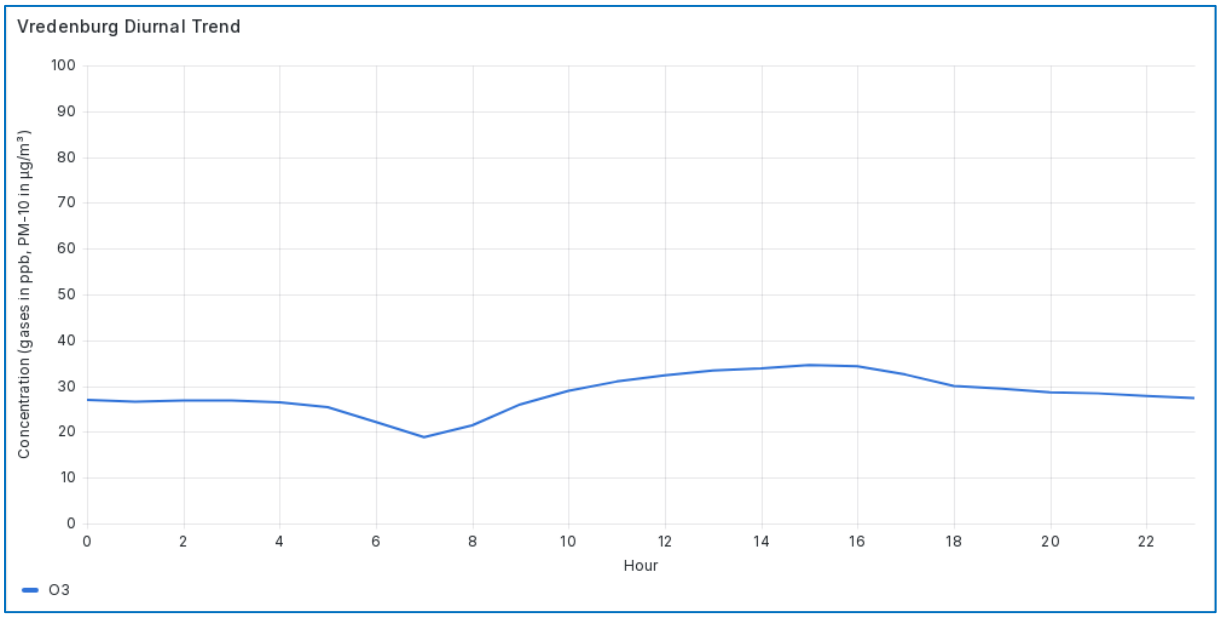
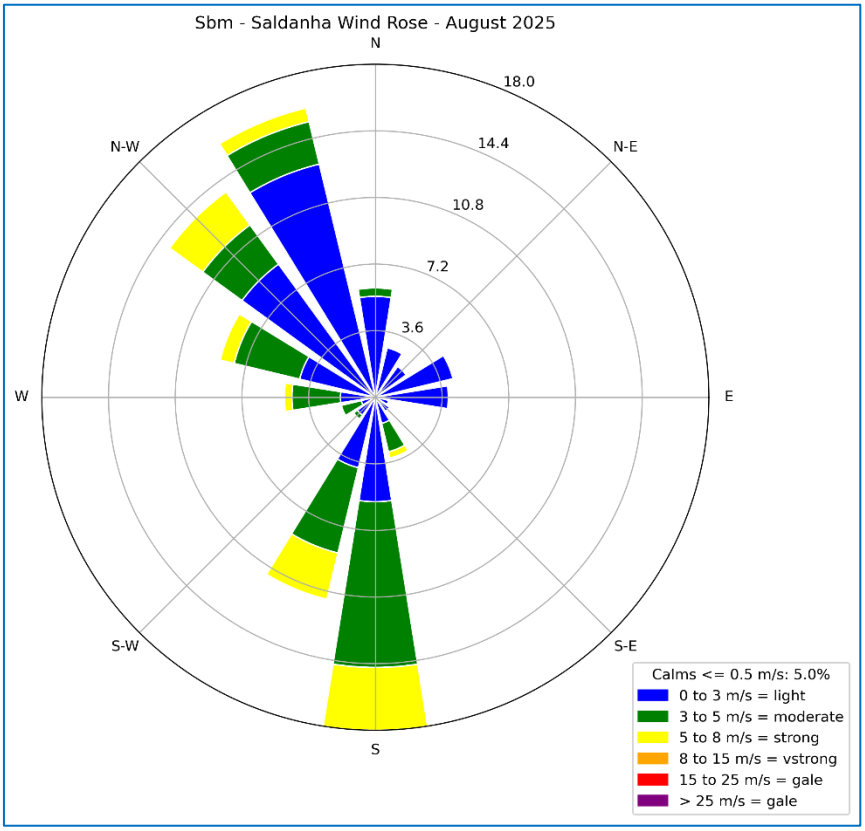


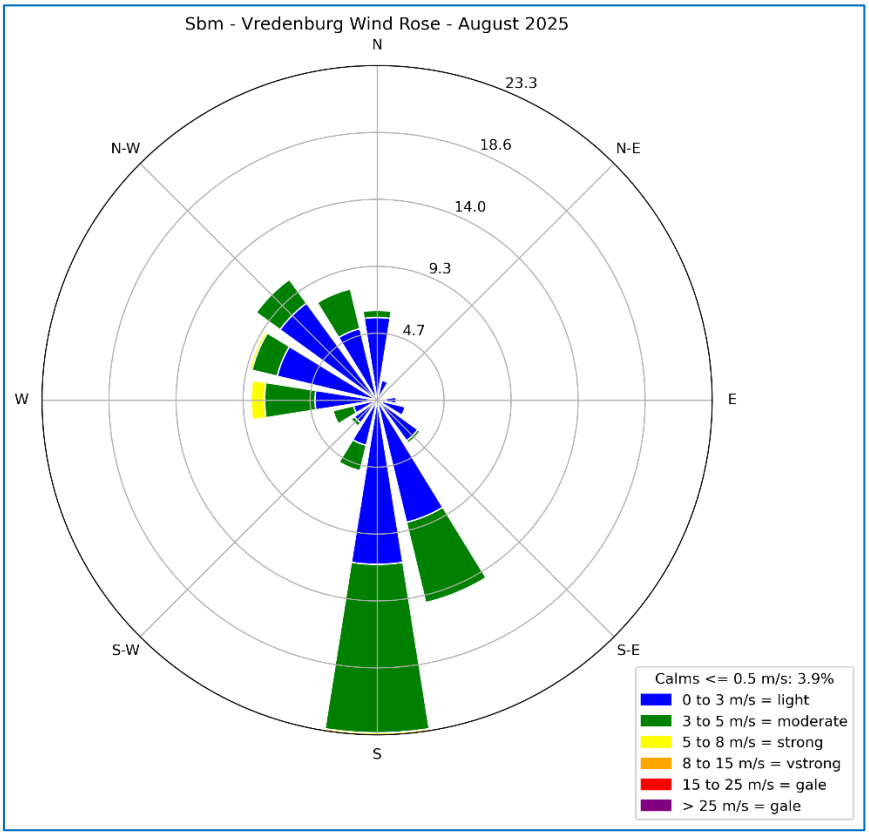

**Figure 4.5-2 Diurnal trend for Vredenburg during the 3rd Quarter of 2025**

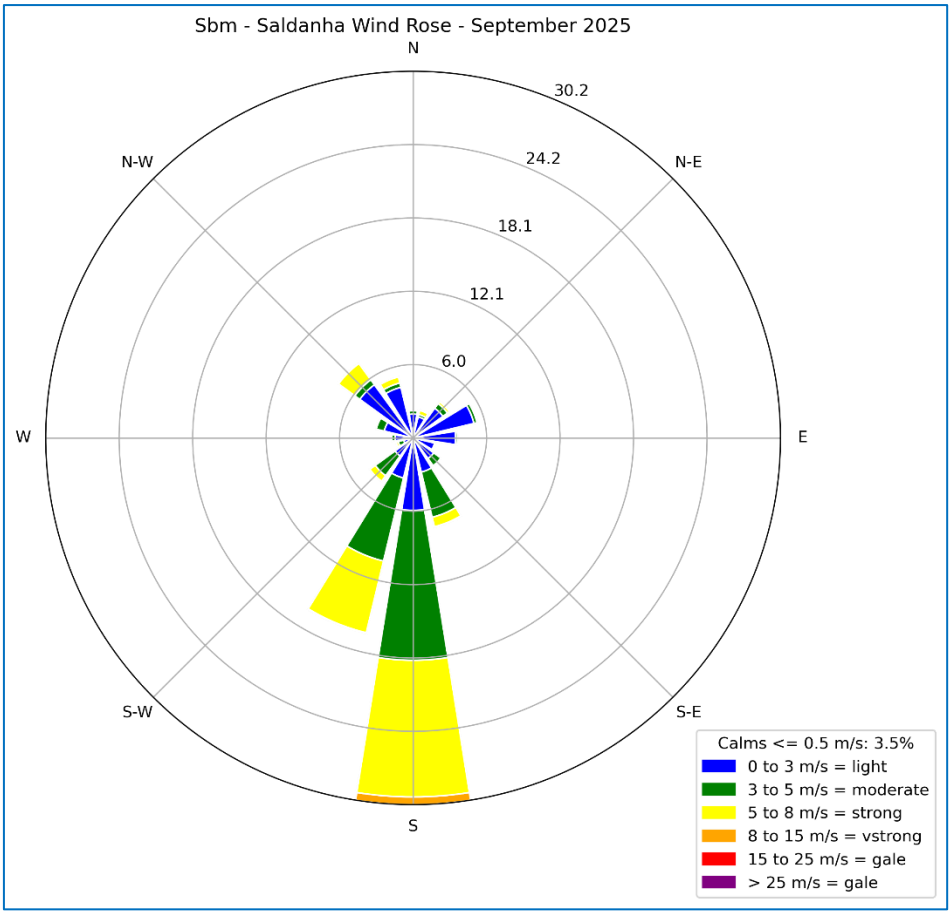


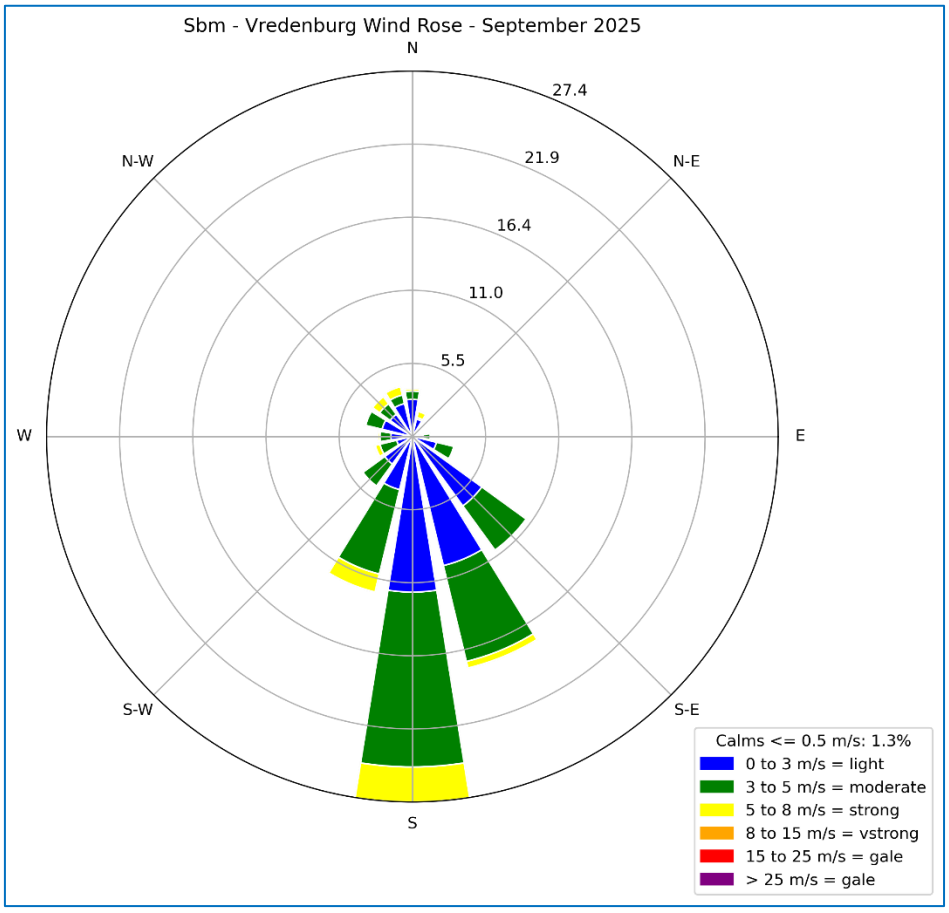
## 4.6 WIND ROSES

The wind roses for Saldana Bay or Vredenburg AQM Stations for the month of July was not available at the time of reporting.




Sbm - Saldanha Wind Rose - September 2025
N
N-E
E
S-E
S
S-W
W
N-W
30.2
24.2
18.1
12.1
6.0
Calms <= 0.5 m/s: 3.5%
0 to 3 m/s = light
3 to 5 m/s = moderate
5 to 8 m/s = strong
8 to 15 m/s = vstrong
15 to 25 m/s = gale
> 25 m/s = gale


Sbm - Vredenburg Wind Rose - September 2025
N
N-E
E
S-E
S
S-W
W
N-W
27.4
21.9
16.4
11.0
5.5
Calms <= 0.5 m/s: 1.3%
0 to 3 m/s = light
3 to 5 m/s = moderate
5 to 8 m/s = strong
8 to 15 m/s = vstrong
15 to 25 m/s = gale
> 25 m/s = gale

# 5 CONCLUSIONS AND RECOMMENDATIONS

This report covers activities during Q3 (July to September) of 2025.

- The average data collection for Q3 at the Saldanha Bay Site was >95% for all pollutants during the Q3 period. There was no PM analyser data due to damaged equipment.
- The average data collection for Q3 at the Vredenburg Site was >99% for Ozone, while the SO2 and NOx analysers are pending air conditioner replacement.

Meteorological conditions were only available for August and September 2025 and were characterised by moderate to strong southerly (S) winds with light to moderate north-westerly (NW) bias, especially during August with an occurrence of 3% to 5% calm conditions.

Additional data is available in the individual monthly reports.

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