

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.

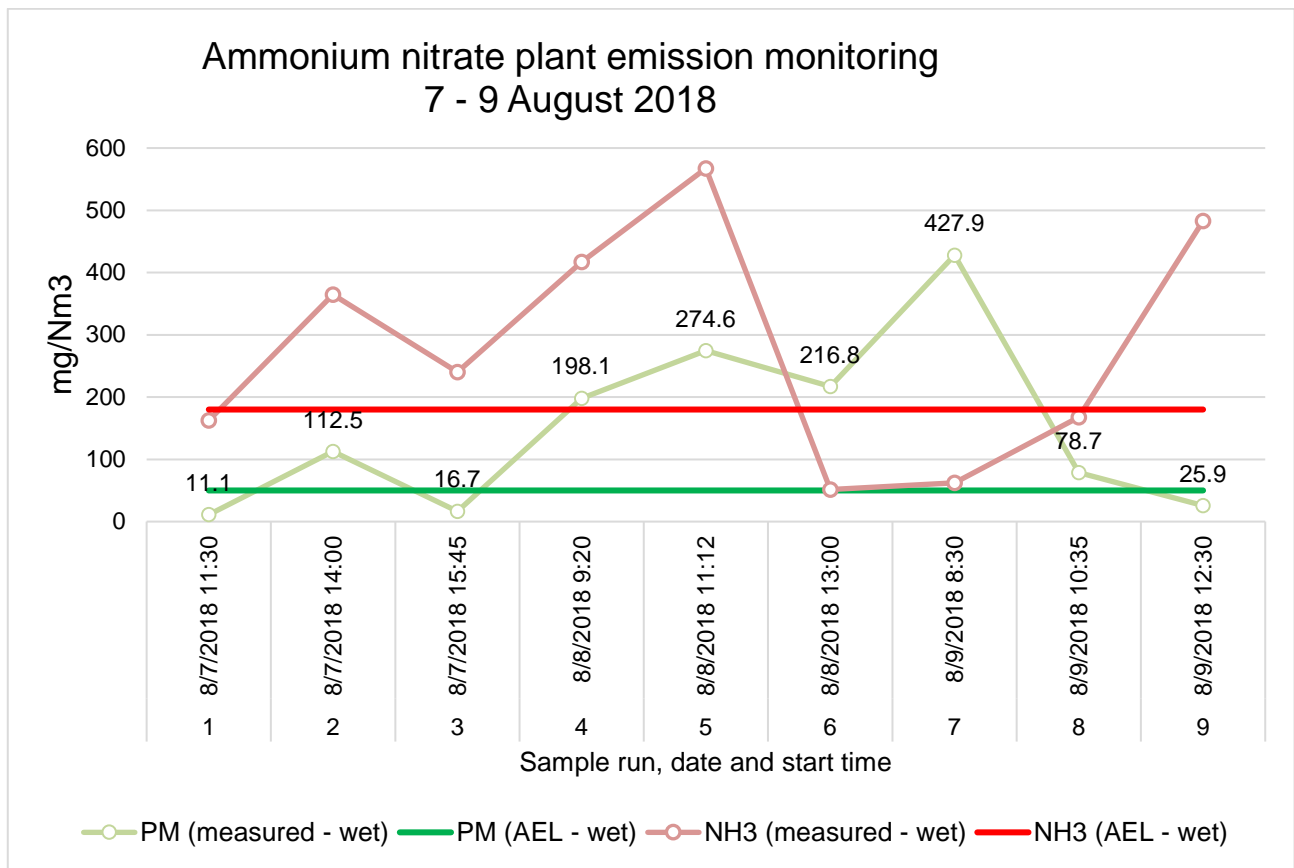


Table 3.1.2: Dust fallout monitoring for burning grounds

| 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

ANNEXURE 11 CASE 11: 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)