



T0107

Draft Summary Monthly Report:

February 2007

Prepared for

RBCAA

AQ002

16 March 2007



REPORT DETAILS

REFERENCE	AQ002
REPORT TITLE	Monthly report: February 2007
DATE SUBMITTED	16 March 2007
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STATUS	Final
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EXECUTIVE SUMMARY

A summary of the RBCAA monthly report for February 2007 is presented. The ambient air monitoring system as maintained by Ecoserv is accredited to ISO 17025:2005 by the South African National Accreditation Service (SANAS) for the measurement of SO₂ and PM₁₀. Measurement of other pollutants reported does not fall within this accreditation. The applicable quality controls and measurement methods are listed in Appendix 1. No HAWK model data is presented in this summary.

SO₂ guideline exceedances

There were six measured exceedances of the DEAT 10-min average standard and two exceedances of the hourly SANS limit value for SO₂ during the reporting period which is listed below.

DEAT 10-min average exceedances (> 191 ppb)					
Station	Date	SO ₂ (ppb)	Wind direction (°)	Wind speed (m/s)	Most likely source
Scorpio	17/02/2007 21:10	252.6	18.8	1.3	Hillside Aluminium
Scorpio	17/02/2007 21:20	208.3	4.2	1.5	Hillside Aluminium
Scorpio	17/02/2007 21:30	233.4	19.9	1.3	Hillside Aluminium
Scorpio	17/02/2007 21:40	219.1	16.3	1.8	Hillside Aluminium
Scorpio	17/02/2007 21:50	232.4	3.5	1.7	Hillside Aluminium
Scorpio	17/02/2007 22:00	192.9	22.4	1.7	Hillside Aluminium

SANS hourly average exceedances (> 134 ppb)					
Station	Date	SO ₂ (ppb)	Wind direction (°)	Wind speed (m/s)	Most likely source
Scorpio	17/02/2007 21:00	205.1	14.5	1.6	Hillside Aluminium
Scorpio	17/02/2007 22:00	141.1	4.3	1.4	Hillside Aluminium

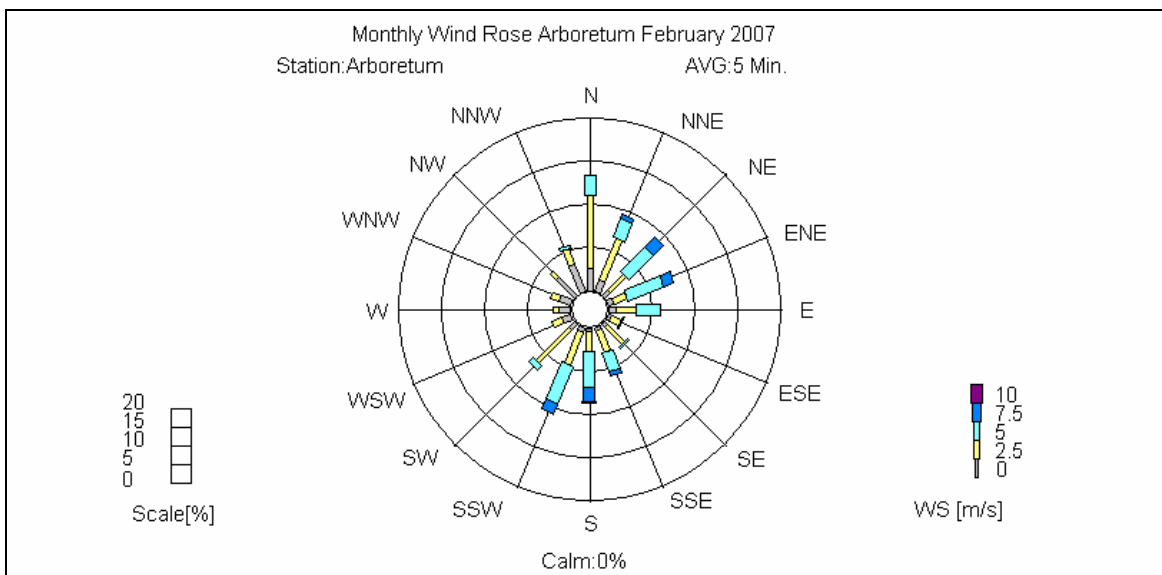
Monthly average SO₂ concentrations

Arboretum	3.2 ppb
Harbour West:	4.5. ppb
Brackenham:	3.1 ppb
CBD:	3.6 ppb
Scorpio:	6.3 ppb

Summary of SO₂ data for February 2007

Station	Data availability	10-min average max	Max % of 10-min av. standard	No. of 10-min av exceed-ances	Hourly average max	No. of hourly av exceed-ances	Daily average max	Max % of daily av. standard	Monthly average
Arboretum	88.5	60.3	32%	0	41.4	0	9.4	20%	3.2
Brackenham	99.1	83.3	44%	0	24.5	0	7.0	15%	3.1
CBD	96.1	92.8	49%	0	70.1	0	21.4	11%	3.6
Scorpio	92.9	252.6	132%	6	205.1	2	22.4	12%	6.3
Harbour West	82.4	123.2	65%	0	46.4	0	15.1	8%	4.5

Wind rose for Arboretum for February 2007

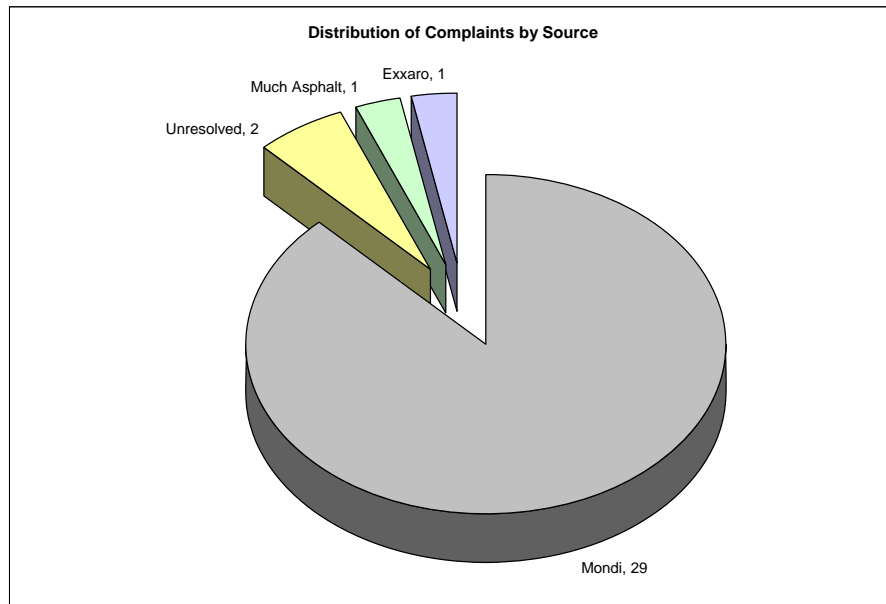


Winds blew predominantly from the north to NE and south to SSW. Wind speeds were stronger from the SSW to south, associated with the passage of coastal lows and cold fronts and from the north-east, associated with high pressure offshore.

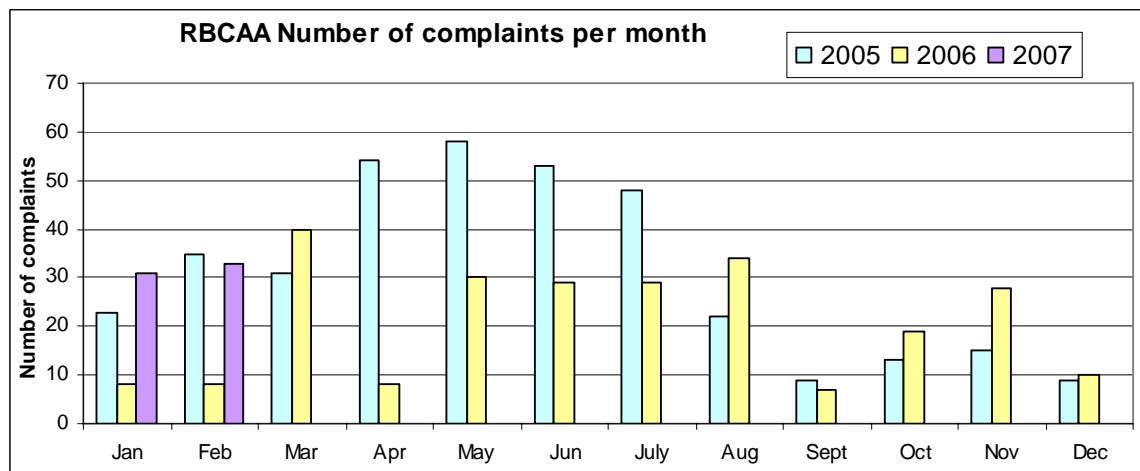
Air quality complaints

A total of 33 air quality complaints were received for the month. The distribution by source is given below and the historical count of complaints by month is also reflected.

Air quality complaints by source



Comparison of number of air quality complaints per month



TRS data

Total reduced sulphur measurements give an indication of odours. TRS data from the CBD station is presented section 5.

Ozone data

Ozone measurements from the Brackenheim station are presented in section 5. There were no standard exceedances, with the maximum hourly average of 51.5 ppb being only 43% and 50% of the NEMAQA and SANS hourly average limits, respectively.

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1 INTRODUCTION

This report summarises the sulphur dioxide (SO₂) monitoring data gathered by the RBCAA monitoring network for the month of February 2007. The SO₂ monitoring network consists of five monitoring stations situated at Brackenham, Arboretum, Harbour West, Scorpio (intersection of John Ross Highway and West Central Arterial) and CBD situated near the Municipal building. The measured results pertain to instantaneous samples drawn from air passing the above fixed stations, and care should be taken when extrapolating these results to surrounding areas. All results are reported at standard temperature and pressure.

The ambient air monitoring system as maintained by Ecoserv is accredited to ISO 17025:2005 by the South African National Accreditation Service (SANAS) for the measurement of SO₂ and PM₁₀. Measurement of other pollutants reported does not fall within this accreditation. The applicable quality controls and measurement methods are listed in Appendix 1.

It is the intention of this report to highlight certain incidents and exceedances of air quality standards. The National Environment Management Air Quality Act, Schedule 2 standards for SO₂ (Act 39 of 2004, published 24 February 2006) are listed in Table 1.

TABLE 1 : NATIONAL AMBIENT AIR QUALITY STANDARDS				
Pollutant	10-minute average	1-hour average*	24-hour average	Annual average
Sulphur dioxide (SO ₂)	191 ppb	134 ppb	48 ppb	19 ppb

* SANS 1929 Standard published by DEAT 9 June 2006 for comment

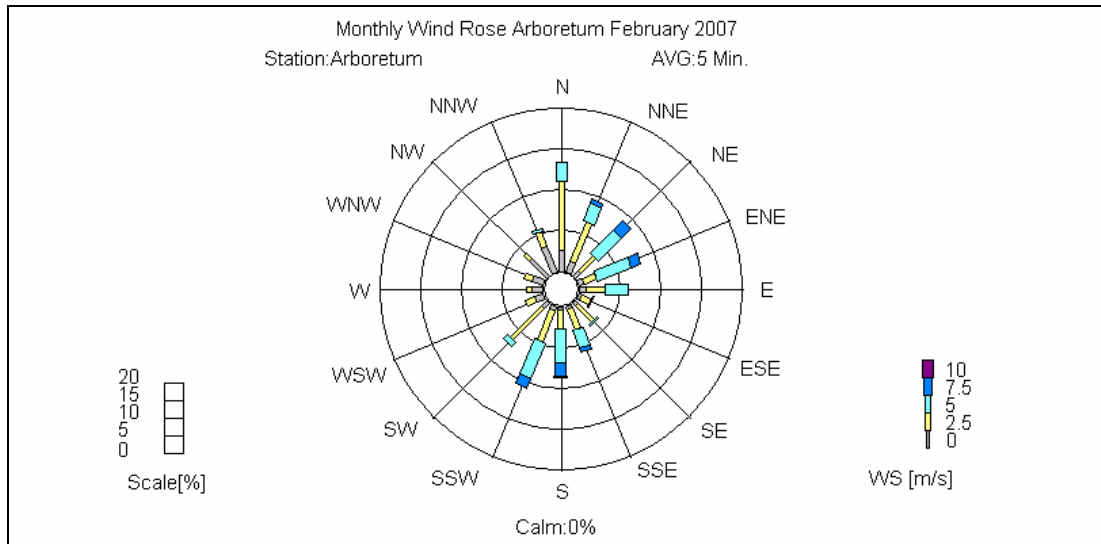
Additional pollutants measured as part of the RBCAA monitoring programme include total reduced sulphurs (TRS) at the CBD station and ozone (O₃) measured at the Brackenham station, the results of which are presented in Appendix 5 of this report.

No HAWK model data is presented in this summary report but will be issued with the final monthly report.

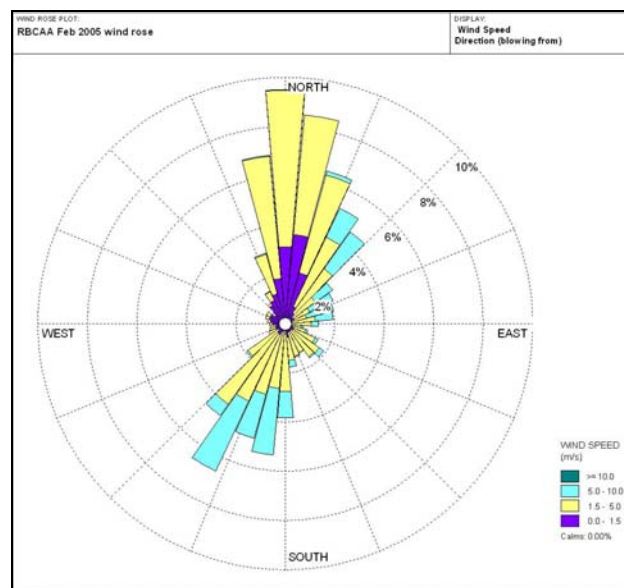
2 PREVAILING WIND CONDITIONS

Figure 2.1: 5-minute average wind rose for the Arboretum station for February 2007, with comparison to the previous year.

(a) Arboretum February 2007 (Average wind speed = 0.4m/s)



(b) Arboretum February 2006



The wind pattern for February 2007 was similar to the previous year, although average wind speeds were lower during February this year. Winds blew predominantly from the south to SSW and north to north-east, with higher wind speeds being recorded from the SSW to south, associated with the passage of coastal lows and cold fronts.

Figure 2.2: Hourly average wind direction at Arboretum (18m)

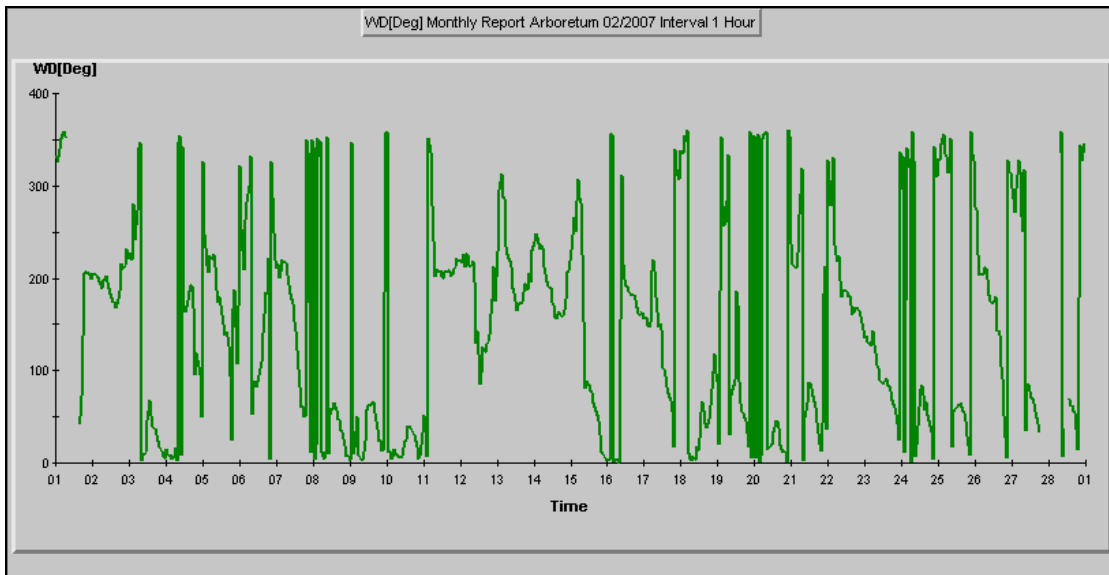
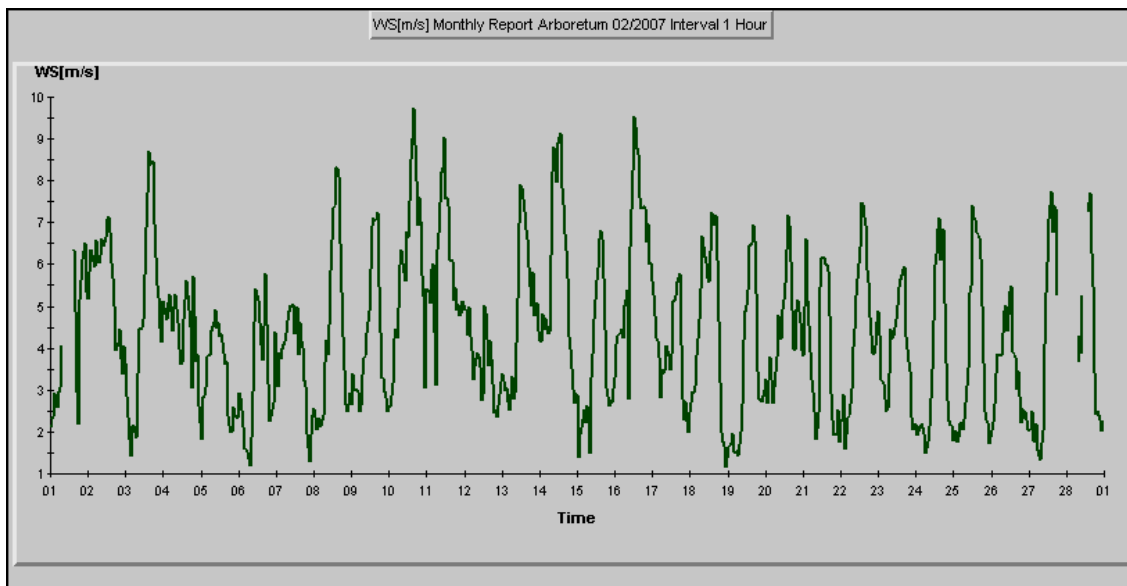


Figure 2.3: Hourly average wind speed (WS) at Arboretum (18m)



3 MONITORING RESULTS

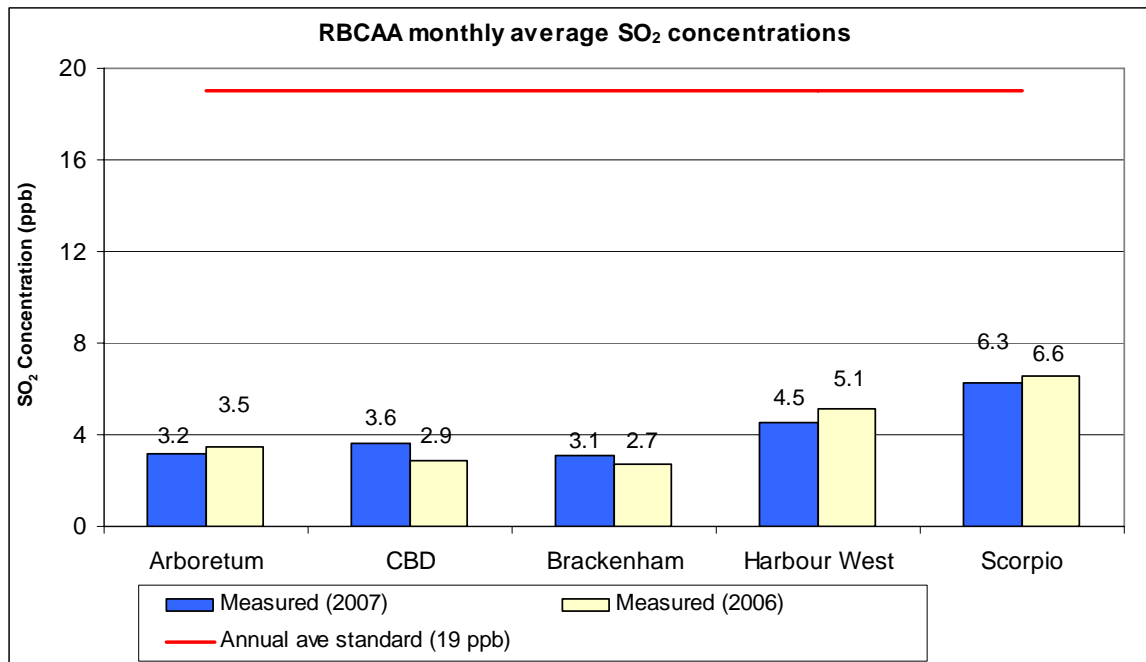
In this section of the report, SO₂ concentrations measured at the fixed monitoring stations are compared.

3.1 Monthly average information

3.1.1 Monthly SO₂ averages

The monthly average SO₂ measured at each of the RBCAA stations for the month is shown in Figure 2. A comparison to the previous year is included.

Figure 3.1: Comparison of monthly average SO₂ concentrations measured at fixed stations for February 2006 and February 2007

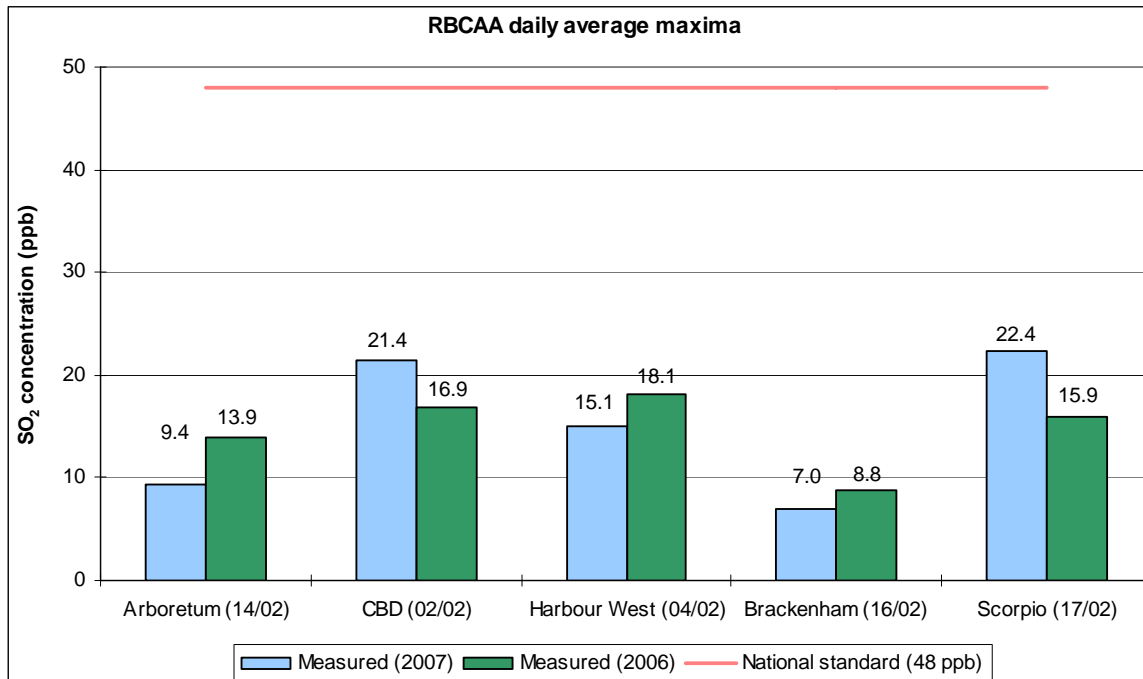


The monthly average SO₂ for February 2007 at the CBD and Brackenham stations was higher than that for the previous year. This was also the case at the CBD during the previous five months. The reason for the increase may be as a result of plant process changes. At the remainder of stations the monthly average SO₂ for February 2007 was less than that for February 2006. In the case of the Scorpio and Harbour West stations this may also be due to changes in plant processes as there is a relatively higher frequency of northerly component winds.

3.2 Daily Average Information

3.2.1 Maximum daily SO₂ averages

Figure 3.2: Comparison of maximum daily average SO₂ concentrations measured at fixed stations for February 2006 and February 2007

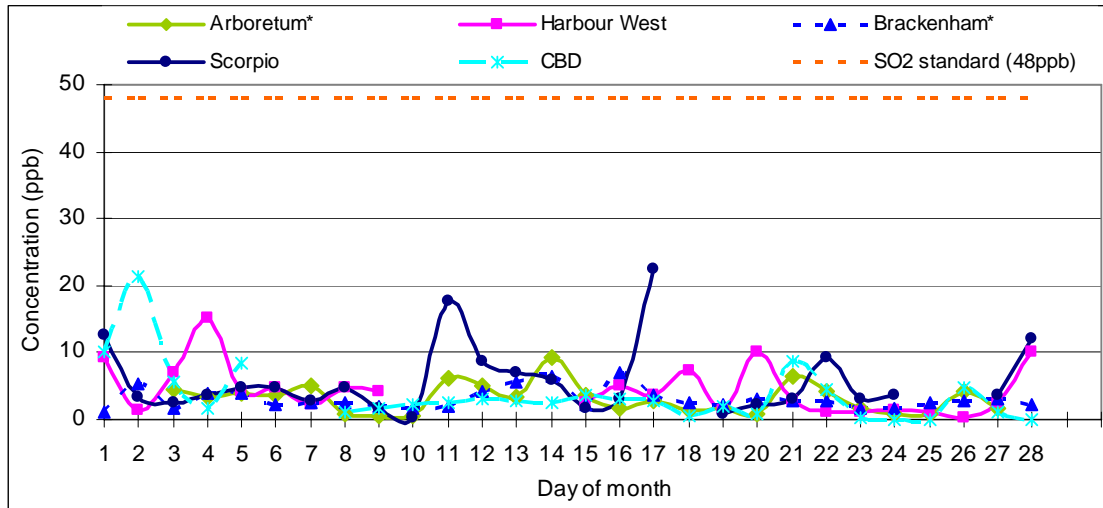


Maximum daily average SO₂ measured at both the Harbour West and Scorpio stations were associated with moderate northerly to north-easterly winds. Maximum daily average SO₂ at the CBD station was associated with fresh to strong southerly to SSW winds.

The maximum daily average concentrations measured during 2007 at the Arboretum, Harbour West and Brackenham stations were lower for the same period the previous year. Over January and February 2007, the Scorpio station has measured increased maximum daily average concentrations compared to the same period the previous year. This may be due to the increase in the northerly component of the winds and or process changes in industrial plants.

3.2.2 Measured daily average SO₂ during February

Figure 3.3: Daily average SO₂ concentrations measured at the fixed stations for February 2007
(National standard = 48 ppb)



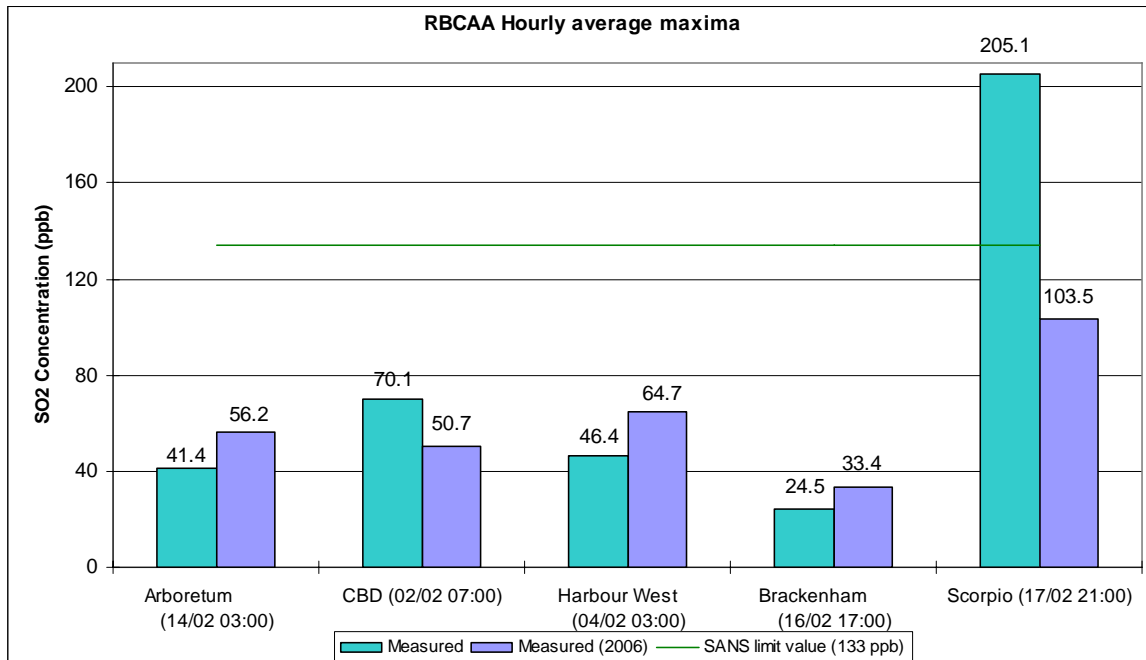
The Scorpio and Harbour West stations measured agreeable peaks on occasions (e.g. 1st and 2nd, 6th, 27 and 29th) but trends were out of phase on other occasions (e.g. 3rd to 5th, 22nd).

There is generally good agreement between the trends at the CBD, Arboretum and Brackenham stations, with the CBD station tending to measure higher concentrations than the other two stations. Elevated SO₂ at the CBD, Arboretum and Brackenham stations was generally measured during moderate to fresh south-westerly winds, which corresponds to the direction of industry relative to the stations.

3.3 Hourly Average Information

3.3.1 Maximum hourly SO₂ averages

Figure 3.4: Comparison of maximum hourly average SO₂ concentrations measured at fixed stations for February 2006 and February 2007

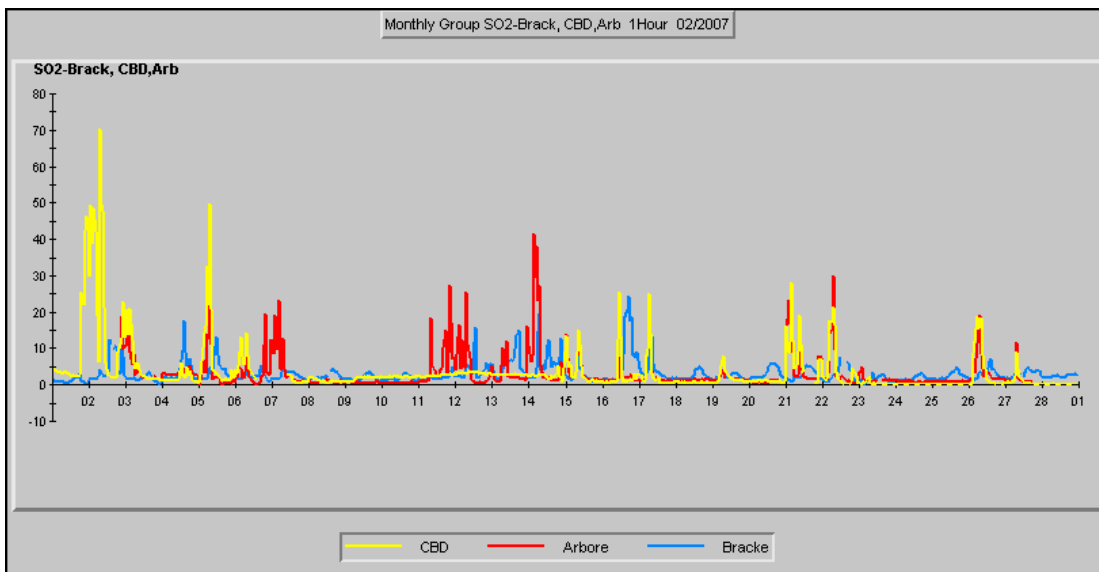


There were two exceedances of the SANS hourly limit at the Scorpio station during the month, associated with light N to NE winds. A case study of these is attached in Appendix 2.

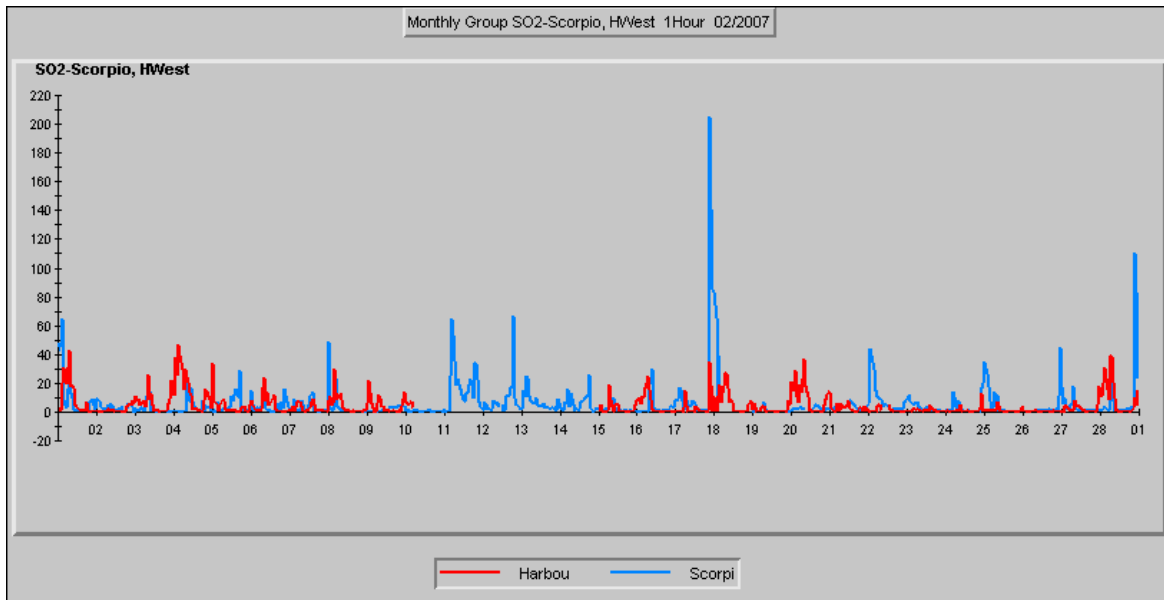
Maximum hourly averages at the Scorpio and CBD stations were higher than that measured in 2006 while measured maximum hourly averages at the other stations were relatively similar or lower to the previous year. This is a very similar trend to that shown in January 2007.

3.3.2 Measured hourly average SO₂ trends

Figure 3.5: Hourly mean concentration at the Arboretum, CBD and Brackenham stations



There was general agreement in the trends in hourly average SO₂ at the Arboretum, CBD and Brackenham stations where data is available, with elevated SO₂ usually correlated with moderate to fresh southerly to south-westerly winds and low concentrations measured during northerly to easterly winds. For comparison, trends in hourly average wind speed and direction are given in section 2.

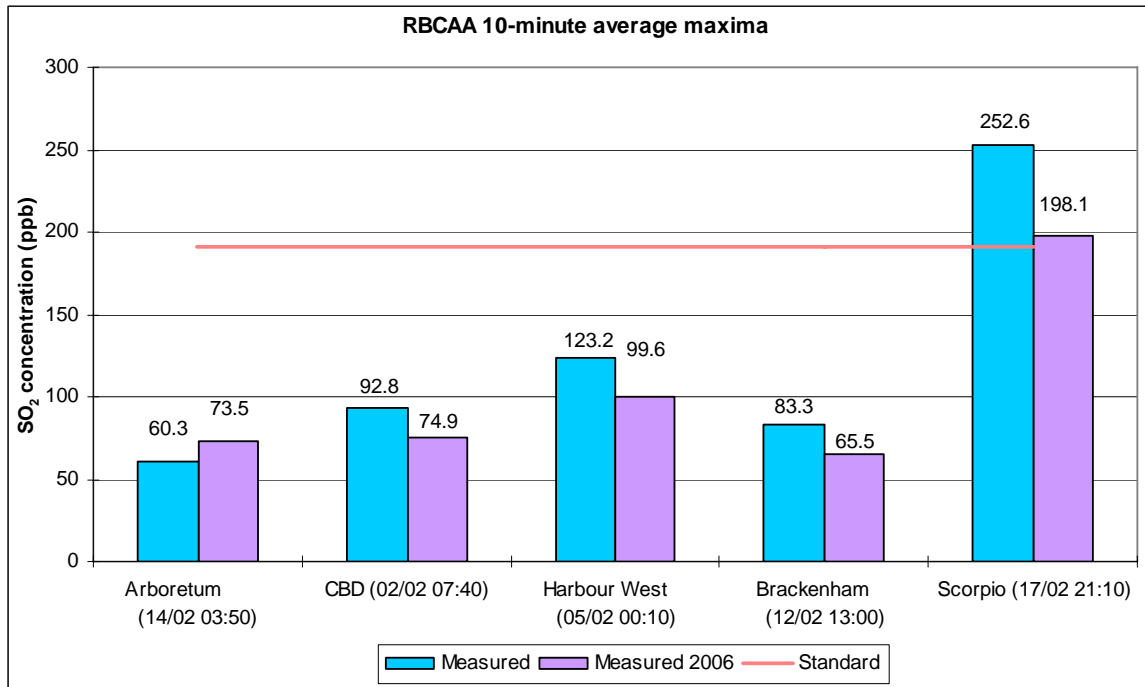
Figure 3.6: Hourly mean concentration at the Harbour West and Scorpio stations

There were two hourly average exceedances of the SANS limit at the Scorpio station. These were measured during the evening of 17 February during light N to NE winds.

Elevated hourly average SO_2 at the Harbour West station was mainly associated with winds from the north-west to north-east. There was agreement at times in the trends at Harbour West and Scorpio, correlated mainly with periods of moderate north-westerly winds.

3.3 Maximum 10-Minute average SO₂

Figure 3.7: Comparison of maximum 10-minutes average SO₂ concentrations measured at fixed stations for February 2006 and February 2007



There were three measured exceedances of the DEAT 10-min average standard February. We see an increase in the maximum 10-minute averages measured at the CBD, Harbour West, Brackenheim and Scorpio stations in 2007. It is interesting to note this significant increase in short term maximum values with little or no significant change in the long term monthly average for 2007.

3.4 Data capture and analyser performance

TABLE 2: DATA CAPTURE FOR RBCAA SYSTEM DURING FEBRUARY 2007

Station	Data (%)	SO ₂ (%)	PM ₁₀ (%)	Ozone	TRS (%)
Arboretum	96.9	88.5			
Harbour West	99.9	82.4			
Brackenheim	99.8	99.1		99.4	
CBD	97.3	96.1	0		94.6
Scorpio	97.1	92.9			

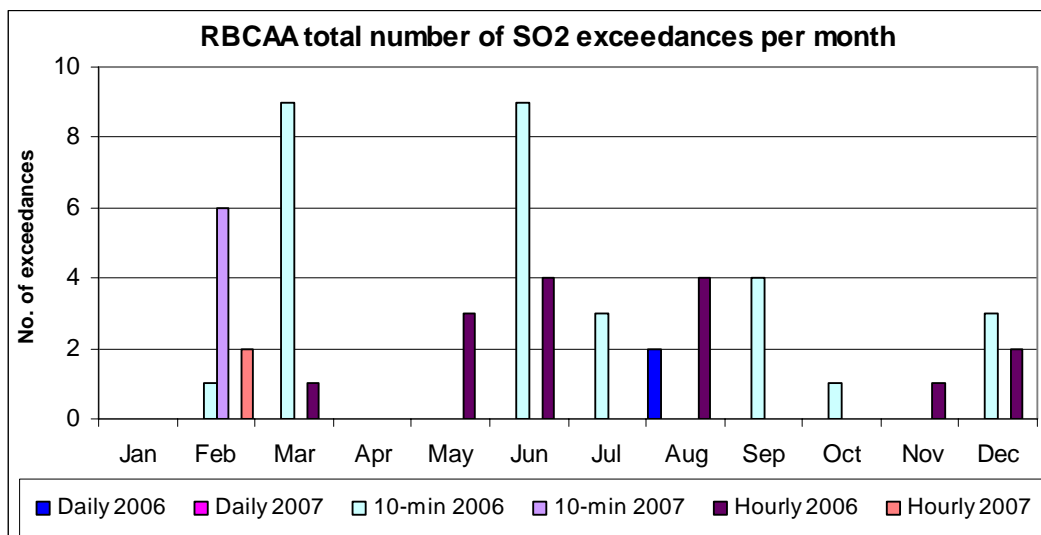
Data capture was just over 80% at the Arboretum and Harbour West stations. Power supply issues at the Arboretum station persisted at the beginning and at the end of the month resulting in a lower data capture rate. The analyser at the Harbour West station had to be taken out of service during the week 12 February due to the failure of the UV lamp. Slight adjustments for variations (of less than 3 ppb) around the zero were applied to the SO₂ data from the Scorpio and CBD stations to compensate for slight variations in the database response and zero drift of analysers. The adjustments were based on the results of the database response to weekly analyser zero, span and calibrator checks and data trends and are detailed in the database.

The TEOM analyser is with the supplier and is being serviced and stripped to identify the problem.

3.5 Compliance with guidelines

Figure 3.8 provides a comparison of the total number of SO₂ standard exceedances per month measured at the RBCAA monitoring stations between 2006 and 2007. There were six measured exceedances of the DEAT 10-min average standard and two exceedances of the hourly SANS limit value for SO₂ during the reporting period

Figure 3.8: Comparison of number of exceedances per month

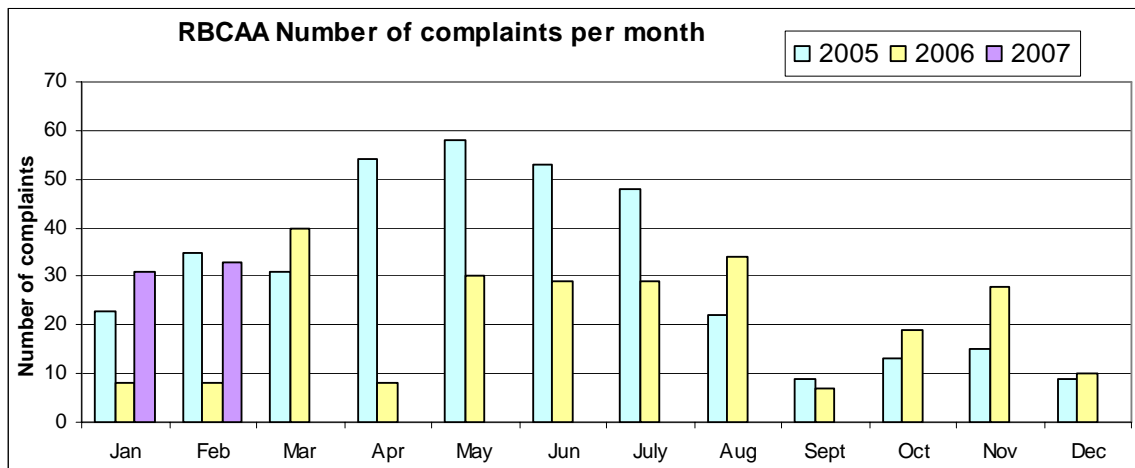


4 AIR QUALITY COMPLAINTS

4.1 Field Observations

A total of 33 air quality complaints were received for the month of February 2007. The historical count of complaints by month is reflected below. There was a significant increase in the number of complaints logged during February 2007 compared to the same period over the previous year. One of the reasons for the increase in February may be due to process disruptions at industrial plants. The complaints are listed in section 4.5.

Figure 4.1: Comparison of number of complaints per month



4.2 Distribution of Complaints by Source

Figure 4.2: February 2007 distribution of complaints by source

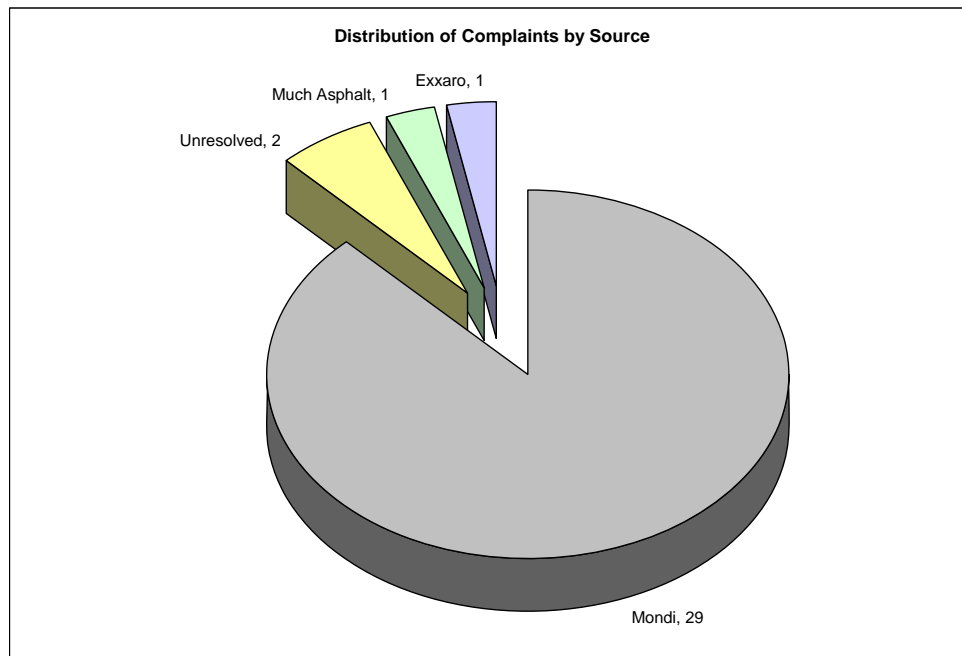
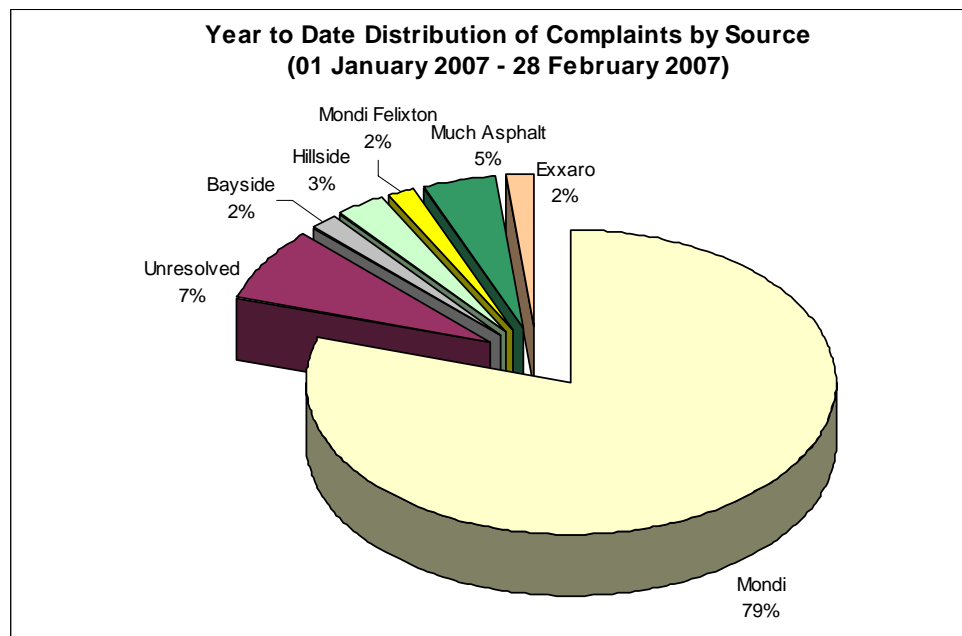


Figure 4.3: 2007 Year-to-date distribution of complaints by source



87% of the complaints during the month were related to Mondi, while 6% remained unresolved.

4.3 Distribution of Complaints by Region

Figure 4.4: February 2007 distribution of complaints by area

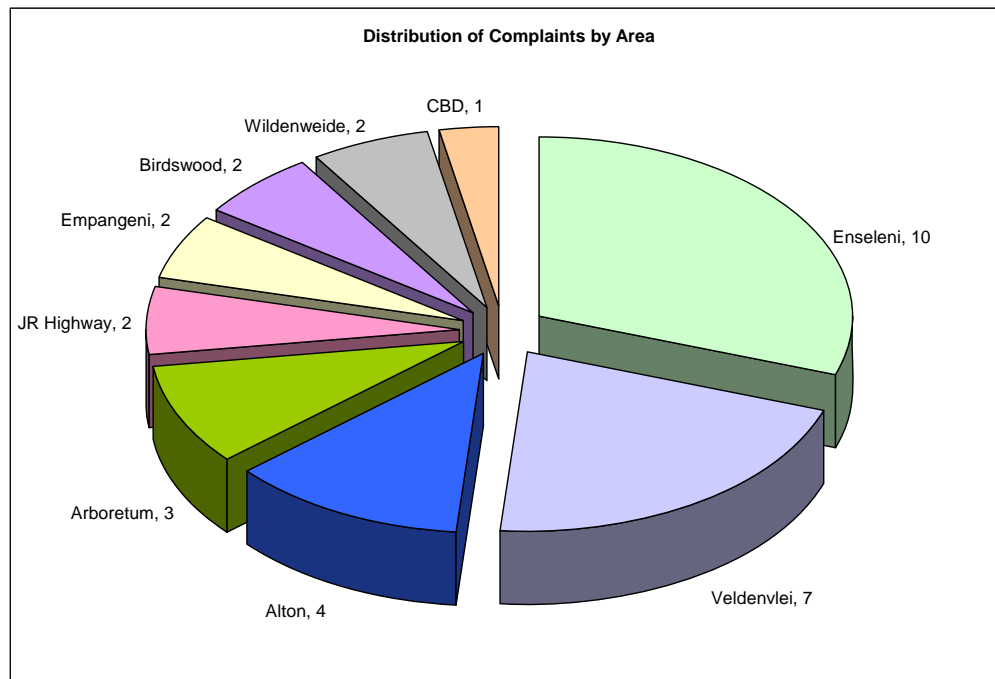
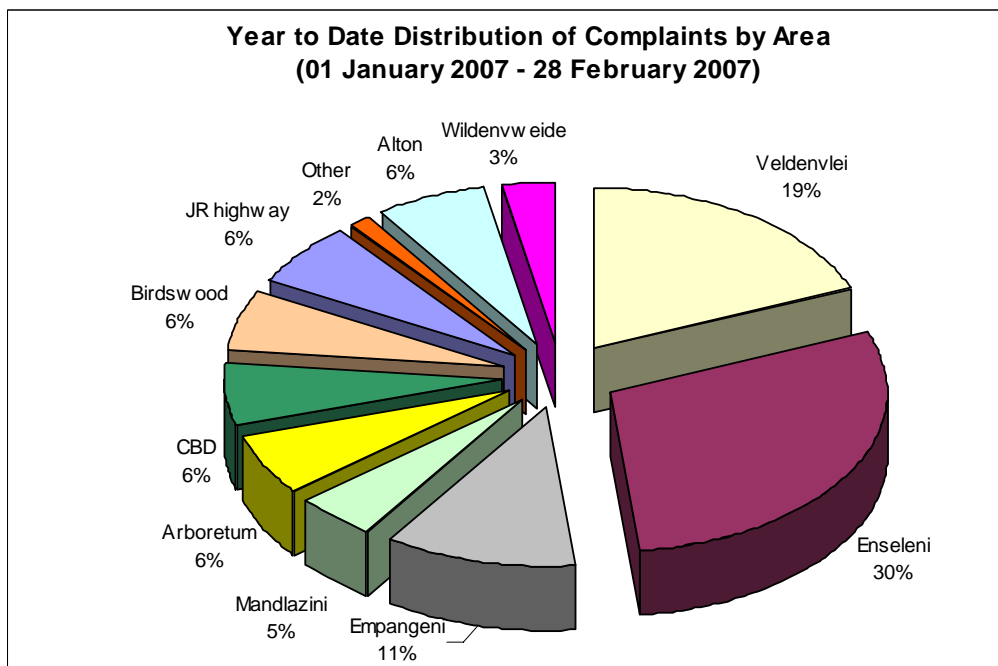


Figure 4.5: 2007 Year-to-date distribution of complaints by area



33% of the complaints during February were related to Mondi odour complaints from the Enseleni area. The year-to-date distribution is dominated by odour complaints from the Enseleni, Veldenvlei and Empangeni areas.

4.4 Complaints by type

Figure 4.6: February 2007 distribution of complaints by type

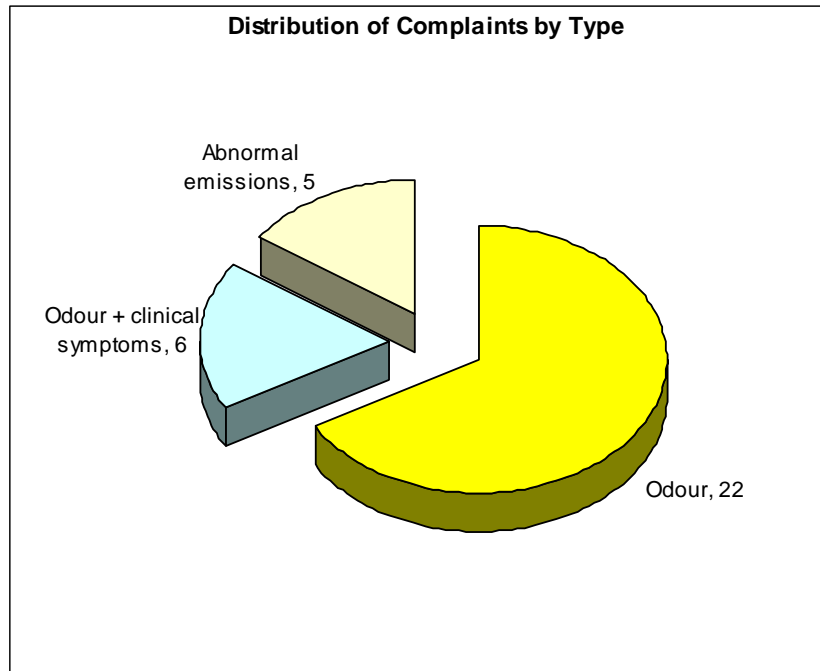
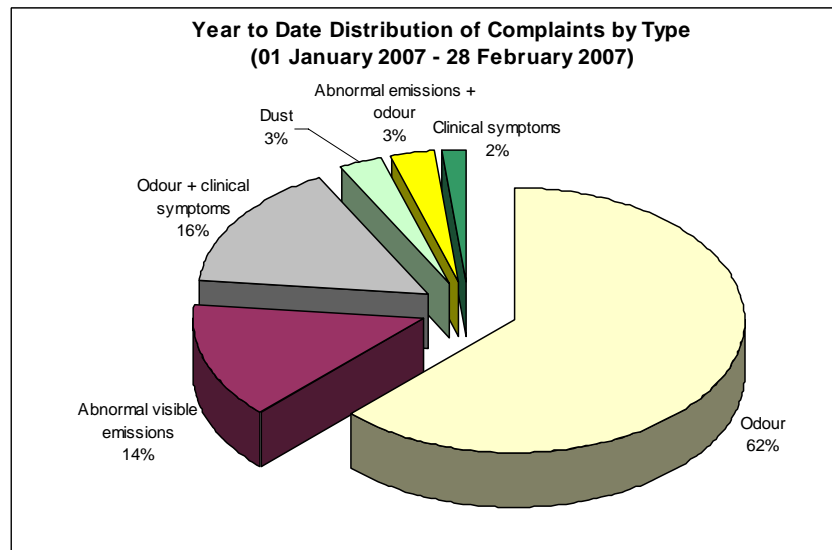


Figure 4.7: 2007 Year-to-date distribution of complaints by type



The majority of complaints logged during February were related to odours.

4.5 Air Quality Complaints Log

No	Date and time	Location	Description	Results	Resolution
1	01 Feb 21h00	Enseleni	Bad odour	Mondi: There were two short spikes from the kiln and recovery boiler 2 which was the likely source of the odour, these were very short spikes (lasting less than two minutes) after which the levels were reduced again. Mondi was the likely source of odour.	Resolved
2	04 Feb 14h00	Enseleni	Mondi odour	Mondi: There was a brief peak of TRS (max 5.2ppm) at 12h45 on 4th Feb from the lime kiln. The duration of the spike was less than two minutes after which the TRS levels returned to previous levels (3.2ppm average). Based on the WD and plant conditions at the time, Mondi was the likely source of the odour.	Resolved
3	05 Feb 09h00	Enseleni	Mondi odour	Mondi: Based on the location of the complainant, Mondi is the likely source of odour however the process parameters do not indicate any exceedances.	Resolved
4	10 Feb 20h00	JR Highway	Very bad Mondi stack(tall stack) and odour	Mondi: We experienced difficulties with the precipitators on the recovery boiler. Manual rapping was conducted to decrease emissions. Based on the wind data and process information, Mondi was the likely source of the odour and visible stack emissions.	Resolved
5	11 Feb 07h15	Enseleni	Mondi odour which was present on and off during the day	Mondi: Wind direction – 269 deg. Wind speed – 4.5 m/s. Kiln H2S – 1.2 ppm. CRU 1 H2S – 1.4 ppm. CRU 2 H2S – 1.8 ppm. Based on the above info, Mondi was not a likely source of odour. Foskor: All plant conditions at Foskor within normal operating parameters. Based on wind direction Foskor would not impact Enseleni. Case study indicated Mondi as the source of odour.	Resolved
6	11 Feb 07h15	Enseleni	Onion like odour	Mondi: Wind direction – 269 deg. Wind speed – 4.5 m/s. Kiln H2S – 1.2 ppm. CRU 1 H2S – 1.4 ppm. CRU 2 H2S – 1.8 ppm. Based on the above info, Mondi was not a likely source of odour. Foskor: All plant conditions at Foskor within normal operating parameters. Based on wind direction Foskor would not impact Enseleni. Case study indicated Mondi as the source of odour.	Resolved

7	11 Feb 12h00	JR Highway	Bad Mondi stack (tall stack)	Mondi: On 11 Feb at approx. 11h30, we experienced problems with the conveyor system on precip 6 on Recovery Unit 2. The repairs on the conveyor required precip 6 to be taken out of service. This resulted in excessive visible emissions. The problem was resolved and the precip was brought back into service by 12h00.	Resolved
8	11 Feb 13h15	Enseleni	Chemical odour	Mondi: Wind direction – 234 deg. Wind speed – 7.7 m/s. Kiln H2S – 4.6ppm. CRU 1 H2S – 1.1 ppm. CRU 2 H2S – 1.8 ppm. Based on the above info, Mondi was not a likely source of odour. Case study indicated Mondi as the source of odour.	Resolved
9	11 Feb 16h45	Enseleni	Chemical odour	Mondi: Problems were experienced with the start up of the kiln on Sunday 11 Feb as a result of poor washing of the lime mud fed into the kiln. This resulted in a higher soda carryover into the kiln. Mondi was the likely source of the odour.	Resolved
10	11 Feb 22h00	Veldenvlei	Mondi odour, forced to close windows	Mondi: Problems were experienced with the start up of the kiln on Sunday 11 Feb as a result of poor washing of the lime mud fed into the kiln. This resulted in a higher soda carryover into the kiln. Mondi was the likely source of the odour. Based on the above info, Mondi was a likely source of odour.	Resolved
11	12 Feb 04h15	Enseleni	Chemical odour	Mondi: On Monday 12 February we experienced problems with the WLCD (white liquor claridisc) and it had to be taken offline for maintenance (6 hours). During this time we had to utilize the ECO filters for white liquor filtration. The usage of ECO filters result in a higher amount of soda being carried forward to the lime mud first stage washing and hence into the kiln. When we have a higher amount of soda carryover into the kiln, we have TRS problems. Mondi was the likely source of the odour.	Resolved
12	12 Feb 06h00	Veldenvlei	Mondi odour causing headache	Mondi: On Monday 12 February we experienced problems with the WLCD (white liquor claridisc) and it had to be taken offline for maintenance (6 hours). During this time we had to utilize the ECO filters for white liquor filtration. The usage of ECO filters result in a higher amount of soda being carried forward to the lime mud first stage washing and hence into the kiln. When we have a higher amount of soda carryover into the kiln, we have TRS problems. Mondi was the likely source of the odour.	Resolved

13	12 Feb 07h00	Farm outside Empangeni near Much Asphalt	Very bad odour emanating from Much Asphalt	Much Asphalt (Daryl Jorgensen): I had previously sent Steve Nel (Manager of Empangeni branch) across to investigate Mrs Dekker's complaints so that we could attempt to resolve. Unfortunately, we are having difficulty in addressing the issue of 'bad odour', as neither the occupants of the site, nor visitors can smell any element of odour. Further to this, the combustion of our heating fuel has been running at a high level of efficiency, which mitigates any possibility of odour. We are expecting SO2 gas analysis results from Ecoserv within the next 2 weeks, which could assist us. We would be happy to consider any suggestions as to how we problem solve this issue.	Resolved
14	12 Feb 08h00	Veldenvlei	Mondi odour causing headache	Mondi: On Monday 12 February we experienced problems with the WLCD (white liquor claridisc) and it had to be taken offline for maintenance (6 hours). During this time we had to utilize the ECO filters for white liquor filtration. The usage of ECO filters result in a higher amount of soda being carried forward to the lime mud first stage washing and hence into the kiln. When we have a higher amount of soda carryover into the kiln, we have TRS problems. Mondri was the likely source of the odour.	Resolved
15	13 Feb 06h30	Birdswood, Pelican Parade	Pungent rotten egg odour	Mondi: There were no indications of process conditions which could have caused the pungent rotten egg smell as described in the complaint. Based on process information Mondri was not the likely source of the odour. Foskor: Plant operating conditions were normal with Mondri water pH = 7.2. Wind direction = 260.5 degrees and wind speed = 2.3 m/s. Sulphuric acid plant A,B and C plant were running at stable conditions with no startup conditions for that day. Based on the normal plant operating conditions and wind direction Foskor was not responsible for the odour. The case study indicated that Mondri was the source of odour.	Resolved
16	13 Feb 08h05	Alton, Dollar Drive	Very bad odour	Mondi: We experienced problems with wash water flow to the lime mud claridisc. The wash water filters blocked up and the low wash water flow resulted in poor washing on the lime mud washer which resulted in TRS emissions from the kiln increasing between 07h00 and 08h00. Mondri was the likely source of the odour.	Resolved

17	13 Feb 08h10	Veldenvlei	Awful Mondi odour causing headache	Mondi: We experienced problems with wash water flow to the lime mud claridisc. The wash water filters blocked up and the low wash water flow resulted in poor washing on the lime mud washer which resulted in TRS emissions from the kiln increasing between 07h00 and 08h00. Mondi was the likely source of the odour.	Resolved
18	13 Feb 08h10	ZO Offices, R/Bay	Very bad odour causing headache	Mondi: We experienced problems with wash water flow to the lime mud claridisc. The wash water filters blocked up and the low wash water flow resulted in poor washing on the lime mud washer which resulted in TRS emissions from the kiln increasing between 07h00 and 08h00. Mondi was the likely source of the odour.	Resolved
19	13 Feb 08h20	Alton, Bell Equipment	Very bad Mondi odour	Mondi: We experienced problems with wash water flow to the lime mud claridisc. The wash water filters blocked up and the low wash water flow resulted in poor washing on the lime mud washer which resulted in TRS emissions from the kiln increasing between 07h00 and 08h00. Mondi was the likely source of the odour.	Resolved
20	13 Feb 08h28	Alton, Fabrep	Bad odour causing nausea	Mondi: We experienced problems with wash water flow to the lime mud claridisc. The wash water filters blocked up and the low wash water flow resulted in poor washing on the lime mud washer which resulted in TRS emissions from the kiln increasing between 07h00 and 08h00. Mondi was the likely source of the odour.	Resolved
21	13 Feb 10h00	Enseleni	Mondi odour	Foskor: Mondi pH was normal at 7.2. Wind direction was 214 Degrees and wind speed was 3.3. Based on the normal plant conditions and wind direction Foskor was not responsible for the Mondi odour. Mondi: Based on the stable conditions in the mill at this time and the wind direction it is not likely that Mondi was the source of the odour. Case study indicated Mondi as the source of odour.	Resolved
22	13 Feb 18h00	Enseleni	Intense super phosphate odour	Mondi: It is possible that the TRS from the kiln could have contributed to odour experienced at Enseleni. The elevated TRS level were due to problems with the lime mud washing before the lime kiln. Based on the WD and plant conditions at the time, Mondi was a likely source of odour.	Resolved

23	13 Feb 18h40	Veldenvlei	Strong Foskor odour causing burning eyes	Mondi: Based on the wind direction measured at the Scorpio station it is possible that the slightly elevated levels of TRS from the lime kiln could have contributed to the odour. The elevated TRS levels were due to problems with the lime mud washing before the lime kiln. The TRS levels from the lime kiln were brought down to below 5ppm by 6pm. Based on the above info, Mondi was a likely source of odour.	Resolved
24	20 Feb 08h00	Empangeni	Flaring and heavy emissions emanating from Exxaro	Exxaro: Full report available below. Summary: The incident occurred on 20 February 2007 at about 08:00 due to excessive brown emissions emanating from the raw gas stack of furnace number 2. Problems were experienced with the clean gas change-over valve. The valve was dirty inside, due to a buildup of sludge, and was not able to open to allow the furnace to change over to clean gas. As soon as the valve was operational again, the off-gas system was changed over to clean gas operation.	Resolved
25	21 Feb 00h15	Veldenvlei	Very strong "guava" type odour	Foskor: Plant operating conditions was normal with Mondi water pH = 7. SO2 concentrations for A,B and C plants were well below 400ppm with all plants running at reduced rates. Based on normal plant conditions, Foskor was not responsible for the odour. Mondi: Our investigations have indicated that the process was running smoothly in the two hours prior to this complaint. The kiln shut down at approximately 00h00. Based on the wind direction and the process information it is unlikely that Mondi was the source of this complaint.	Unresolved
26	21 Feb 00h45	Birdswood, 10 Kolgansdans	Severe Mondi odour	Mondi: Our investigations have indicated that there was a spike from the lime kiln at 00h30. The spike occurred on startup of the kiln after a lime washer water wash (the kiln was taken offline for that period). During start up the oxygen content in the kiln dropped resulting in the increased TRS emissions because the sulphur compounds were not adequately oxidised. The oxygen content was stabilised within minutes and by 00h40 the TRS emissions had reduced to below 1ppm. In order to ensure that this does not happen again the operators and foremen have been cautioned to ensure adequate oxygen content in the kiln on start up. Based on the WD and the plant conditions at the time, Mondi was the likely source of odour.	Resolved
27	21 Feb 00h45	Arboretum, 25 Maroelamoot	Severe Mondi odour		Resolved
28	21 Feb 00h45	Arboretum, Naboomnek	Severe Mondi odour		Resolved

29	22 Feb 00h28	Arboretum, 25 Maroelamoot	"Cat urine" odour causing burning eyes and itchy nose	Mondi: Our investigations have indicated that there were problems Lime Mud ClariDisk performance at the time. It was due for a water wash to improve cloth permeability. The spikes were just before we were in a position to water wash the Lime Mud ClariDisk. Based on weather patterns at the time and the above info, Mondri was the likely source of odour.	Resolved
30	22 Feb 07h50	Veldenvlei	Mondi odour. At 06h45 there appeared to be a huge plume in the vicinity of Mondri. I was at a distance so I couldn't confirm Mondri as the source.	Mondi: Our investigations have indicated that there were problems experienced with the firing of non condensable gases into the kiln at this time. Corrective action was taken and the gases were fired into the flare to reduce TRS emissions. TRS emissions from the kiln reduced to approximately 5ppm by 7h30am. Based on the above info, Mondri was the likely source of odour.	Resolved
31	26 Feb 16h30	Wildenweide, Giraffe View	Toxic odour	Mondi: Based on the wind direction and the stable process conditions it is not likely that Mondri is the source of this odour.	Unresolved
32	27 Feb 06h45	Alton	Excessive emissions emanating from Mondi causing a heavy brown plume across the skyline	Mondi: On 27 Feb at approx. 06h20, we experienced problems with the conveyor system on precip 7 on Recovery Boiler 1. The repairs on the conveyor required precip 7 to be taken out of service. This resulted in excessive visible emissions. The production rate of the boiler was subsequently decreased to bring the opacity to within specification.	Resolved
33	27 Feb 07h00	Wildenweide, Giraffe View	Toxic odour	Mondi: Our investigation indicated that problems with the wash water strainers were experienced and hence lime mud washing was inconsistent. The lime mud washer needed to be acid washed and mud washing was poor during this period. Based on the above info it is likely that Mondri was a source of odour.	Resolved

5 TRS AND OZONE DATA

5.1 TRS Data

Total Reduced Sulphurs (TRS) are measured at the CBD station. Trends in hourly and daily average TRS are provided in Figs 5.1 and 5.2, respectively. Maximum concentrations for selected time averaging periods are shown in Table 3. There are no guidelines or standards for TRS, however the odour threshold is 5 ppb.

TABLE 3: MAXIMUM TRS CONCENTRATIONS (ppb) DURING FEBRUARY			
	5-minute average	Hourly average	Daily average
TRS (ppb)	158.5	107.4	24.5
Date & time	11/02 23:05	11/02 23:00	11/02

All maximum TRS concentrations were measured on 11 February and associated with fresh SW winds. The source from this wind vector may indicate Foskor as a source or an unidentified source in this area.

Figure 5.1: Hourly average TRS at the CBD station during February 2007

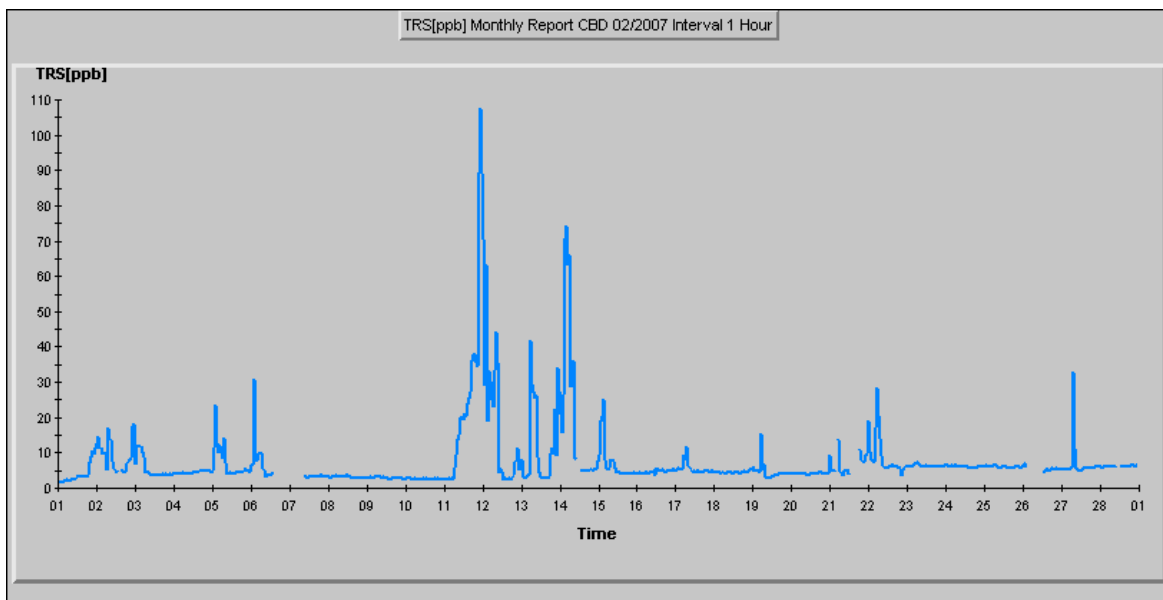
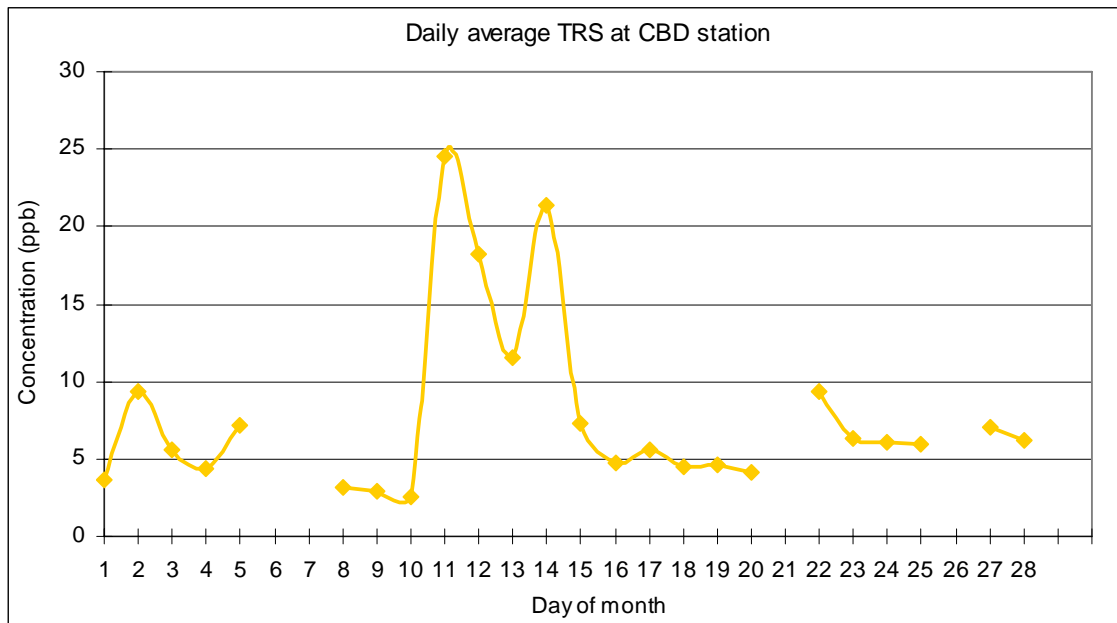


Figure 5.2: Daily average TRS at the CBD station during February 2007

The trend in daily average TRS concentrations was similar to that for SO₂, with peaks in TRS generally correlated with periods of moderate to fresh SSW to south-westerly winds.

5.2 Ozone Data

The standards and target values for the National Environment Management: Air Quality Act (NEMAQA) and South African National Standard (SANS), respectively for O₃ are presented in Table 4.

Table 4: O ₃ standards and target values		
	National (NEMAQA) standard	SANS 1929:2004 target
Instant peak	250 ppb	N/A
Hourly average	120 ppb	102 ppb
8-Hour running average	N/A	61 ppb

Data capture for the month of February was 99.4% and the monthly average 4.5 ppb. There were no standard exceedances, with the maximum hourly average of 51.5 ppb being only 43% and 50% of the NEMAQA and SANS hourly average limits, respectively. The trends in hourly average and daily average O₃ are presented in Figures 5.3 and 5.4.

Figure 5.3: Hourly average O₃ at Brackenheim during February 2007

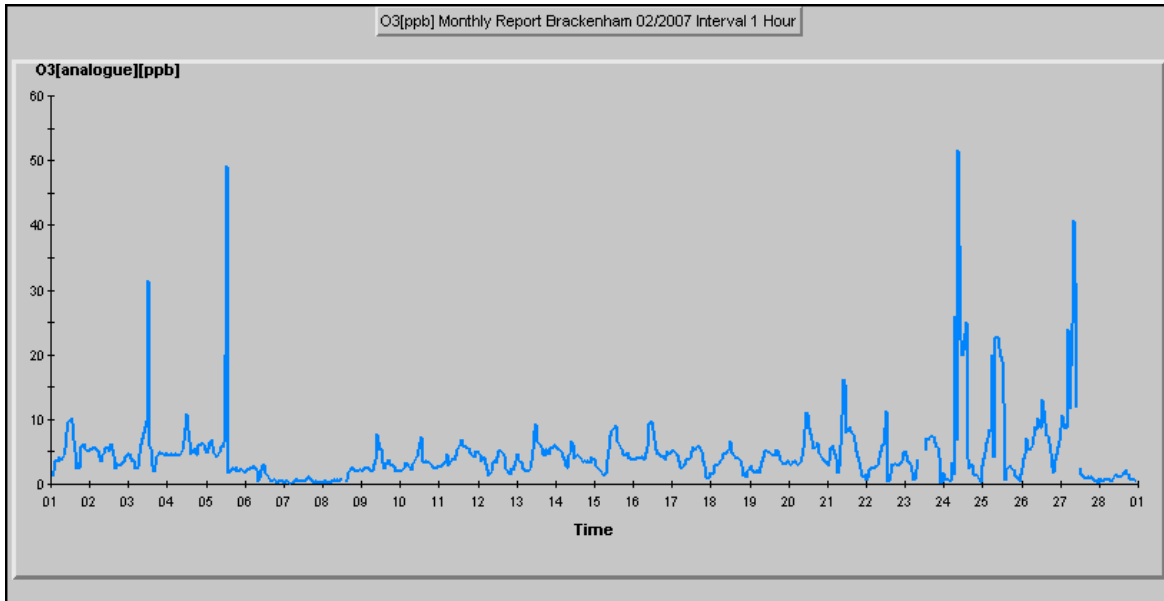
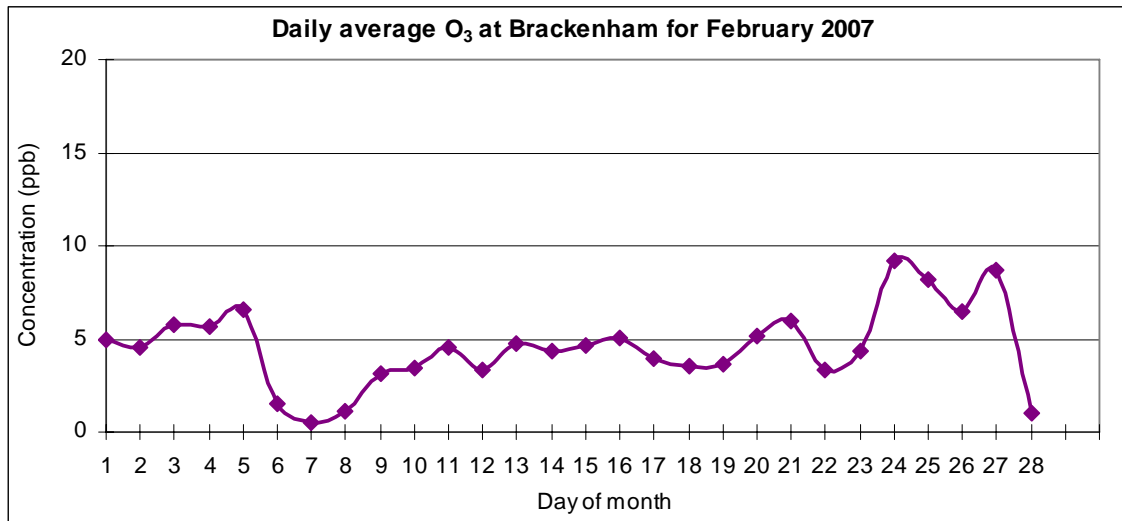


Figure 5.4: Daily average O₃ at Brackenheim during February 2007



APPENDIX 1

SANAS Requirements

The SO₂ concentrations reported are determined by a United States Environmental Protection Agency (USEPA) equivalent method. At the Arboretum, Harbour West, Brackenham and Scorpio stations the equivalent method number is EQSA-0193-092 and at the Caravan the equivalent method number is EQSA-0495-100. All SO₂ measurements allow for a maximum precision error of 15% of the reported value. A tolerance around the zero point of plus or minus 10 ppb is allowed. All effort is made to reduce the error to a minimum. In terms of quality assurance standards, data collection must be above 80% to be valid for statistical analysis.

Note that the system is accredited for the measurement of SO₂ and PM₁₀ only. The accreditation does not include the measurement of O₃, TRS or meteorological variables (e.g. wind, temperature). All opinions, interpretations and Hawk model findings detailed in the report do not form part of the accreditation.

APPENDIX 2



RBCAA: Case Study for Exceedances

17 February 2007

Prepared for

RBCAA

AQ002

March 2007

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6 INTRODUCTION

This assessment has been completed at the request of the Richards Bay Clean Air Association (RBCAA). The RBCAA monitors air quality and weather in Richards Bay on a continuous basis. It has established an air pollution computer simulation programme called the Hawk Model. The model can be used to identify sources of exceedance based on actual weather conditions, as is the case in this report.

6.1 Scope of Work

ECOSERV's understanding of the scope of this report is to provide information as part of the investigation of the ambient SO₂ exceedances at the Scorpio station on 17 February 2007. The report includes a case study simulation using the Hawk Dispersion Model bearing in mind the limitations of the model.

The exceedances are listed below:

Table 1.1: Exceedances of National 10-minute standard (191 ppb) for SO₂

Station	Date	SO ₂ (ppb)	wind direction	wind speed (m/s)
Scorpio	17/02/2007 21:10	252.6	18.8	1.3
Scorpio	17/02/2007 21:20	208.3	4.2	1.5
Scorpio	17/02/2007 21:30	233.4	19.9	1.3
Scorpio	17/02/2007 21:40	219.1	16.3	1.8
Scorpio	17/02/2007 21:50	232.4	3.5	1.7
Scorpio	17/02/2007 22:00	192.9	22.4	1.7

Table 1.2: Exceedances of SANS hourly limit value (134 ppb) for SO₂

Exceedance of the DEAT hourly average SO ₂ standard (>134 ppb)				
Station	Date & time	SO ₂	wind direction	wind speed (m/s)
Scorpio	17/02/2007 21:00	205.1	14.5	1.6
Scorpio	17/02/2007 22:00	141.1	4.3	1.4

6.2 SO₂ trends and meteorology

Winds were light from the NNE to NNW during the time of the 10-minute and hourly average exceedances on the 17th (Fig. 1a). The period was preceded by a gradual switch from easterly through to north-easterly winds during which low SO₂ concentrations were measured.

Figure 1a: 5-minute average wind direction and speed at Scorpio on 17 February 2007.

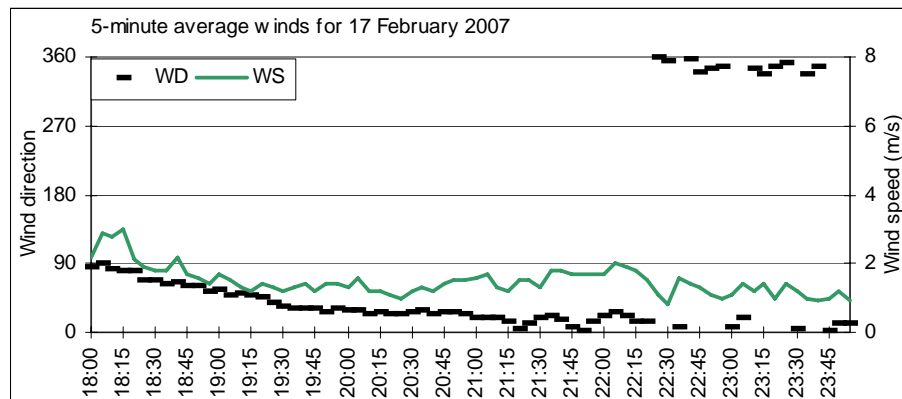
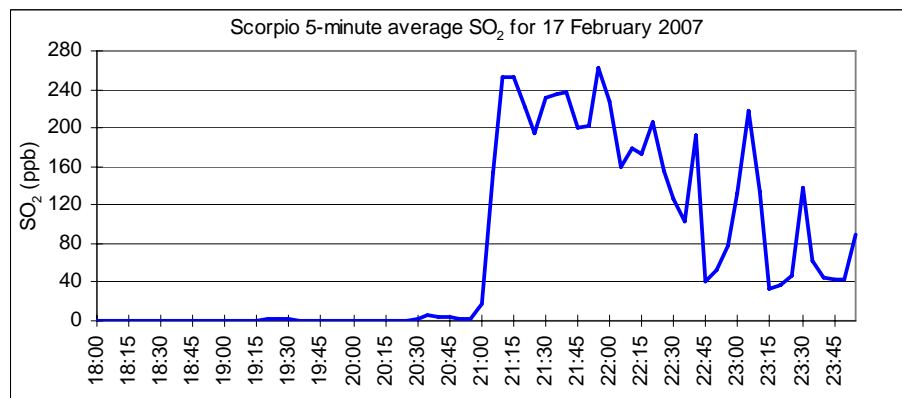


Figure 1b: 5-minute average SO₂ concentrations at Scorpio station on 17 February 2007.



7 METHODOLOGY

7.1 Dispersion Modelling

The model uses actual weather conditions, including changes in wind direction, and average emissions to determine source contributions.

Figure 2: 10-minute Average Source Contributions for 17 February 2007 at 21:10

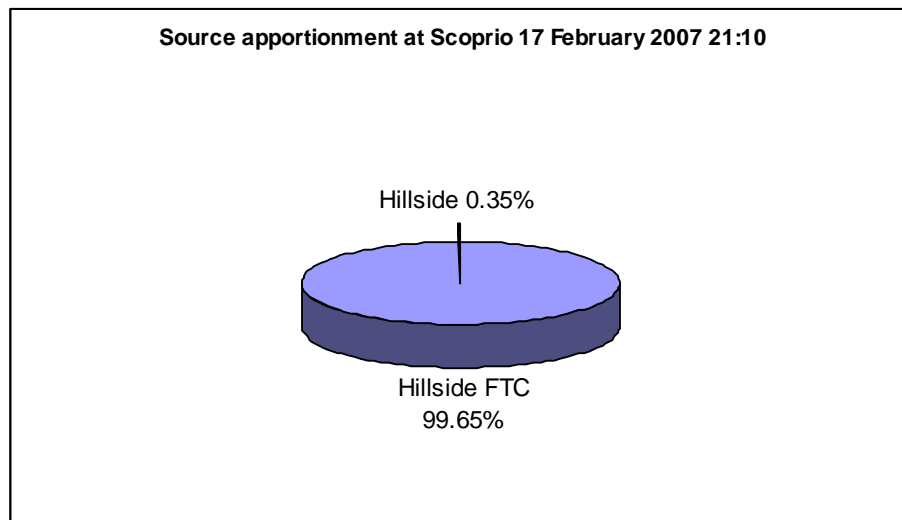


Figure 3: 10-minute Average Source Contributions for 17 February 2007 at 21:20

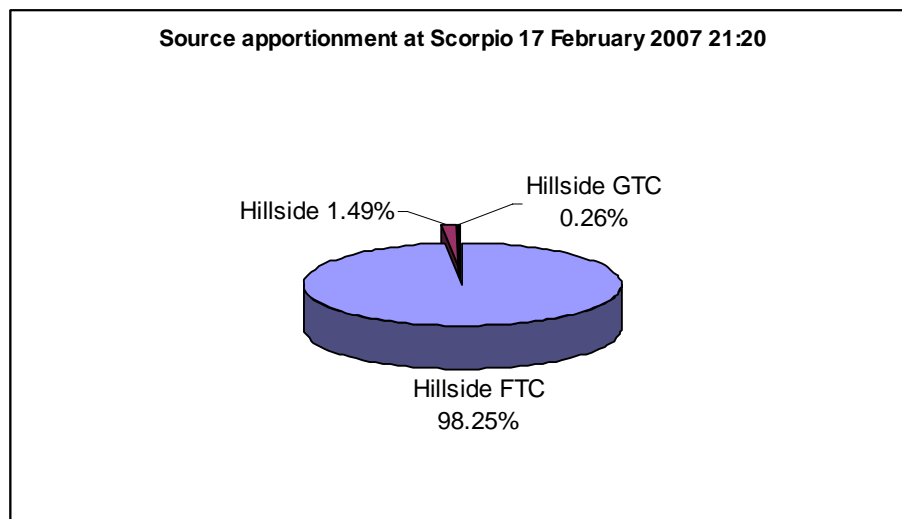


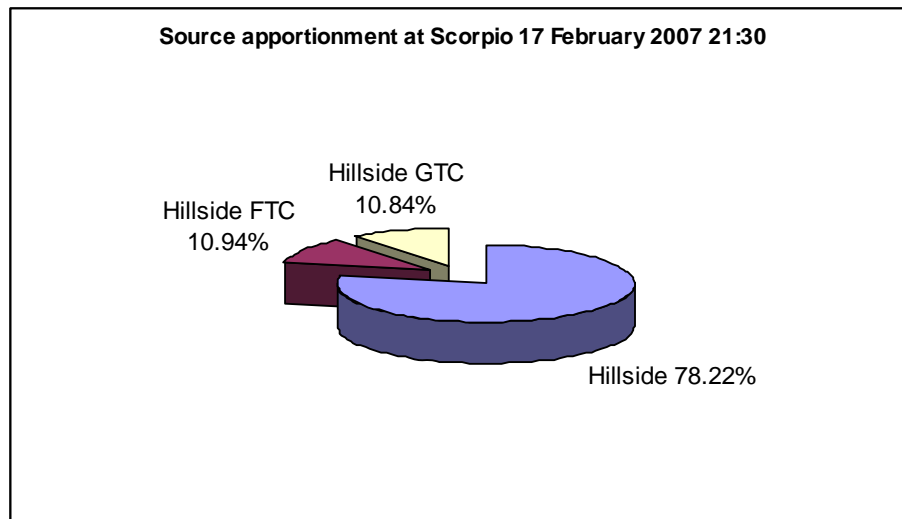
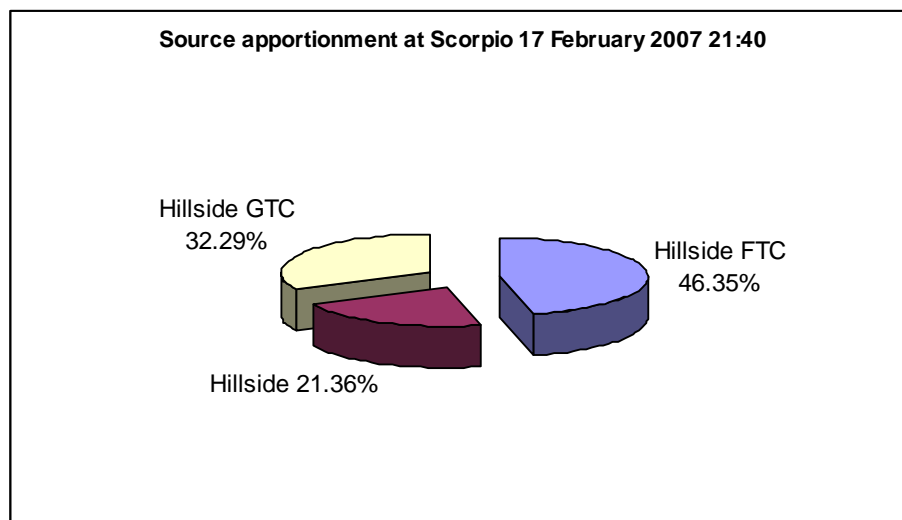
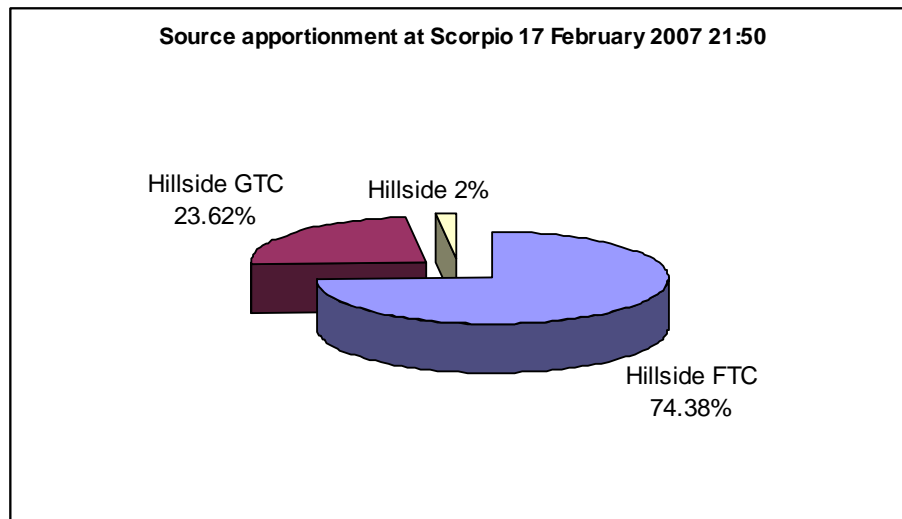
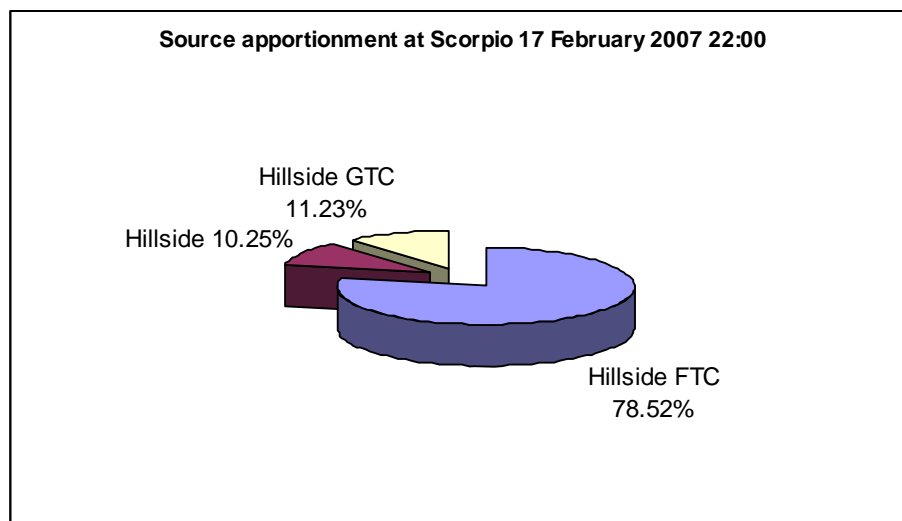
Figure 4: 10-minute Average Source Contributions for 17 February 2007 at 21:30**Figure 5: 10-minute Average Source Contributions for 17 February 2007 at 21:40**

Figure 6: 10-minute Average Source Contributions for 17 February 2007 at 21:50**Figure 7: 10-minute Average Source Contributions for 17 February 2007 at 22:00**

The source contributions indicate that the most likely source of SO₂ emissions leading to the 10-minute average SO₂ exceedances on 17 February 2007 is the Hillside Aluminium plant.

Figure 8: Hourly Average Source Contributions for 17 February 2007 for the hour 21:00

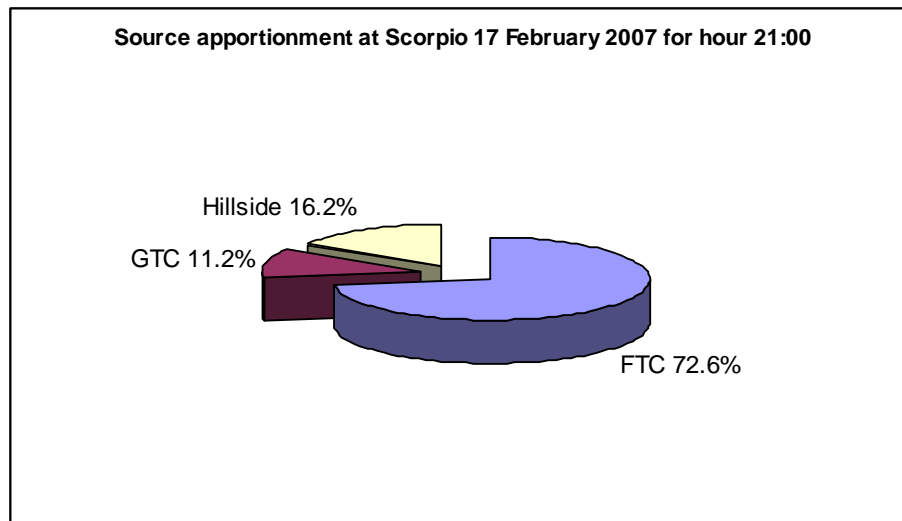
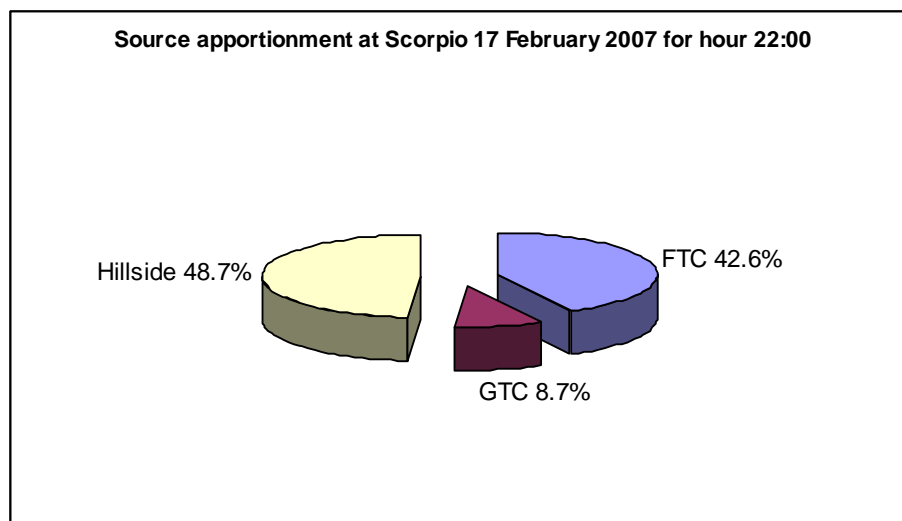


Figure 9: Hourly Average Source Contributions for 17 February 2007 for the hour 22:00



Over the two hourly averages for 17 February 2007, 21:00 and 22:00, the source contributions indicate that the most likely source of SO₂ emissions was Hillside Aluminium.

8 CONCLUSIONS

The results identify the major source of SO₂ emissions leading to the 10-minute average and hourly average exceedances at the Scorpio station on 17 February 2007 as Hillside Aluminium.

The model uses annual average emission rates. If process emissions were varying at the time of exceedance, the results may be affected.