

Sasol South Africa

Secunda Chemical Operations (formerly known as Sasol Nitro)

Annual Emission Report

Dated 31 August 2018

prepared for

Gert Sibande District Municipality

**regarding atmospheric emission license for Sasol South Africa (Pty) Ltd
Nitro - number 0020/2015/F02**

Reporting period: July 2017 – June 2018

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Standard abbreviation list	
AEL	Atmospheric emissions license
CH ₄	Methane
CO ₂	Carbon dioxide
COD	Chemical oxygen demand
CTL	Coal to liquid
DEA	Department of Environmental Affairs
GHG	Greenhouse gases
GJ	Gigajoule
GTC	Gas to chemicals
IPCC	Intergovernmental panel on climate change
kNm ³	Kilo normal cubic meter
mg/Nm ³	Milligram per normal cubic meter
NH ₃	Ammonia
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen
N ₂ O	Nitrous oxide
PM	Particulate matter
ppb	Parts per billion
RDP	Reconstruction development programme
SCO	Secunda Chemicals Operations
US EPA	United States Environmental Protection Agency

1. INTRODUCTION

Sasol South Africa (Pty) Ltd Nitro, part of Secunda Chemical Operations (SCO), is required in terms of section 7.6 of its atmospheric emission license (AEL) number 0020/2015/F02 to submit an annual emission report 60 days after the end of each reporting period.

This report covers the reporting period from July 2017 to June 2018. Emission monitoring was done by independent service providers using the prescribed USEPA methods contemplated in annexure A of section 21 minimum emission standards of the National Environmental Management Air Quality Act.

Section 3 of this document summarises the emissions measured compared to the maximum emission rates as per the AEL.

2. SERVICE PROVIDER

Sasol uses independent service providers to conduct the necessary emission testing and dust fallout monitoring. The contact details of the service provider used are shown in table 2.1 and 2.2 below.

Table 2.1: Future Projects (Pty) Ltd

Physical address	Future Projects (Pty) Ltd 480 Smuts Drive Halfway Gardens Midrand Gauteng 1685 South Africa
Telephone number	+27 11 052 1250
Email	info@futureprojects.co.za

Table 2.2: Gondwana Environmental Solutions (Pty) Ltd

Physical address	Gondwana Environmental Solutions International (Pty) Ltd 562 Ontdekkers Road Florida
Postal address	PO Box 158 Florida Hills 1716
Telephone number	+27 11 472 3112
Fax No	+27 11 674 3705
Email	info@gesza.co.za

3. RESULTS

3.1. Emission results

Table 3.1.1: Emission results (under normal operating conditions)

Point source	Pollutant	Reference AEL Emission limit (mg/Nm ³)	Measured hourly average concentration (mg/Nm ³)
1: Nitric acid stack	NO _x (expressed as NO ₂)	2000	191
	NH ₃	100	0,1
2: Ammonium nitrate stack	PM	50 on a wet basis	See Note 1 below
	NH ₃	180 on a wet basis	
3: Granular fertilizer stack	PM	100	31
	NH ₃	300	1,7
4: Ammonium sulphate stack	PM	100	4,1
	NH ₃	100	15

Note 1: The March 2017 sampling data, included in the compliance report for 2017 confirmed compliance with the applicable limits. However, during 2018, we experienced challenges with the taking of the required samples during the same scheduled sampling period, given that the plant was not in operation during this period of scheduled sampling. During this and the following months, our Secunda operations experienced several plant trips that resulted in unstable plant conditions. These plant trips were outside of our control. Consequently, we were unable to schedule timeous sampling during the period under reporting. However, we deem it prudent to include the data from sampling undertaken on 7, 8 and 9 August 2018 to enable our performance and compliance assessments. It should be noted, as illustrated in the graphs below, that there are outliers where compliance with the applicable limits are exceeded. This is inconsistent with the compliance data from March 2017. We are mindful that the sampling campaign was undertaken shortly after the annual shut down of our plant and that the plant operating conditions may not necessarily have been optimally stable and representative of normal operating conditions. We are therefore undertaking the necessary actions to comprehensively assess our plant performance. This includes the undertaking of maintenance, further monitoring and associated data verification in the interest of sustained compliance.

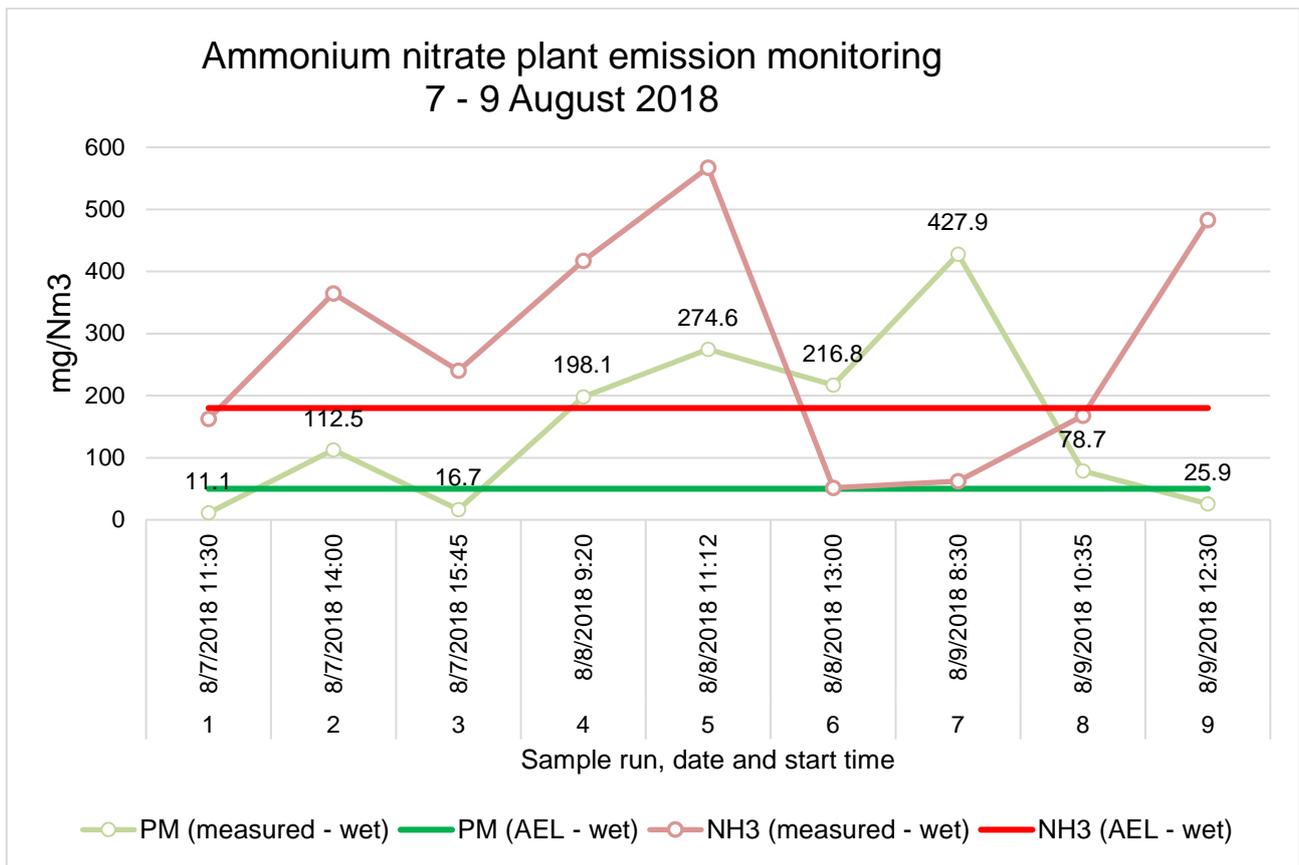


Table 3.1.2: Dust fallout monitoring for burning grounds

Restriction Areas	Dust fall rate (D) (mg/m ² /day, 30-days average)		Permitted frequency of exceeding dust fall rate	
Residential Area	D < 600		Two within a year, not sequential months	
Non-residential area	600 < D < 1200		Two within a year, not sequential months	
Monitoring location	Nitro dam wall	Nitro export entrance	Nitro cell phone tower	Nitro explosives entrance
Site classification	Non-residential	Non-residential	Non-residential	Non-residential
July 2017	11	76	27	58
August 2017	30	44	39	76
September 2017	54	89	38	65
October 2017	52	58	68	98
November 2017	32	51	36	76
December 2017	31	61	55	79
January 2018	61	261	34	202
February 2018	42	134	260	195
March 2018	40	110	78	139
April 2018	44	143	57	128
May 2018	80	384	102	162
June 2018	99	210	100	151

Table 3.1.3: Observed SO₂ concentrations by passive samplers for burning grounds

SO₂ concentrations recorded at the passive sampling locations do not indicate the contribution of the burning grounds alone. They also measure cumulative impact of the Sasol Secunda complex and other off-site sources.

In order to assess SO₂ concentration against annual ambient air quality standard of 19 ppb, data from May 2017 to April 2018 was used.

SO₂ concentrations (ppb)			
Location	Nitro plant	Dam	Cell phone Tower
Annual ambient SO₂ standard			19 ppb
May 2017	5,6	7,4	20,3
June 2017	20	ND*	0,7
July 2017	11,3	53	12,3
August 2017	15,2	12	ND*
September 2017	Passive sampling was not conducted during these months due to contractual matters which took longer than expected.		
October 2017			
November 2017	20,6	22,7	21,3
December 2017	11,4	8,8	14,8
January 2018	3,3	3,7	8,0
February 2018	1,5	0,6	12,9
March 2018	3,5	6	6,3
April 2018	7,3	3,9	5,6
Annual average	10	13,1	11,4

ND* denotes no data. Passive samplers were damaged during data collection.

4. COMPLIANCE AUDIT REPORTS

No AEL related findings were identified during the second party audit conducted in 2018 financial year.

5. MAJOR UPGRADE PROJECTS

No major project upgrades for abatement or process equipment were initiated or completed during the reporting period ended June 2018.

6. GREENHOUSE GAS (GHG) EMISSIONS

Sasol South Africa Limited is registered as required in terms of the National Greenhouse Gas Emission Reporting Regulations, section 5 (1) with the Department of Environmental Affairs (DEA). Data has been submitted to the DEA on 31 March 2018 for calendar year 2017 as per the requirements set out in Annexure 3 of the Regulations. The GHG emissions and activity data relates specifically to all the registered Sasol facilities.

Please refer to Annexure 1 for the GHG emission and activity data that was submitted.

7. PUBLIC CONSULTATION FORUM

Two public consultation sessions were held in FY18 to meet the applicable AEL requirements. On 29 November 2017, public consultation sessions were held at Sasol eMbalenhle club and Sasol Secunda recreation club. Another session was held at Difa Nkosi hall in Lebohang on 30 November 2017. The second round of public consultations took place at Secunda and Lebohang. On 19 April 2018 the scheduled session could not safely proceed at Sasol eMbalenhle recreation club due to unforeseen community disruptions unrelated to air quality management matters. However, it took place at Sasol Secunda recreation club. The session was held on 20 April 2018 at Leandra RDP hall took place as planned. (See annexure 2 for the presentation and attendance registers for the two sessions that took place in FY18).

8. ACTIONS TAKEN ON COMPLAINTS RECEIVED

No complaints were received during the reporting period ended June 2018.

ANNEXURE 1: SASOL'S 2017 GHG SUBMISSION TO THE NATIONAL GHG REPORTING REGULATIONS

Name of data provider		Herman van der Walt/Shamini Harrington											
Data Provider ID		170500107											
Date of submission:		31 March 2018											
Year of data:		2017											
Comments: Activity data has been supplied. A carbon mass balance has been used to determine GHG data. In most cases the activity data cannot be directly translated to GHG data. Flaring activity data cannot be supplied due to various streams entering the flare at any given time.													
IPCC code	Sub category (disaggregated by fuel / product type / production process)	Activity data			Emissions (tonnes/year)								
		Name of activity data	Value of activity data	Units of activity data	CO ₂			CH ₄			N ₂ O		
					Value	Tier	Reference - technical guidelines	Value	Tier	Reference - technical guidelines	Value	Tier	Reference - technical guidelines
1A1	1A1c	Boiler coal combustion	14 977 374	tonnes of run of mine coal	25 429 246	3	Page 52-54	300	1	Page 52- 54	449	1	Page 52- 54
1A1	1A1c	Gas to power plants	750 271	kNm ³	1 420 641	3	Page 52-54	25,3	1	Page 52- 54	2.53	1	Page 52- 54
1A1	1A1c	Fuel gas combustion	28 640 347	GJ	1 194 110	3	Page 52-54	21,3	1	Page 52- 54	2.13	1	Page 52- 54
1A1	1A1c	Fuel oil combustion	1 100 948	GJ	118 860	3	Page 52-54	4,6	1	Page 52- 54	0.92	1	Page 52- 54
1A1	1A1c	Sasol catalytic cracker	1 199 845	kNm ³	188 429	3	Page 52-54	7,3	1	Page 52- 54	1.46	1	Page 52- 54
1A1	1A1c	Wet sulphuric acid combustion emissions	177 871	kNm ³	68 055	3	Page 52-54	1,2	1	Page 52- 54	0.12	1	Page 52- 54
1A	1A1c	Natural gas combustion	910 988	GJ natural gas	39 454	3	Page 52-54	0,7	1	Page 52- 54	0.07	1	Page 52- 54
1B	1B3	Other Energy Industries: process emissions	30 042 216	kNm ³ (pure gas rate for CTL/GTC)	23 227 198	3	Page 52-54	96 416	3	Page 52- 54			
1B	1B3	Flaring emissions	No activity data due to complexity	N/A	2 027 278	3	Page 52-54						

			of the process											
1B	1B3	Wet sulphuric acid process emissions	177 871	kNm ³	309 044	3	Page 52-54							
1B	1B3	Butanol stripper	182 658	tonnes of butanol	15 323	3	Page 52-54							
4D	4D2	Process water dams	23 360	tonnes process water feed	7 065	3	Page 52-54	3 853	3	Page 52-54				
4D	4D2	Water recovery (including domestic sewage)	119 401	tonnes COD	180 962	3	Page 52-54							
2B	2B2	Nitric acid production	643 962	tonnes of nitric acid							692	3	Page 52-54	
2B	2B1	Ammonia production	313 043	tonnes of ammonia	241 415	3	Page 52-54	7 962	3	Page 52-54				
1B	1B1	Sasol Mining	40 020 782	tonnes of coal mined	0			3 229	2	Page 52-54				
1B2	1B2b	Natural gas venting from the pipeline	4 555 664	kNm ³ of natural gas	0			243	2	Technical Page 52-54				
4C	4C2	Open burning of waste	Not applicable											
1A5	1A5b	Mobile combustion: Mining machinery	245 406	litres of petrol and diesel	19 410	1	Carbon budget reporting requirement							

ANNEXURE 2: PUBLIC CONSULTATION FORUM ATTENDANCE LIST AND PRESENTATION (SEE ATTACHED DOCUMENTS)

ANNEXURE 3: STACK EMISSIONS SAMPLING REPORTS (SEE ATTACHED REPORTS)