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Att: Heloise van Schalkwyk
Acting Director: Appeals and Legal Review
Per Email: hvanschalkwyk@dffe.gov.za

CC: Advocate Patel
Per Email: fpatel@dffe.gov.za

Your reference	Our Reference	Date
LSA234243	I Sampson/KAM SASO10973.288	17 April 2024

Dear Ms Van Schalkwyk

APPEAL DECISION AGAINST THE REFUSAL DECISION OF THE NATIONAL AIR QUALITY OFFICER ISSUED TO SASOL SOUTH AFRICA LTD, SECUNDA OPERATIONS (REFERENCE LSA 234243)

1. I refer to the above decision ("appeal decision") and the related correspondence with the Appeals Directorate and the NECA Forum ("the Forum") regarding paragraph 4.3.2 and 4.3.3 thereof. I further refer to your decision letter dated 15 April 2024 in which you kindly agreed to grant the appellant, Sasol South Africa Limited's ("Sasol"), request for an extension until 17 October 2024, to file with you the information it has been directed to file in terms of the aforementioned paragraphs of the appeal decision.

2. Included herewith, is Sasol's submission of information as directed in paragraph 4.3.2 of the appeal decision.

3. You are aware that representatives from Sasol and I met, together with Just Share and their legal representative, with the Forum on 12 April 2024 to obtain clarity on what information the Forum and Dr Ramsay are anticipating receiving with respect to the Minister's direction in paragraph 4.3.2 of the appeal decision. Based on the clarification provided the information submitted therefore includes 2019 and 2023 sulphur dioxide (SO_2) emissions data, at a higher-resolution for five relevant days during each of the

calendar years where Sasol operated at relatively higher SO_2 emission concentrations. This level of specificity was requested by the Forum.

4. SO_2 emission data for the steam plants (east and west) located at the Secunda Operations (east and west factory respectively) for calendar year (CY) 2019 and CY 2023 is attached as **Annexure "A"**. The data consists of daily average concentrations (on a dry basis at 10% oxygen) for the SO_2 emissions at each of the west and east main smokestacks. This data is used as the basis for justifying the proposed concentration , as required in terms of paragraph 4.3.2.

5. In addition to the abovementioned data, higher resolution emission data (ten-minute averages) is provided for five days during each of CY2019 and CY2023 and is also included in Annexure "A". The selected days are representative of periods of normal operation.

6. The concentration limit which Sasol deems to be justified and appropriate, and therefore proposed, is **2000 mg/Nm^3** to be applied for emissions from the steam plants (applicable to both the east and west stack). It should be noted that this concentration limit represents a maximum or ceiling value below which the steam plants at the Secunda Operations can consistently operate with due consideration to the aspects explained in 7.1 below. It is also the current limit included in Sasol's atmospheric emissions license as referred to in paragraph 7.3 which is lower than the existing plant standard of 3500 mg/Nm^3.

7. In Sasol's view the proposed limit is justified using the following as key considerations:

7.1. **Variability of Sulphur Content in the Coal**

The variability of sulphur content in the fine coal feed to the boilers at the steam plants determines the concentration of SO_2 emissions from the steam plants. Therefore, the concentration of the SO_2 emissions is not a function of plant performance and cannot be controlled through operational levers and plant optimisation interventions.

In contrast, Sasol can utilise operational levers to ensure consistent operations below the granted load-based limits.

The steam plants use fine coal, a by-product of mining coarse coal for our primary process (coal-to-liquids), as feedstock. SO_2 is a by-product of the sulphur found in impurities in the coal such as pyrite (a sulphur containing mineral). The quality of the coal, and thus the sulphur content, is variable and dependant on the geological composition of coal in the area being mined. The variability in the sulphur content in coal used at the steam plants in question is illustrated in figure 1 below. Notably, the range within which the sulphur content varies, remained relatively consistent over a longer-term period from 2016 to 2024. It is therefore a reasonable assumption that this variability trend will continue with

associated variability, as a direct consequence, in the concentration of SO_2 in the emissions from the steam plants.

These aspects are key considerations for the purposes of justifying and determining the concentration limit Sasol has proposed. . It appropriately informs the ceiling limit which we can consistently maintain. The data submitted in Annexure “A” as well as that presented in figure 1 support this.

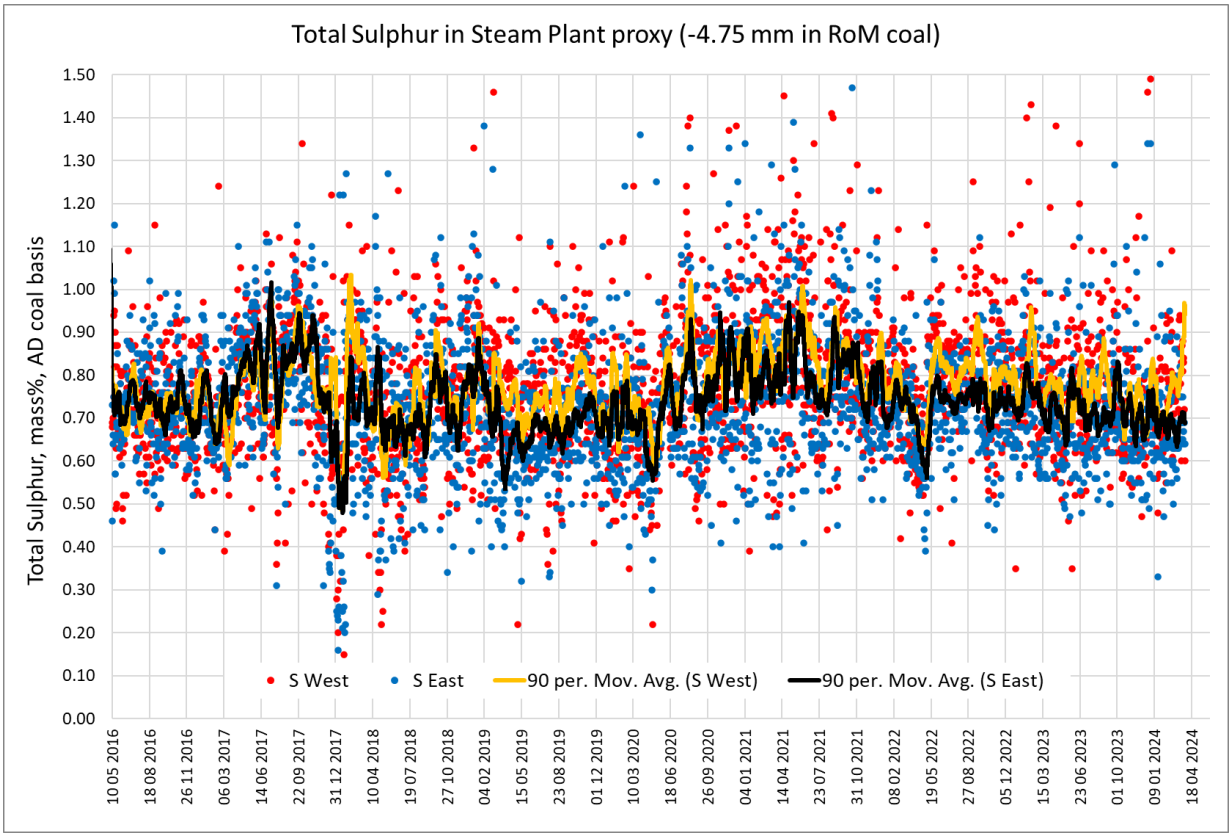

Figure 1: Variability in the sulphur content of the coal feed to the steam plants

The western factory and the eastern factory receive coal from different mines. In general, the coal from the mines feeding the eastern factory has a lower sulphur content than those feeding the western factory. The SO_2 concertation in the emissions from the western steam plant is therefore higher than for the eastern steam plant, as is evident from the data submitted.

The emission data from the western steam plant was, therefore, used to calculate an emission limit below which both the eastern and western plant operated (ceiling or maximum concentration) during the periods being evaluated.

7.2 **Impact of Emission Concentration at the Point Source**

Sasol's 12A application and subsequent appeal motivated to be regulated on a load based limit with due consideration of atmospheric impacts and health impacts supported by expert evidence and views. The load-based limit has since been granted.

For ease of reference, I refer you to the relevant key extracts below from the report submitted as part of Sasol's appeal "Independent study of load vs concentration limits – SO_2 emissions" by Osman Environmental Solutions LLC.

"Concentrations of air pollution in a stack are far less important in evaluating environmental impacts than are the total masses (load) of air pollutants emitted. A 3 MW boiler and a 75 MW boiler both could have emission limits of 1,000 mg/Nm^3, but the larger boiler would consume 25 times more air resources than the smaller boiler. Mathematically, a source could operate for 10 minutes with emissions 100 times greater than the daily average concentration limit and still be in compliance with the MES. Thus, there is no guarantee that compliance with the MES is protective of human health. Consequently, in terms of environmental harm, the mass-based metric is much more important than the concentration at which pollutants are being emitted into the atmosphere".

It follows that emission load is a more reliable and a direct indication of the potential health impact than an emission concentration. Accordingly, the appropriateness of a concentration-based limit, should not usurp the granted load based limit which Sasol demonstrated in its application (and appeal) will primarily yield the ambient air quality benefits, as a compliance tool in this regard.

7.3 **Justifying a Concentration Based Limit Aligned with our AEL and Impacts Assessed for the Clause 12A Application**

As part of Sasol's Clause 12A application (and reiterated in the appeal) it was demonstrated, based on measured ambient concentration data as well as the atmospheric impact report, that emissions from the steam plants neither cause nor contribute to exceedances of the national ambient air quality standards for SO_2, while operating in accordance with the concentration based emission limit of **2000 mg/Nm^3** included in Sasol's atmospheric emission license (AEL). Sasol, therefore, deems it appropriate and justified to continue adhering to this limit while reducing the mass of emissions in accordance with the conditions of the appeal decision.

7.4 Evaluation of Emission Data

As shown above the coal quality of the western factory has a higher sulphur content than that of the eastern factory. For this reason emission data from the western factory was used to calculate the ceiling limit below which the plant is able to consistently operate considering the 2019 and 2023 data. The results from this analysis are captured in the table below and Annexure "A".

Tabel 1: Evaluation of emission data

West factory SO_2 emission data (mg/Nm^3)		
Percentile	**CY2019**	**CY2023**
50	1238	1142
55	1250	1155
60	1266	1163
65	1279	1181
70	1300	1203
75	1330	1227
80	1371	1246
90	1534	1325
95	1579	1391
99	1661	1494
100	1745	1522
Maximum	**1745**	**1522**
Standard Deviation	188	138
Average	1242	1146
Average plus 2 x Standard Deviation	1618	1422

The results confirm the variability of SO_2 emissions in line with the variability in the sulphur content of the coal. It confirms that operating below a limit of 2000 mg/Nm^3 is possible based on the trends and assumptions referred to in paragraph 7.1 above.

Yours sincerely

Ian Sampson
SHEPSTONE & WYLIE
(This document has been sent electronically and is therefore not signed)