

# BACKGROUND INFORMATION DOCUMENT

April 2022

## SASOL SOUTH AFRICA LIMITED OPERATING THROUGH ITS SECUNDA OPERATIONS

### APPLICATION FOR A LOAD BASED EMISSION LIMIT FOR SULPHUR DIOXIDE (SO<sub>2</sub>) IN TERMS OF CLAUSE 12A OF THE MINIMUM EMISSION STANDARDS (MES) OF 22 NOVEMBER 2013 AS AMENDED, PUBLISHED IN TERMS OF SECTION 21 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT 39 OF 2004

#### Introduction & Overview

The National Environment Management: Air Quality Act (Act No. 39 of 2004) (AQA) reformed the law regulating air quality by the setting of emission and ambient air quality standards to protect human health and the environment.

Sasol's Secunda Operations activities in the main relate to the conversion of coal into liquid fuels and a range of chemical products. Secunda Operations has various atmospheric emissions across its operations.

While most of the Secunda Operations processes can comply with the MES limits, there were certain activities for which Secunda Operations was unable to comply with the specified

compliance timeframes, or the new plant emission limits that came into effect on 1 April 2020. For these specific cases Sasol applied for and was granted, postponement of the compliance timeframes until 31 March 2025.

Secunda Operations is currently on track with its air quality improvement plans to achieve the 2025 compliance requirements for all emission sources except for the steam plant boiler operations SO<sub>2</sub> MES limit.

As such, Secunda Operations intends to apply for an alternative load-based emission limit for SO<sub>2</sub> in terms of Clause 12A of the MES (GN1207 in Government Gazette 42013 of 31 October 2018)

The purpose of this Background Information Document (BID) is to present Secunda Operations' reasoning for an alternative load based SO<sub>2</sub> emission limit and to invite your participation in that process.



Figure 1: Secunda Operations petrochemical facility which is situated in Secunda, Mpumalanga. A SO<sub>2</sub> load based emission limit for the Steam Plant is sought as detailed in this BID

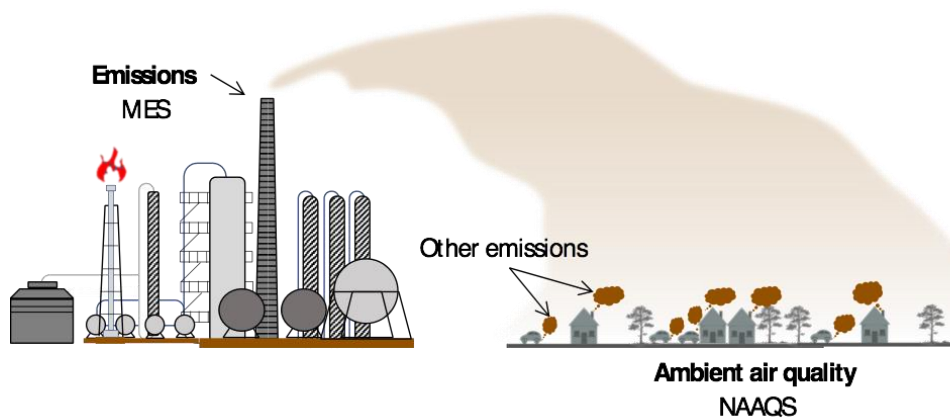


Figure 2: Schematic illustrating the difference between point source emission standards and ambient air quality standards

### What are the MES?

The Minimum Emissions Standards (MES) issued by the Department of Forestry, Fisheries and Environment (DFFE), prescribe emission limits that must be complied with by different industrial activities. Emissions limits are prescribed for Secunda Operations too, and such limits are specified for emissions of many substances which include amongst others: Sulphur Dioxide (SO<sub>2</sub>), Particulate Matter (PM) and Nitrogen Oxides (NO<sub>x</sub>) from the boilers at the steam plant.

The MES are prescribed by the DFFE to control sources of air pollution so that ambient air quality (essentially the air that we breathe) does not present risks to human health and the environment. The DFFE also publishes National Ambient Air Quality Standards (NAAQS) to prescribe tolerable concentrations of pollution in ambient air. These various concepts are illustrated schematically in Figure 2.

### What is Secunda Operations' approach to air quality management?

Secunda Operations accepts the objectives of the MES. To date, through a variety of projects, Secunda Operations has been able to meet the prescribed MES for most of their point and area emission sources.

### What is Secunda Operations applying for?

A key part of the petrochemical operation at Secunda is the generation of steam using boilers. High pressure steam is utilized throughout the Secunda facility. It is used as a heating medium and also as feed to the coal gasification process. In addition, the steam produced is used to generate electricity thereby reducing electricity import from Eskom and ensuring that the factory can safely shutdown in the event of an interruption in the supply from Eskom.

Emissions of SO<sub>2</sub>, PM and NO<sub>x</sub> from the Steam plant boilers are limited by the MES. Secunda Operations is on track to achieve the MES for PM and NO<sub>x</sub> by 31 March 2025, . However, achieving the SO<sub>2</sub> limit is technically extremely challenging due to the integrated nature of the Sasol process as well as physical constraints imposed by the congested nature of the facility.

### What has Secunda Operations done?

Secunda Operations steam plant boiler SO<sub>2</sub> compliance studies have considered detailed technology scans and investigated various air quality abatement technologies for SO<sub>2</sub>. Unfortunately, there is no viable abatement technology solution that can be fitted to the Secunda Operations Steam plant boilers to comply with the SO<sub>2</sub> MES limit by 2025.

Secunda Operations' compliance efforts also include the development of coal beneficiation as an abatement option which considers removing Sulphur containing minerals from the coal before burning the coal in the boilers, using a process known as coal washing.

Although coal washing has the potential to reduce SO<sub>2</sub> emissions to achieve the promulgated standard of 1000 mg/Nm<sup>3</sup>, coal washing would create other additional environmental impacts associated with the resultant wastewater and the footprint of the required facility. In addition, coal washing is not aligned to Secunda Operations' sustainability objectives and long-term vision of moving away from coal, therefore an investment in coal washing would be contrary to the phasing out of coal.

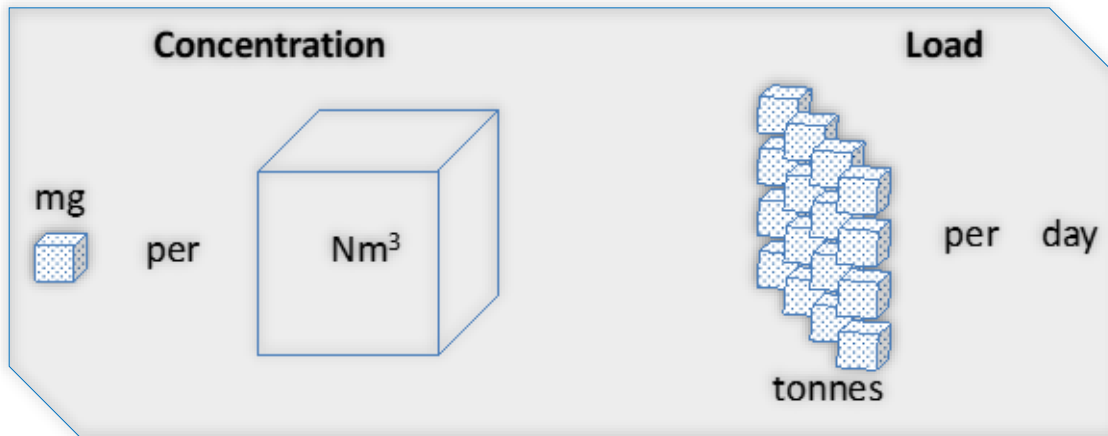


Figure 3: Illustration of the difference between concentration and load

### What is Secunda Operations proposing to do?

Secunda Operations is proposing to reduce the quantity of SO<sub>2</sub> it emits to atmosphere from 2025, compared to what it emits currently. Secunda Operations intends to achieve this reduction by implementing various projects that will reduce the amount of steam required from coal fired boilers between 2025 and 2030. Secunda Operations has also implemented a widespread energy efficiency programme across the industrial operation so that far less electricity is required than previously. In addition, Sasol plans to source electricity generated from renewable sources.

With less electricity and steam required from the coal fired boilers, Secunda Operations would be able to turn down the current boiler fleet, thereby reducing all emissions from coal combustion.

Reducing the operations of the boilers would see a material reduction in the quantity of SO<sub>2</sub> emitted from Secunda Operations. At the same time there would be a material reduction in NO<sub>2</sub> and PM emissions.

Even with the reductions in emissions, though, Secunda Operations would still not be able to comply with the MES for SO<sub>2</sub>. The inability to comply is because the MES prescribes pollutant concentrations and not pollutant quantities.

The MES require Secunda Operations to ensure that the concentration of SO<sub>2</sub> is less than 1 000 mg/Nm<sup>3</sup>. Stated differently, the MES defines that provided Secunda Operations does not emit more than 1 kg of SO<sub>2</sub> per cubic meter of air it is compliant, regardless of how many kilograms it emits or indeed the rate that it emits.

This is relevant because the ambient concentrations that the DFFE wants to achieve are a function of the quantity that is emitted and the rate (the load), not the concentration (Figure 3).

### What is Clause 12A of the MES?

In the last revision of the MES, a new provision was added, i.e. Clause 12A (GN 1207 in Government Gazette 42013 of 31 October 2018). Clause 12A allows an existing plant to make a case for being limited by the DFFE to a load-based emission limit (the quantity and the rate of the pollutant emissions) and not a concentration limit (the amount of pollutant per cubic meter of air emitted).

### What is Secunda Operations Clause 12A application process?

Secunda Operations is accordingly applying to the National Air Quality Officer (NAQO) to be limited by the MES to a prescribed emission load in accordance with Clause 12A of the MES rather than a emission concentration.

To support a Regulation 12A application, Secunda Operations will conduct an assessment of the ambient air quality implications of the proposed approach.

Secunda Operations has appointed independent specialist service providers to compile the Regulation 12A application. Air Resource Management (Pty) Ltd has been appointed to conduct the public participation and stakeholder engagement process and Airshed Planning Professionals (Pty) Ltd has been appointed to prepare the Atmospheric Impact Report (AIR).

The AIR will establish an independent and objective analysis of the impact on ambient air quality of a load rather than a concentration limit for SO<sub>2</sub> emissions from the boilers at the steam plant. Secunda Operations will also ensure that the motivation report supporting the Clause 12A application is provided for public review and comment, together with the AIR.

### How will stakeholders be involved in his application?

Stakeholder consultation is a key component of the Secunda Operations Clause 12A application process. The consultation process is shown in figure 4. During the stakeholder consultation process, Interested and Affected Parties (I&AP's) will have an opportunity to review and comment on the relevant documents applicable to the Secunda Operations Clause 12A application including the motivation for the application and the Atmospheric Impact Report (AIR).

### How do you register as an I&AP?

You are invited to register as an Interested and Affected Party (I&AP). As a registered I&AP you will be invited to participate in the public engagements and receive access to all relevant documentation at the start of the public consultation process. A period of 30 days is available to review the relevant documents applicable to the Secunda Operations Clause 12A application and to submit comments. I&APs must please provide their comments together with their name, contact details (preferred method of notification, e.g. e-mail address or cell number) and an indication of any direct business, financial, personal or other interest which they have in the application to the contact person indicated in this notice within the review period.

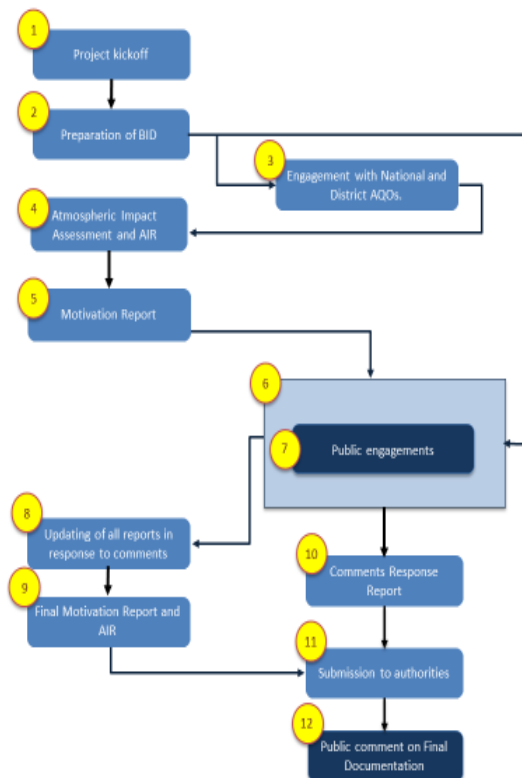


Figure 4: Schematic presentation of the public participation process for Secunda Operations Regulation 12A SO<sub>2</sub> emission load-based application

All interested and affected parties (I&APs) are also invited to attend Stakeholder Open day to be held on the 6<sup>th</sup> of May 2022 at the Lilian Ngoyi Centre in Secunda, from 10 am to 4 pm. You are kindly requested to RSVP as soon as possible should you wish to attend.

**To register as an I&AP, RSVP to the Stakeholder Meeting and/or to obtain more information, please contact:**

**Anesu Shamu**

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Tel: 011 655 7170

E--mail: [comments@arm-air.co.za](mailto:comments@arm-air.co.za)

Please ensure that you register within the timeframes provided. Alternatively, you can utilise the online comment form:

[https://form.jotform.com/Anesu\\_Shamu/sasol-registrationform](https://form.jotform.com/Anesu_Shamu/sasol-registrationform)

