

Consolidated information on initial & additional postponements and responses to technical clarifications: Sasol Secunda complex

The information provided below underpins the information already provided and summarised elsewhere in documents pertaining to the postponement application, including the final motivation reports and associated technical appendices, the final Atmospheric Impact Report and the final Comment and Response Report.

This document contains three sections:

- A. Technical clarification on aspects of the applications, linked to information contained in postponement applications;
- B. Reference tables consolidating information pertaining to the applications as extracted from the application documentation, along with references to the applicable emission sources in the redacted Atmospheric Emissions Licence and 2014 annual emissions report;
- C. A summary table contextualising the requested alternative emissions limits for each applicable point source including extracts from the source data used to inform these limits.

A. Responses to technical clarification questions

1. Can Sasol Secunda provide additional information on the compliance roadmaps and projects and timelines?

Figure 1 below is an excerpt from Chapter 7 of the final motivation reports for initial and additional postponement. A summary of the roadmap detail is provided below, and referenced to the specific sections of the application where this information is provided.

Section 7.5 of the final motivation report for additional postponement provides detail on progress on implementation of the roadmap from September 2013 – November 2014. Table 4 of the final motivation report for initial postponement (pg 23) highlights the requested period of postponement, linked to project schedules where compliance solutions have been identified.

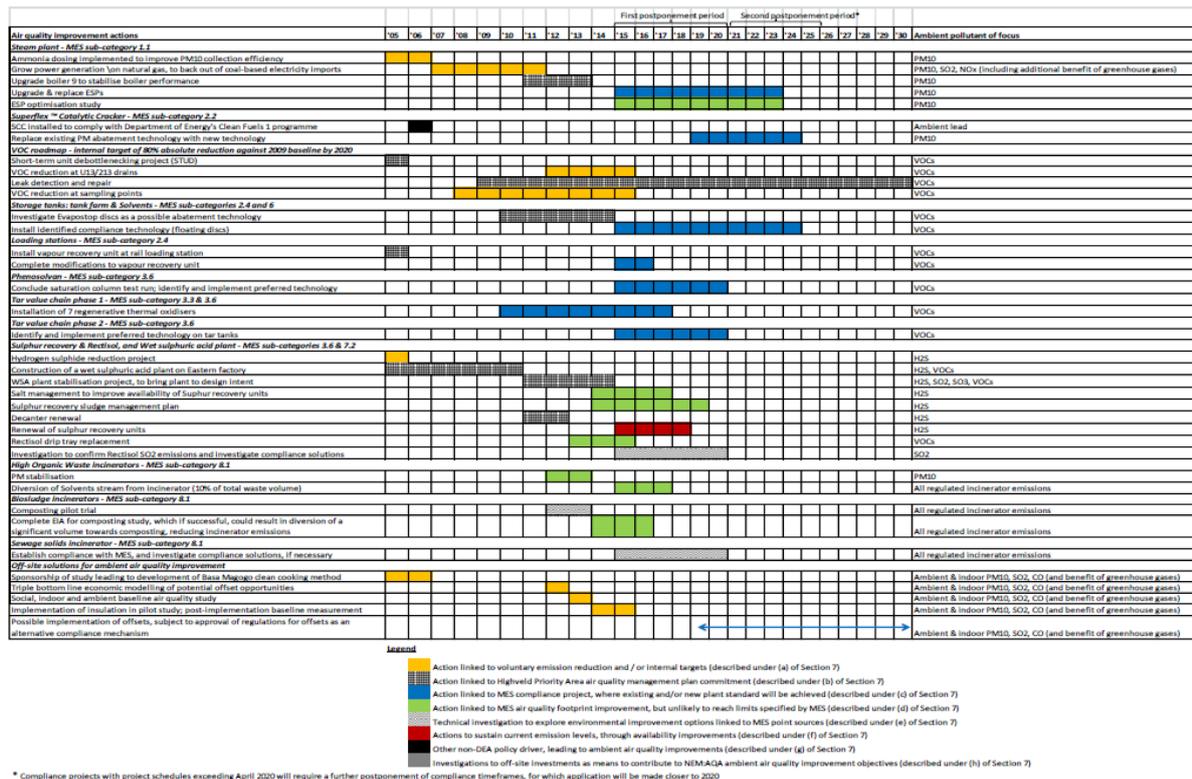


Figure 1: Secunda roadmap for sustainable air quality improvement, as depicted in Chapter 7 of the final motivation reports for initial and additional postponement (note: this is a condensed diagram, the motivation report contains an A3 version)

1.1. Steam plant (Category 1.1)

At the steam plant, an initial postponement was requested to allow for the successful implementation of a project to reduce PM emissions. PM emissions can be reduced by the renewal of the steam plant electrostatic precipitators to reach the existing plant PM standards under all normal operating conditions. As the performance of the ESP deteriorates over time, to keep the emissions below the existing plant standard of 100 mg/Nm³ will not only require the renewal of internals but also the continuous maintenance of these systems to prevent deterioration in PM emissions. Further information is contained in section 2 of the technical appendix to the initial postponement motivation report. A schedule is provided in chapter 7.4 of the initial postponement motivation report (Summary of roadmap to sustainable air quality improvement). The schedule for this project is based on the statutory maintenance schedule of the boilers.

1.2 Superflex Catalytic Cracker (Category 2.2)

Current information indicates that full compliance can only be achieved by upgrading or replacing the current abatement equipment at SCC with a different technology. Technology assessments indicate that certain identified solutions employed on typical FCCs may also reduce emissions on the SCC process, although by an unknown quantum on this unique facility. A full technology evaluation is being conducted to identify the most appropriate technology suitable to the unique conditions of the SCC plant as discussed in section 3 of the technical appendix of the initial postponement motivation report. A schedule is provided in chapter 7.4 of the initial motivation report (Summary of roadmap to sustainable air quality improvement).

1.3 Petroleum products storage tanks for Sasol Synfuels, Sasol Oil and Sasol Solvents (Categories 2.4 and 6)

Sasol Synfuels, Sasol Oil and Sasol Solvents are seeking a postponement in order to finalise its studies to confirm the effectiveness of floating disk technology in reducing VOC emissions from tanks, thereafter to obtain the authority's approval on the use of the alternative technology, and, subject to its approval, implement the solution on the applicable tanks. Subject to their approval and installation, the efficiency of the floating devices would be monitored as part of the Sasol Synfuels fugitive emissions monitoring program to ensure that the floating devices remain effective over time. Further information on floating disks and their implementation is contained in section 4 of the technical appendix to the initial postponement application. A schedule is provided in chapter 7.4 of the initial motivation report (Summary of roadmap to sustainable air quality improvement).

1.4 Road and rail loading facilities (Category 2.4)

A vapour recovery unit has already been installed at the Loading facility, as required by the MES. However, to ensure safe operation of the unit, changes are required to the unit. Once these changes have been implemented, the unit will be operational, as indicated in section 5 of the technical appendix to the initial postponement application. A schedule is provided in chapter 7.4 of the initial motivation report (Summary of roadmap to sustainable air quality improvement).

1.5 Emission sources to be incorporated under Tar value chain phase 1 project (Categories 3.3 and 3.6)

Sasol has undertaken proactive investments informed by a risk-based approach and aligned with voluntary internal targets. One example is investments on the VOC roadmap, to reduce emissions of VOCs by 80% by 2020, off a 2009 baseline. The projects address VOC emissions beyond that which is required by the MES. The Tar value chain Phase 1 project aims to address, in addition to the point sources and tanks listed in the AEL, various other fugitive emission sources (drains and sumps) that contribute to VOC concentrations. Further information is contained in section 6 of the Technical appendix to the initial postponement application. A schedule is provided in chapter 7.4 of the initial motivation report (Summary of roadmap to sustainable air quality improvement). To date, two of the seven RTOs are installed and in the process of being commissioned.

1.6 Emission sources to be incorporated under Tar value chain phase 2 project (Category 3.3)

Similar to the tar value chain Phase 2 project, the Phase 2 project aims to reduce VOC emissions in line with an internal VOC reduction target. The Phase 2 portion of this project aims to address tanks listed in the AEL as indicated in the Table below. The project aims to achieve full compliance with the MES. For further information on the roadmap to compliance is discussed in section 7 of the Technical appendix to the initial postponement application. A schedule is provided in chapter 7.4 of the initial motivation report (Summary of roadmap to sustainable air quality improvement).

1.7 Phenosolvan (Category 3.6)

As indicated in section 8 of the Technical appendix to the postponement application, various options are currently under investigation to identify the optimal solution to achieve the MES. The investigations require testwork to assess the applicability of the preferred solution and synergies with the Tar value chain Phase 1 project is also under investigation, but dependent on the commissioning of the Phase 1 RTOs as indicated in the Technical appendix. A schedule is provided in chapter 7.4 of the motivation report (Summary of roadmap to sustainable air quality improvement).

1.8 Sulphur recovery and Rectisol plant (Category 3.6)

As part of the implementation of commitments to the Highveld Priority Area air quality management plan a wet sulphuric acid plant was constructed on Sasol Secunda's eastern factory to reduce H₂S emissions. Various technology options have been identified and further investigated to assess the feasibility of their implementation. Further information on the technologies investigated to further reduce H₂S emissions is contained in section 9 of the Technical appendix to the additional postponement application.

The 2013 MES introduced an SO₂ standard for this listed activity. Although it is not expected that there will be significant concentrations of SO₂ in this stream, a postponement is requested to allow for measurements and investigations to understand the source of SO₂ emissions, as detailed in section 9 of the technical appendix to the initial postponement application.

1.9 Wet sulphuric acid plant (Category 7.2)

As indicated in 1.8 above, a Wet Sulphuric Acid Plant (WSA) was installed on the eastern side of the factory to reduce H₂S emissions. The WSA experienced low availability due to technical challenges, however, focussed efforts to improve availability is ongoing and starting to show positive results. Further information on the technology options identified for compliance and the feasibility of these options is provided in section 4 of the technical appendix to the additional postponement motivation report.

1.10 Sewage solids incinerator (Category 8.1)

The sewage solids incinerator was not a listed activity prior to the promulgation of the MES in November 2013, as the throughput of the incinerator was below the threshold published in the 2010 MES. For this reason the emissions from the incinerator have not been fully characterised and an extensive monitoring campaign will be required. No technical investigations have been undertaken into potential solutions for compliance with the MES to date, given the recent changes to this listed activity category. The postponement on the existing plant standards is required to conduct and establish a comprehensive emission baseline inventory under all normal operating conditions, to ascertain what emissions will require abatement to comply with the MES as indicated in section 11 of the technical appendix to the initial postponement motivation report.

1.11 HOW incinerators (Category 8.1)

A study is currently underway to investigate the potential for diversion of the feed streams to the HOW incinerator away from the incinerators, by identifying alternative beneficial uses. The feasibility of this solution is currently unknown, but it is known that solutions to reduce volumes of feed streams to incinerators would not practically reduce emission concentrations, but would rather reduce the tons (pollution load) of emissions to atmosphere. Since the MES are specified on a concentration basis, reduction in tons of emissions from incinerators, while beneficial for ambient air quality, would not deliver compliance with MES. Further information on the technology options identified and assessed for feasibility is contained in section 6 of the technical appendix to the additional postponement motivation report.

1.12 Biosludge incinerators (Category 8.1)

Sasol is currently investigating the implementation of solutions driven by MES compliance, which are aligned with NEMA sustainable development principles and which result in point source emission improvements, but which are unlikely to reach the prescribed emission limits set by the MES. In the case of the biosludge incinerators, solutions informed by the waste hierarchy either to divert portions of waste streams from incinerators for beneficiation have been investigated. As indicated in Section 7.5 of the final motivation report for additional postponement, an environmental impact assessment is currently under way to take this solution to scale.

Further information on the technology options identified and assessed for feasibility is contained in section 7 of the technical appendix to the additional postponement motivation report.

2. What is the exit gas temperature achieved on the HOW incinerators?

The exit gas temperature of the HOW incinerators is provided in the table in Section B below.

3. What are the corresponding names of the listed activities seeking postponement in the atmospheric emission licence and the annual emission report?

The references to each point source under each listed activity category seeking postponement in the redacted AEL and annual emission report are provided in the table in Section B below.

4. How did Sasol derive the proposed alternative emission limits?

An explanation of how the alternative emission limits were derived for each “point of compliance” is provided in the table in Section C below.

5. Why are PM measurements at the Main Stack in the 2014 annual emissions report lower than the alternative emission limit requested for 2015?

(Note that further information on PM emission measurements is provided in the footnotes to the table in Section C below).

The fact that PM measurements at the Main Stack appear to be lower than the alternative emission limit, is a function of the change in how licence conditions are specified in the licence for the periods prior to, and after, the implementation of the 2015 MES. As a consequence of the change of definition for “point of compliance”, as provided in Part 2 of the 2013 MES, compliance monitoring will, from April 2015, be reported based on concentrations at different points in the process.

A schematic representation of the various process units and their interactions is provided as Figure 2 of the additional postponement motivation report, copied below for ease of reference as Figure 2. The figure indicates that process units from different listed activities release emissions to atmosphere via a single tall stack (one on the eastern factory and one on the western factory).

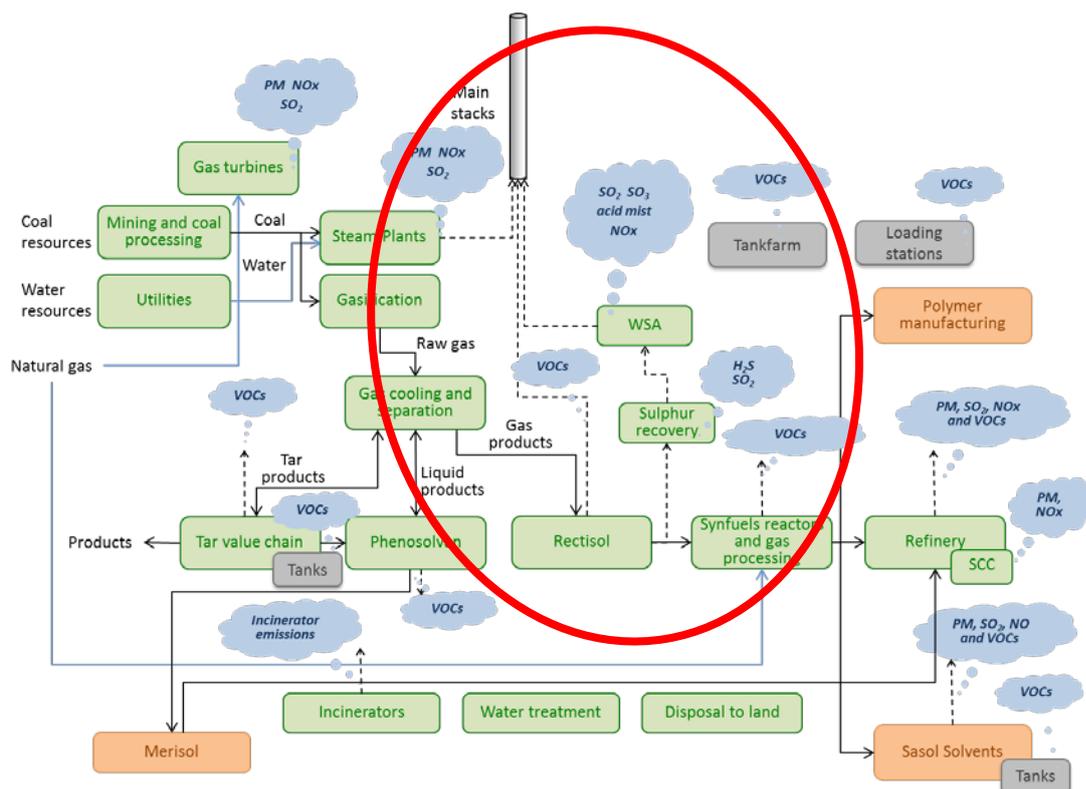


Figure 2: schematic representation of the Secunda facility, indicating that the Rectisol process, Sulphur recovery and Steam plant emissions exit via the main stacks (one on East factory, one on West factory), as per Chapter 2 of the final motivation reports

This is particularly important in defining the point of compliance for the sulphur recovery units and steam plants. This interaction is described in further detail in Section 2 of the technical appendix to the additional postponement motivation report, Figure 3 below and the text that follows is an excerpt from Chapter 2 of the technical appendix to the final motivation report for additional postponement (pg 10):

“The East and West factories each have a main stack, which disperse the emissions from two integrated Listed Activities (the steam plant under Category 1.1, and Rectisol and Sulphur Recovery under Category 3.6). Steam plant flue gases enter at the bottom of the stack at point B in Figure 3, and off gases from the Rectisol and Sulphur Recovery processes enter just above this point, at point A.

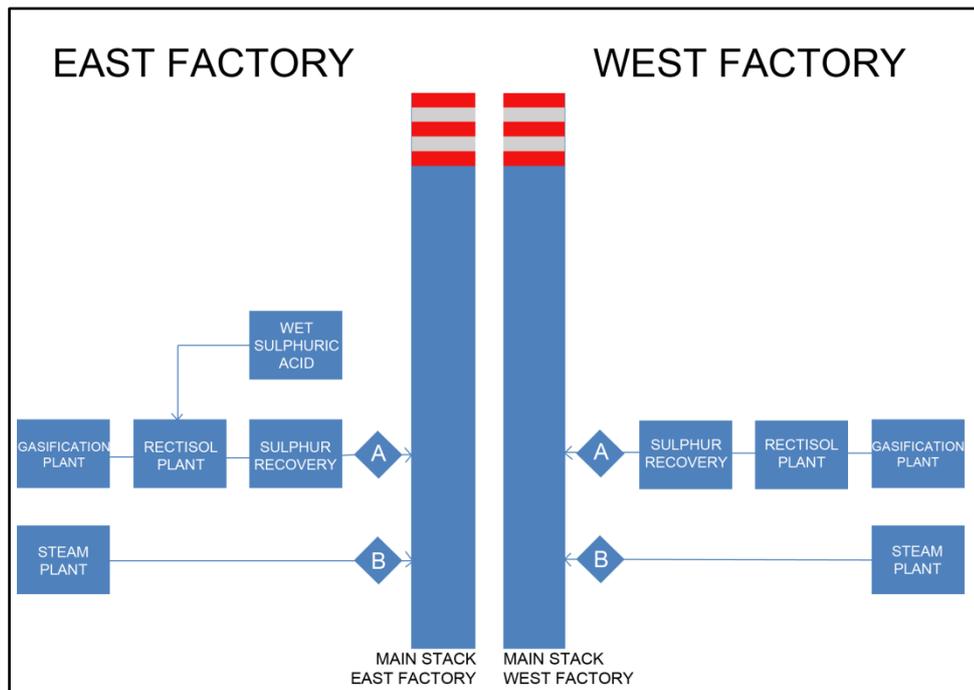


Figure 3: Integration of steam plant and Gasification off gas clean-up processes at main stacks for flue gas dispersion

The MES defines the point of compliance as “any point within the off gas line, where a sample can be taken, from the last vessel closest to the point source of an individual listed activity to the open-end of the point source or in the case of a combination of listed activities sharing a common point source, any point from the last vessel closest to the point source up to the point within the point source prior to the combination / interference from another listed activity”. In the diagram, the points of compliance equate to points A and B, which are points before the activities enter the common main stack and mix and dilute each other. Compliance with H₂S standards in terms of the promulgated MES therefore refers to concentration measurements at point A. Similarly, compliance with SO₂, NO_x and PM standards in terms of the promulgated MES refers to concentration measurements at point B.”

In terms of the currently applicable licence conditions, and hence aligned with the manner in which compliance reporting for FY2014 was done, PM measurements were taken in the main stack. Concentrations of PM measured in the main stack (after combination of the two listed activities) will therefore be lower than concentrations measured at point B.

The alternative emissions limit requested has been aligned with the “point of compliance” definition in the 2013 MES, and reflects the maximum daily average emission concentrations expected under normal operating conditions at point B.

B. Table of consolidated information for Sasol Secunda as extracted from initial and additional postponement applications, including references to AEL and 2014 annual emissions report

| Applicant | Listed activities seeking postponement | | Description of activity | Applicable MES, and requested alternative emissions limits and arrangements | Technical detail on application | Assessment of impacts on postponements for ambient air quality: Atmospheric Impact Report | | | | References to AEL and 2014 annual emissions report | | Other relevant references in application |
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| | MES Category | Name of process plant | | | | Pollutant | Point source parameters - AIR Table 4.1 pg 27 | Emission rates Baseline emissions: AIR Table 4.2 pg 28-31 (average emissions) and Appendix C2-5 pg 189-196 (maximum release rates). Compliance scenarios: Table 5.21 & 5.22 pg 101-106. | Start up, shut down and upset conditions | Impacts: sensitive receptors & isopleths – AIR Section 5.1 | Reference to point source information in AEL | |
| Located in initial or additional postponement application | | | Section and page reference to applicable motivation report | Section and page reference to applicable motivation report | Section and page reference to technical appendix to applicable motivation report | | | | | | | The columns to the left describe the impact of each listed activity on ambient air. The cumulative impact of all listed activities for criteria pollutants are described in the following Sections of the AIR: Section 5.1.8.1.1 and Fig 5-50 pg 109-110 (SO ₂); Section 5.1.8.1.2 and Fig 5-61 pg 116-117 (NO _x); Section 5.1.8.1.3 pg 121-122 and Fig 5-70, and Table 5-25 pg 128 (PM); Section 5.1.8.1.4 pg 128-130 and Fig 5-82, 5-83 (TVOC). In order to assess the impact of H ₂ S emissions on ambient air, an independent toxicological review was commissioned by Infotox to identify an appropriate guideline. This report is provided as part of the |
| Initial postponement: Sasol Synfuels | 1.1 | Steam plant (particulate matter) | Section 2.6.1, pg 7 (initial postponement) | duration of requested postponement : Table 6, pg 23 applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 8, pg 26 (initial postponement) | Chapter 2, pg 3-5 (initial postponement) | PM | Point source no. 1 & 2 | Table 4.2 - Point source no. 1 & 2. Table 5.21/5.22 – Steam stations main stack East & West. Appendix C2-5 – B1 & B2 | Annexure 8 of Comment & Response Report | Section 5.1.8.1.3 pg 121-123 Fig 5-71, 5-72, 5-73 | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 Point source codes: B1 (U43) B2 (U243) | B1 (U43): Main Stack West - was not sampled due to plant operational issue encountered during FY14; the sampling campaign is rescheduled for FY15. B2 (U243): Main Stack East Also refer to response to question 5 in Section A above regarding 'point of compliance'. Also refer to response to question 5 in Section A above regarding 'point of compliance'. |
| Additional postponement: Sasol Synfuels | 1.1 | Steam plant (particulate matter; SO ₂ ; NO _x) (note: this point source does not seek a postponement on 2015 existing plant standards for SO ₂ , but information is | Section 2.5.1, pg 6 (additional postponement) | applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of | Chapter 1, pg 1-8 (additional postponement) | SO ₂ | Point source no. 1 & 2 | Table 4.2 - Point source no. 1 & 2. Table 5.21/5.22 – Steam stations main stack East & West. Appendix C2-5 – B1 & B2 | Annexure 8 of Comment & Response Report | Section 5.1.8.1.1 pg 109-111 and Fig 5-50, 5-51, 5-52; Figure 5-59, 5-60 pg 115-116 | B1 (U43) B2 (U243) | Not reported as it is not required as a license condition for FY14. Will be reported for FY15 |
| | | | | | | NO _x | | | | Section 5.1.8.1.2 pg 116-119 and Fig 5-62, 5-63, 5-64, 5-65 | B1 (U43) B2 (U243) | Not reported as it is not required as a license condition for FY14. Will be reported for FY15 |

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| | | included in respect of 2020 new plant standards) | | postponement: Table 4, pg 23 (additional postponement) | | PM | | | | Section 5.1.8.1.3 pg 121-123 Fig 5-71, 5-72, 5-73 | B1 (U43) B2 (U243) | B1 (U43): Main Stack West - was not sampled due to plant operational issue encountered during FY14; the sampling campaign is rescheduled for FY15. B2 (U243): Main Stack East Also refer to response to question 5 in Section A above regarding 'point of compliance'. | documentation for the additional postponement application. |
| Initial postponement: Sasol Synfuels | 2.2 | Superflex™ catalytic cracker ("SCC") (particulate matter) | Section 2.6.2, pg 7 (initial postponement) | duration of requested postponement : Table 6, pg 23 applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 8, pg 26 (initial postponement) | Chapter 3, pg 6-8 (initial postponement) | PM | Point source no. 3 | Table 4.2 - Point source no. 3. Appendix C2-5 – SCC5 stack Table 5.21/5.22 – SCC | - Note: this point source is subject to a variation to licence application | Section 5.1.8.1.3 pg 121 & 126-128 Fig 5-78, 5-79, 5-80 & 5-81 | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 Point source code: SCC 5, Stack | SCC 5, Stack The following note was included: "The reported sampling results exceed the limit set in Synfuels AEL for the SCC stack, however it should be noted that it was communicated to the licensing officer that a variation application will be submitted to Gert Sibande Municipality in this regard." (reference to the variation to licence application is also included in the final motivation reports) | |
| Initial postponement: Sasol Synfuels Sasol Oil | 2.4 | Petroleum products storage tanks: Special arrangement (b)(i) (TVOCs) | Section 2.6.3, pg 8 (initial postponement) | duration of requested postponement : Table 6, pg 23 applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 8, pg 26 (initial postponement) | Chapter 4, pg 9-11 (initial postponement) | TVOC | n/a (fugitive emissions) | n/a (fugitive emissions) | n/a (fugitive emissions). Refer to AIR Section 4.4.1 pg 33 for detail on monitoring and measurement. Refer to Appendix C2-4 pg 186-188 for details on storage tanks. | AIR: Section 5.1.8.1.4 pg 128-130 Fig 5-82, 5-83 Also refer to AIR summary in motivation report, Section 6.2.8 C pg 34 & Section 6.3.3 pg 38 | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) Sasol Oil/0019/2014/F01 Point source codes: 1, 8, 49, 50, 51, 52, 53, 60, 63, 64, 65, 66, 67, 70, 72, 73, 102 | Not reported as it is not required as a license condition for FY14. Will be reported for FY15 based on investigation stipulated in AEL. | |

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| Initial postponement: Sasol Group Services | 2.4 | Road and rail loading facilities: Special arrangement (c)(i) (TVOCs) | Section 2.6.4, pg 8 (initial postponement) | duration of requested postponement : Table 6, pg 23 applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 8, pg 26 (initial postponement) | Chapter 5, pg 12-13 (initial postponement) | TVOC | | | | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0018/2014/F01 No point source code for road and rail loading | Not reported as it is not required as a license condition for FY14. Will be reported for FY15 based on investigation stipulated in AEL. |
| Initial postponement: Sasol Synfuels | 3.3 & 3.6 | Tar value chain: point sources under Tar value chain phase 1 project (TVOCs) | Section 2.6.5, pg 8 (initial postponement) | duration of requested postponement : Table 6, pg 23 applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 8, pg 26 (initial postponement) | Chapter 6, pg 13-15 (initial postponement) | TVOC | | | | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 Point source codes: FPP5 (U86 E514) | Not reported as it is not required as a license condition for FY14. Will be reported for FY15 |
| Initial postponement: Sasol Synfuels | 3.3 | Tar value chain: point sources under Tar value chain phase 2 project (Special arrangement (b)(i)) (TVOCs) | Section 2.6.5, pg 9 (initial postponement) | duration of requested postponement : Table 6, pg 23 applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 8, pg 26 (initial postponement) | Chapter 7, pg 16-17 (initial postponement) | TVOC | | | | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 Point source codes: CT3 (39TK103) CT4 (39TK104) CT5 (39TK105) | Not reported as it is not required as a license condition for FY14. Will be reported for FY15 based on investigation stipulated in AEL. |

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| Initial postponement: Sasol Synfuels | 3.6 | Phenosolvan (TVOCs) | Section 2.6.6, pg 9 (initial postponement) | duration of requested postponement : Table 6, pg 23 applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 8, pg 26 (initial postponement) | Chapter 8, pg 18-20 (initial postponement) | TVOC | | | | | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 No point source code included in AEL due to insufficient information being available at the time. This will be addressed once results from the test run is available, as described in Chapter 8 of the technical appendix. | Not reported as it is not required as a license condition for FY14. Will be reported for FY15 |
| Initial postponement: Sasol Synfuels | 3.6 | Sulphur recovery plant (SO ₂) | Section 2.6.7 & 2.6.8, pg 9-10 (initial postponement) | duration of requested postponement : Table 6, pg 23 applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 8, pg 26 (initial postponement) | Chapter 9, pg 20-21 (initial postponement) | SO ₂ | Point source no. 1 & 2 | SO ₂ emissions deriving from this activity are not presently known; all SO ₂ from main stacks assumed to derive from Cat 1.1 activities. Since this is a new requirement introduced in the 2013 MES, postponement is sought to separately quantify SO ₂ from sulphur recovery. | | | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 Point source codes: Rectisol East (off gas to main stack) Rectisol West (off gas to main stack) | Not reported as it is not required as a license condition for FY14. Will be reported for FY16 |
| Additional postponement: Sasol Synfuels | 3.6 | Sulphur recovery plant (hydrogen sulphide) | Section 2.5.2, pg 6-8 (additional postponement) | applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 4, pg 23 (additional postponement) | Chapter 2, pg 9-14 (additional postponement) | H ₂ S | Point source no. 4 & 5 (equivalent to point source no. 1 & 2) | Table 4.2 - Point source no. 4 & 5. Table 5.21/5.22 – Sulfur recovery East & Sulfur recovery West Appendix C2-5 – Rectisol East & Rectisol West | Annexure 8 of Comment & Response Report | Section 5.1.8.2 pg 130 & Section 5.1.8.2.2 pg 141-145 Fig 5-84, 5-85, 5-86, 5-87, 5-88, 5-89, 5-90, 5-9123 | Rectisol East (off gas to main stack) Rectisol West (off gas to main stack) | Rectisol East (off gas to main stack) Rectisol West (off gas to main stack) |

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|--|-----|---|--|--|--|-----------------|--------------------------|---|---|--|--|--|
| Additional postponement: Sasol Synfuels | 3.6 | Rectisol plant (TVOCs) | Section 2.5.2, pg 6-8 (additional postponement) | applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 4, pg 23 (additional postponement) | Chapter 3, pg 15-17 (additional postponement) | TVOC | Point source no. 1 & 2 | Table 4.2 - Point source no. 1 & 2. Table 5.21/5.22 – Rectisol East & Rectisol West Appendix C2-5 – Rectisol East & Rectisol West | - | Section 5.1.8.1.4 pg 128-130 Fig 5-82, 5-83 | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 Point source codes: Rectisol East (off gas to main stack) Rectisol West (off gas to main stack) | Not reported as it is not required as a license condition for FY14. Will be reported for FY15 |
| Initial postponement: Sasol Solvents | 6 | Petroleum products storage tanks: Special arrangement (b)(i) (TVOCs) | Section 2.6.3, pg 8 (initial postponement) | duration of requested postponement : Table 6, pg 23 applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 8, pg 26 (initial postponement) | Chapter 10, pg 22-24 (initial postponement) | TVOC | n/a (fugitive emissions) | n/a (fugitive emissions). Refer to Section 4.4.1 pg 33 for detail on monitoring and measurement | | Section 5.1.8.1.4 pg 128-130 Fig 5-82, 5-83 | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) Sasol Oil/0019/2014/F01 Point source codes: 11, 12, 13, 23, 24, 25, 26, 29, 31, 32 | Not reported as it is not required as a license condition for FY14. Will be reported for FY15 |
| Additional postponement: Sasol Synfuels | 7.2 | Wet sulphuric acid plant (SO ₂ and SO ₃) (note: this point source does not seek a postponement on 2015 existing plant standards, but information is included in respect of 2020 new plant standards) | Section 2.5.2, pg 6-8 (additional postponement) | applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 4, pg 23 (additional postponement) | Chapter 4, pg 18-20 (additional postponement) | SO ₂ | Point source no. 6 | Table 4.2 - Point source no. 6. Table 5.21/5.22 – WSA Appendix C2-5 – WSA1 | - | Section 5.1.8.1.1 pg 109 & pg 114-115, Fig 5-57, 5-58 | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 Point source codes: WSA 1 (518ME-1003) | Not reported as it is not required as a license condition for FY14. Will be reported for FY15. |
| | | | | | | SO ₃ | | | | Section 5.1.8.2 pg 130-131 & Section 5.1.8.2.3 pg 146-147 Fig 5-92, 5-93 | WSA 1 (518ME-1003) | Not reported as it is not required as a license condition for FY14. Will be reported for FY15. |

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|---|--------------------------------------|---|--|--|--|--|--|--|---|--|---|--|
| Initial postponement: Sasol Synfuels | 8.1 | Sewage solids incinerator: point source emission standards and various special arrangements (all applicable requirements) | Section 2.6.9, pg 10 (initial postponement) | duration of requested postponement : Table 6, pg 23 applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 8, pg 26 (initial postponement) | Chapter 11, pg 25-26 (initial postponement) | All applicable requirements | The inclusion of this point source as a listed activity is a new requirement introduced in the 2013 MES. Therefore, postponement is sought to implement monitoring and assess compliance status, and if required, to investigate compliance solutions. | | | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 Point source codes: W1 (353IN101) | Not reported as it is not required as a license condition for FY14. Will be reported for FY15 | |
| Additional postponement: Sasol Synfuels | 8.1 | High Organic Waste (HOW) incinerators: special arrangement (a)(vi) and emission limits for PM NOx HF Sum of lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium Mercury Cadmium + Thallium Total Organic Compounds | Section 2.5.3, pg 8 (additional postponement) | applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 4, pg 23 (additional postponement) | Chapter 5, pg 21-25 (additional postponement) | SO ₂ | Point source no. 9 & 10 | Table 4.2 - Point source no. 9 & 10. Table 5.21/5.22 – HOW West & HOW East Appendix C2-5 – HOW1 & HOW2 | - | Section 5.1.8.1.1 pg 109 & pg 113-114, Fig 5-55, 5-56 | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 Point source codes: HOW1 (052CI-101) HOW2 (252CI-101) | HOW1 (052CI-101) and HOW1 (252CI-101). The source is referred to as HOW1 (252CI-101), but should in fact read HOW 2 (252CI-101) |
| Section 5.1.8.1.2 pg 116 & pg 120-121 and Fig 5-68, 5-69 | HOW1 (052CI-101) HOW2 (252CI-101) | | | | | | | | | | | |
| Section 5.1.8.1.3 pg 121 & pg 125 Fig 5-76, 5-77 | HOW1 (052CI-101) HOW2 (252CI-101) | | | | | | | | | | | |
| Section 5.1.8.2 pg 130-140 | HOW1 (052CI-101) HOW2 (252CI-101) | | | | | | | | | | | |
| The exit temperature at the HOW stacks is provided in Table 4.1 of the AIR, but has been reported to vary between 350 and 400 °C. | HOW1 (052CI-101) HOW2 (252CI-101) | | | | | | | | | | | |
| | | | | | | NOx | | | | | | |
| | | | | | | PM | | | | | | |
| | | | | | | Non-criteria pollutants | | | | | | |
| | | | | | | Exit gas temperatures must be maintained below 200°C | | | | | | |

| | | | | | | | | | | | | |
|--|-----|---|--|---|--|-------------------------|------------------------|---|---|--|---|--|
| Additional postponement: Sasol Synfuels | 8.1 | Biosludge incinerators: emission limits for PM CO SO ₂ NOx HCl HF Sum of lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium Mercury Total Organic Compounds Ammonia | Section 2.5.3, pg 8 (additional postponement) | applicable MES and the alternative emissions limits or alternative special arrangements which Sasol proposes to prevail during the period of postponement: Table 4, pg 23 (additional postponement) | Chapter 6, pg 26-30 (additional postponement) | SO ₂ | Point source no. 7 & 8 | - | Table 4.2 - Point source no. 7 (Biosludge East 1 & 2) & 8 (Biosludge West 1 & 2). Table 5.21/5.22 – Biosludge East & Biosludge West Appendix C2-5 – WA1, WA2, WA3 & WA4 | Section 5.1.8.1.1 pg 109 & pg 112-113, Fig 5-53, 5-54 | Govan Mbeki / Sasol Chemical Industries Pty (Ltd) 0016/2014/F01 Point source codes: WA1 (052WK-2102) WA2 (052WK-2202) WA3 (252WK-2102) WA4 (252WK-2202) | WA1 (052WK-2102) WA2 (052WK-2202) WA3 (252WK-2102) WA4 (252WK-2202) |
| | | | | | | NOx | | | | Section 5.1.8.1.2 pg 116 & pg 119-120 and Fig 5-66, 5-67 | WA1 (052WK-2102) WA2 (052WK-2202) WA3 (252WK-2102) WA4 (252WK-2202) | |
| | | | | | | PM | | | | Section 5.1.8.1.3 pg 121 & pg 124 Fig 5-74, 5-75 | WA1 (052WK-2102) WA2 (052WK-2202) WA3 (252WK-2102) WA4 (252WK-2202) | |
| | | | | | | Non-criteria pollutants | | | | Section 5.1.8.2 pg 130-140 | WA1 (052WK-2102) WA2 (052WK-2202) WA3 (252WK-2102) WA4 (252WK-2202) | |

C. Summary table contextualising alternative emissions limits requested for each applicable point source

| Located in initial or additional postponement application | MES Category | Applicable Sasol Activities in Secunda complex | Substance(s) | Emission limits or special arrangements* | | Alternative emission limit requested during 1 st postponement period | Method used for recent independent emission measurement campaign, or other method used to determine requested alternative emission limits | Measurement range informing the proposed alternative emission limit (mg/Nm ³ NTP, respective O ₂ reference conditions for each listed activity as per MES; ng I-TEQ/Nm ³ in the case of dioxins and furans) | Description of how the proposed alternative emission limit value was derived |
|--|------------------------------|--|--------------------|--|--------------------------|---|--|---|--|
| | | | | New plant standards | Existing plant standards | | | | |
| Additional postponement (PM, SO ₂ , NO _x) and Initial postponement (PM) | Category 1: Sub-category 1.1 | Steam plant | Particulate matter | 50 | 100 | 130 | Isokinetic dust sampling results, using US-EPA method 5 now upgraded to US-EPA method 17 | Refer to note (a) below the table for details on the emission range. | Refer to note (a) below the table for details, as well as to the answer provided to question 5 in Section A above. A concentration of 130 mg/Nm ³ is proposed based on the online results, calculated back to the defined "point of compliance". This postponement is necessary to implement a capital project to upgrade the electrostatic precipitators, as detailed in the compliance roadmap information summarised in Section A above. |
| | | | Sulphur dioxide | 500 | 3500 | n/a (compliant) | n/a (compliant with existing plant standard). A campaign conducted during April and May 2013 using US EPA Method 6C_SO ₂ Instrumental, and calculations done based on coal sulphur content predictions | n/a (compliant with existing plant standard). Refer to adjacent explanation in respect of new plant standards. The 2013 measurement campaign yielded measurements of an average 852, and maximum of 1400 mg/Nm ³ at 10% O ₂ . The maximum, adjusted for a degree of variation in measurements and coupled with variations in predicted coal sulphur content, was used to derive a proposed value for the period post 2020. | Online analyser results available from the East stack indicate compliance to existing plant standards, but new plant standards are exceeded by variable margins, directly dependent on the coal sulphur content. The sulphur content of the coal to the factory varies due to geological conditions at the mine supplying the coal to the boilers. The geological conditions, and consequently the sulphur content of the coal, vary depending on the area currently being mined or planned to be mined. Variations in feed and process conditions within a 5 year period are taken into consideration, as far as practically possible, in determining a feasible limit to apply during a period of postponement. Sasol's predictions for maximum SO ₂ emission concentrations beyond 2020, informed by current views on the average sulphur content of the coal, and allowing for process variations, is 2000 mg/Nm ³ . |
| | | | Oxides of nitrogen | 750 | 1100 | 1 400 | A campaign conducted during April and May 2013 using US EPA Method 7E_NO ₂ Instrumental | Average 972, Max 1555 mg/Nm ³ at 10 % O ₂ | Refer to note (b) below the table for details. The 1400 mg/Nm ³ requested is seen as an achievable limit based on the previous measurements, allowing for process condition variations and burner conditions. |
| Initial postponement | Category 2: Sub-category 2.2 | Superflex™ Catalytic Cracker (SCC) | Particulate matter | 100 | 120 | 330 | Campaigns using US EPA method 17 | Average results for two successive days in 2011 is 1379,2 mg/Nm ³ @10% O ₂ (based on 3 samples) as measured in the stack. A back calculation was done on the Waste Heat Boiler outlet result and gave a result of 392 mg/Nm ³ @10%O ₂ . Average for results of two successive days in | Based on third party sample results and engineering calculations averaging 326 mg/Nm ³ @10mol% O ₂ , dry. This was rounded up to the nearest 10 mg/Nm ³ (hence, 330). |

| Located in initial or additional postponement application | MES Category | Applicable Sasol Activities in Secunda complex | Substance(s) | Emission limits or special arrangements* | | Alternative emission limit requested during 1 st postponement period | Method used for recent independent emission measurement campaign, or other method used to determine requested alternative emission limits | Measurement range informing the proposed alternative emission limit (mg/Nm ³ NTP, respective O ₂ reference conditions for each listed activity as per MES; ng I-TEQ/Nm ³ in the case of dioxins and furans) | Description of how the proposed alternative emission limit value was derived |
|--|------------------------------|--|----------------------------------|--|--------------------------|---|--|---|--|
| | | | | New plant standards | Existing plant standards | | | | |
| | | | | | | | | 2013, and back calculated to the Waste Heat Boiler is 261 mg/Nm ³ @10%O ₂ (based on 3 Samples). The average emissions based on both of these third party sample results is 326,6mg/Nm ³ @10% O ₂ . | |
| | | | Sulphur dioxide | 400 | 550 | | | n/a (compliant with existing and new plant standards) | |
| | | | Oxides of nitrogen | 1 500 | 3 000 | | | n/a (compliant with existing and new plant standards) | |
| Initial postponement | Category 2: Sub-category 2.4 | Storage tanks at Tankfarm | Total Volatile Organic Compounds | Type 3 storage vessels shall be of the following type: a) External floating-roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20m, or b) fixed-roof tank with internal floating deck/roof fitted with primary seal, or c) Fixed roof tank with vapour recovery system | | Incorporate into the site fugitive emissions monitoring plan | Measurements per source not taken as the fugitive sources are highly variable in concentration and very difficult to quantify accurately due to the number of variables affecting emissions. | n/a | Refer to note (d) below the table for details. |
| | | Storage tanks at Tankfarm | Total Volatile Organic Compounds | Type 1, 2 and 4 tanks comply Some type 3 storage tanks comply | | n/a (compliant) | | | |
| | | Loading stations | Total Volatile Organic Compounds | All installations with a throughput of greater than 50,000m ³ per annum of products with a vapour pressure greater than 14 kPa, must be fitted with vapour recovery or vapour destruction units. Emission limits for vapour recovery/destruction using non-thermal treatment: Existing plant standard: 40 000 New plant standard: 40 000 | | Incorporate into the site fugitive emissions monitoring plan | No previous measurements. Will be reported for Financial Year 15. | It was not possible to propose alternative emission limits for these loading stations since they are considered fugitive emissions and no previous measurements exist. As detailed in Table 5, pg 23 of the final motivation report for initial postponements, a one-year postponement is sought for this source. During the period of postponement, to ensure no negative impact, it is proposed that these sources be included in the site fugitive emission management plan. | |
| Additional postponement (H ₂ S, TVOC) and initial postponement (SO ₂) | Category 3: Sub-category 3.6 | Rectisol and Sulphur Recovery Plants | Hydrogen sulphide | 3 500 | 4 200 | 12 500 | A campaign conducted during in 2013 using US EPA Method 18 & NIOSH 1500/1501 & 6013 | Refer to note (c) below the table for details. A sampling campaign conducted in 2013 revealed an East stack average concentration measured as 1682,2 mg/Nm ³ , which is back calculated to the defined 'point of compliance' as 16822 mg/Nm ³ (during the campaign, one phase of the plant was out of operation, with less absorption resulting in higher emissions). The West stack average concentration measured (excluding an outlier) as 1384,5 mg/Nm ³ , again back calculated to the defined 'point of compliance' as 13845 mg/Nm ³ . Note that back calculations are done to the defined 'point of compliance' based on best information available on dilution in the main stacks resulting from combined listed activities. | Refer to note (c) below the table for details, and also to the answer provided to question 5 of Section A above regarding the 'point of compliance'. Alternative emission limit for H ₂ S of 12 500 mg/Nm ³ is based on expected coal quality variations as explained above for Steam plant SO ₂ emissions, as well as assuming plants are operating under normal conditions. The average value and standard deviation were used to statistically calculate the expected range within which H ₂ S emissions will be sustainably achieved during normal operating conditions. The maximum of this operating range was 12 500 mg/Nm ³ . |

| Located in initial or additional postponement application | MES Category | Applicable Sasol Activities in Secunda complex | Substance(s) | Emission limits or special arrangements* | | Alternative emission limit requested during 1 st postponement period | Method used for recent independent emission measurement campaign, or other method used to determine requested alternative emission limits | Measurement range informing the proposed alternative emission limit (mg/Nm ³ NTP, respective O ₂ reference conditions for each listed activity as per MES; ng I-TEQ/Nm ³ in the case of dioxins and furans) | Description of how the proposed alternative emission limit value was derived |
|---|---|--|----------------------------------|--|--------------------------|---|--|---|---|
| | | | | New plant standards | Existing plant standards | | | | |
| | | | Total Volatile Organic Compounds | 130 | 250 | 300 | A campaign conducted during November 2013 using NIOSH 1501 | Maximum daily average emission concentration measured of 263 mg/Nm ³ | From the sampling results a maximum emission concentration of 263 mg/Nm ³ was measured and, to consider process variability and uncertainty, this was rounded up to the figure of 300 mg/Nm ³ . |
| | | | Sulphur dioxide | 500 | 3 500 | Compliance status to be determined. As explained in the last column adjacent, any SO ₂ emissions arising from the Sulphur recovery plant are already accounted for and are presently assumed to be emissions from the Steam Plant combustion process, detailed in the second row of this table. | n/a - no measurements available | Prior to amendments in MES Category 3.6 in November 2013, compliance with an SO ₂ standard was not required. Hence, emission concentrations are currently not known, if present at all. The postponement is requested to allow for measurements and investigations to understand the source of SO ₂ emissions split between the Steam plant and Sulphur recovery process. It should be noted that, as described in response to Q5 of Section A above, since Sulphur recovery and Steam plant emissions are co-dispersed via the main stacks, all SO ₂ in the main stacks is already monitored and currently assumed to originate from the boilers at the Steam plant. Thus, any SO ₂ from the sulphur recovery process will already be included in the total SO ₂ measured at the main stack – i.e. these are <i>not additional</i> SO ₂ emissions not previously accounted for. | |
| Initial postponement | Category 3: Sub-category 3.6 | Phenosolvan | Hydrogen sulphide | 3 500 | 4 200 | n/a (compliant) | | | |
| | | | Total Volatile Organic Compounds | 130 | 250 | Incorporate into the site fugitive emissions monitoring plan | Measurements to be taken in 2015. | It was not possible to propose alternative emission limits for these vents since they behave similar to fugitive emissions (i.e. sporadic emissions, not continuous, of varying concentrations) and a reliable emission limit is not available. During the period of postponement, to ensure no negative impact, it is proposed that these sources be included in the site fugitive emission management plan. | |
| | | | Sulphur dioxide | 500 | 3 500 | n/a (compliant) | | | |
| Initial postponement | Category 3: Sub-category 3.3 Sub-category 3.6 | Sources in Tar Value Chain – Phase 1 | Hydrogen sulphide | 3 500 | 4 200 | n/a (compliant) | | | |
| | | | Total Volatile Organic Compounds | 130 | 250 | Incorporate into the site fugitive emissions monitoring plan | Measurements per source not taken as the fugitive sources are highly variable in concentration and due to small vent diameters and the variety of sources point source specific parameters could not accurately be quantified. | Alternative emission limits were not proposed for these VOC emission sources since this project comprises hundreds of sources of varying nature (open drains, trenches, majority vents are small diameters making flow measurements inaccurate and reduce the accuracy of the concentration measurements) and therefore the majority of these sources are | |

| Located in initial or additional postponement application | MES Category | Applicable Sasol Activities in Secunda complex | Substance(s) | Emission limits or special arrangements* | | Alternative emission limit requested during 1 st postponement period | Method used for recent independent emission measurement campaign, or other method used to determine requested alternative emission limits | Measurement range informing the proposed alternative emission limit (mg/Nm ³ NTP, respective O ₂ reference conditions for each listed activity as per MES; ng I-TEQ/Nm ³ in the case of dioxins and furans) | Description of how the proposed alternative emission limit value was derived |
|---|------------------------------|---|----------------------------------|---|--------------------------|---|---|--|--|
| | | | | New plant standards | Existing plant standards | | | | |
| | | | Sulphur dioxide | 500 | 3 500 | n/a (compliant) | | | considered fugitive emissions and hence reliable emission limits are not available. During the period of requested postponement (2 years), to ensure no negative impact, it is proposed that these sources be included in the site fugitive emission management plan. |
| Initial postponement | Category 3: Sub-category 3.3 | Sources in Tar Value Chain – Phase 2 | Total Volatile Organic Compounds | Type 3 storage vessels shall be of the following type: a) External floating-roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20m, or b) fixed-roof tank with internal floating deck/roof fitted with primary seal, or c) Fixed roof tank with vapour recovery system | | Incorporate into the site fugitive emissions monitoring plan | Measurements per source not taken as the fugitive sources are highly variable in concentration and very difficult to quantify accurately due to the number of variables affecting emissions. | | These sources comprise three storage tanks. Refer to note (d) below the table for details. |
| Initial postponement | Category 6 | Storage tanks (Sasol Solvents) | Total volatile organic compounds | Type 3 storage vessels shall be of the following type: a) External floating-roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20m, or b) fixed-roof tank with internal floating deck/roof fitted with primary seal, or c) Fixed roof tank with vapour recovery system | | Incorporate into the site fugitive emissions monitoring plan | Measurements per source not taken as the fugitive sources are highly variable in concentration and very difficult to quantify accurately due to the number of variables affecting emissions. | | Refer to note (d) below the table for details. |
| Additional postponement | Category 7.2 | Wet sulphuric acid plant (WSA) (Sasol Synfuels) | SO ₂ | 350 | 2800 | 800 | n/a (compliant with existing plant standards, but does not meet new plant standards) Due to changes in emissions associated with various changes made on the WSA plant as described in Chapter 4 of the technical appendix for the final motivation report for additional postponement, no reliable measurement results indicative of current performance are available. Re-measurements results awaited in 2015. | | Since no reliable measurement results indicative of current performance are available, Sasol performed engineering calculations to determine feasible limits. The SO ₂ design value for the WSA plant was based on best available technology at the time of construction with two beds, each with an efficiency of 90%, with a total design efficiency of 99%. This design value is, however, above the MES for new plant standards. For further information on progress made to date and technology options required, please refer to Chapter 4 of the technical appendix for the final motivation report for additional postponement. |
| | | | SO ₃ | 25 | 100 | 100 | n/a (compliant with existing plant standards, but does not meet new plant standards) Due to changes in emissions associated with various changes made on the WSA plant as described in Chapter 4 of the technical appendix for the final motivation report for additional postponement, no reliable measurement results indicative of current performance are available. Re-measurements results awaited in 2015. | | In order to reduce the SO ₃ emissions from the WSA plant, considerable effort has gone into optimising the wet electrostatic precipitator to ensure optimal removal of acid mist. Due to process improvements implemented, the existing plant standard of 100 mg/Nm ³ is seen as a feasible and achievable limit, given current information. For further information on progress made to date and technology options required, please refer to Chapter 4 of the technical |

| Located in initial or additional postponement application | MES Category | Applicable Sasol Activities in Secunda complex | Substance(s) | Emission limits or special arrangements* | | Alternative emission limit requested during 1 st postponement period | Method used for recent independent emission measurement campaign, or other method used to determine requested alternative emission limits | Measurement range informing the proposed alternative emission limit (mg/Nm ³ NTP, respective O ₂ reference conditions for each listed activity as per MES; ng I-TEQ/Nm ³ in the case of dioxins and furans) | Description of how the proposed alternative emission limit value was derived |
|---|------------------------------|--|---|--|--------------------------|---|---|--|--|
| | | | | New plant standards | Existing plant standards | | | | |
| | | | | | | | | | appendix for the final motivation report for additional postponement. |
| Additional postponement | Category 8: Sub-category 8.1 | HOW incinerators | Particulate matter | 10 | 25 | 1 400 | A campaign conducted using US EPA method 26a | Min 10, Average 248, Max 1398 mg/Nm ³ , dry at 10% O ₂ Alternative emission limit requested is based on the maximum measured value (1398) | Refer to note (e) below the table for details. |
| | | | Carbon Monoxide | 50 | 75 | n/a (compliant with existing and new plant standards) | | | |
| | | | Sulphur dioxide | 50 | 50 | n/a (compliant with existing and new plant standards) | | | |
| | | | Oxides of nitrogen | 200 | 200 | 2 450 | A campaign conducted using US EPA method 7E | Min 467, Average 1607, Max 2449 mg/Nm ³ , dry at 10% O ₂ . Alternative emission limit requested is based on the maximum measured value (2449) | |
| | | | Hydrogen chloride | 10 | 10 | n/a (compliant) | | | |
| | | | Hydrogen fluoride | 1 | 1 | 7 | A campaign conducted using US EPA method 26a | Min 5.82, Average 6.27, Max 6.83 mg/Nm ³ , dry at 10% O ₂ Alternative emission limit requested is based on the maximum measured value (6.83) | |
| | | | Sum of Lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium | 0.5 | 0.5 | 21 | A campaign conducted using US EPA method 29 | Min 2, Average 21, Max 78 mg/Nm ³ , dry at 10% O ₂ . Alternative emission limit requested is based on the maximum measured value (78) | |
| | | | Mercury | 0.05 | 0.05 | 0.27 | A campaign conducted using US EPA method 29 | Min 0.01, Average 0.09, Max 0.27 mg/Nm ³ , dry at 10% O ₂ Alternative emission limit requested is based on the maximum measured value (0.27) | |
| | | | Cadmium + Thallium | 0.05 | 0.05 | 0.12 | A campaign conducted using US EPA method 29 | Min 0.01, Average 0.03, Max 0.12mg/Nm ³ , dry at 10% O ₂ Alternative emission limit requested is based on the maximum measured value (0.12) | |
| | | | Total Organic Compounds | 10 | 10 | 50 | A recent sampling campaign was conducted using US EPA method 25a | No available measurements at the time that alternative emission limits were proposed, hence an estimation was made, which was also informed by Sasolburg Operations measurements | |
| | | | Ammonia | 10 | 10 | n/a (compliant with existing and new plant standards) | | | |
| | | | Dioxins and furans | 0.1 | 0.1 | n/a (compliant with existing and new plant standards) | | | |
| | | | n/a | | | Exit gas temperatures must be maintained below 200°C | Operate at current exit gas temperature. No chlorinated compounds to be fed to incinerators. | US EPA methods | |

| Located in initial or additional postponement application | MES Category | Applicable Sasol Activities in Secunda complex | Substance(s) | Emission limits or special arrangements* | | Alternative emission limit requested during 1 st postponement period | Method used for recent independent emission measurement campaign, or other method used to determine requested alternative emission limits | Measurement range informing the proposed alternative emission limit (mg/Nm ³ NTP, respective O ₂ reference conditions for each listed activity as per MES; ng I-TEQ/Nm ³ in the case of dioxins and furans) | Description of how the proposed alternative emission limit value was derived |
|---|------------------------------|--|---|--|--|---|---|--|--|
| | | | | New plant standards | Existing plant standards | | | | |
| Additional postponement | Category 8: Sub-category 8.1 | Biosludge Incinerators | Particulate matter | 10 | 25 | 890 | A campaign conducted using US EPA method 26a | Min 74, Average 268, Max 1120 mg/Nm ³ , dry at 10% O ₂ . Alternative emission limit requested is based on Average measured value (268) + Three Standard Deviations | Refer to note (e) below the table for details. |
| | | | Carbon Monoxide | 50 | 75 | 5 000 | A campaign conducted using US EPA method 3 | Min 586, Average 2558, Max 5588 mg/Nm ³ , dry at 10% oxygen. Alternative emission limit requested is based on Average measured value (2558) + Three Standard Deviations | |
| | | | Sulphur dioxide | 50 | 50 | 150 | A campaign conducted using US EPA method 6C | Min 3, Average 45, Max 146 mg/Nm ³ , dry at 10% O ₂ Alternative emission limit requested is based on Average measured value (45) + Three Standard Deviations | |
| | | | Oxides of nitrogen | 200 | 200 | 640 | A campaign conducted using US EPA method 7E | Min 48, Average 416, Max 729 mg/Nm ³ , dry at 10% O ₂ Alternative emission limit requested is based on Average measured value (416)+ Three Standard Deviations | |
| | | | Hydrogen chloride | 10 | 10 | 20 | A campaign conducted using US EPA method 26a | Min 4.1, Average 10.4, Max 21.1 mg/Nm ³ , dry at 10% O ₂ Alternative emission limit requested is based on Average measured value (10.4) + Three Standard Deviations | |
| | | | Hydrogen fluoride | 1 | 1 | 28 | A campaign conducted using US EPA method 26a | Min 6.2, Average 17, Max 28.1 mg/Nm ³ , dry at 10% O ₂ Alternative emission limit requested is based on the maximum measured value (28,1) | |
| | | | Sum of Lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium | 0.5 | 0.5 | 2.4 | A campaign conducted using US EPA method 29 | Min 0.56, Average 1, Max 2.4 mg/Nm ³ , dry at 10% O ₂ Alternative emission limit requested is based on the maximum measured value (2.4) | |
| | | | Mercury | 0.05 | 0.05 | 0.85 | A campaign conducted using US EPA method 29 | Min 0.31, Average 0.53, Max 0.82 mg/Nm ³ , dry at 10% O ₂ | |
| | | | Cadmium + Thallium | 0.05 | 0.05 | n/a (compliant) | | | |
| | | | Total Organic Compounds | 10 | 10 | 50 | A recent sampling campaign was conducted using US EPA method 25a | No available measurements at the time that alternative emission limits were proposed, hence an estimation was made, which was also informed by Sasolburg Operations measurements | |
| Ammonia | 10 | 10 | 47 | A campaign conducted using US EPA method 26a | Min 7.4, Average 25.3, Max 47.7 mg/Nm ³ , dry at 10% O ₂ | | | | |

| Located in initial or additional postponement application | MES Category | Applicable Sasol Activities in Secunda complex | Substance(s) | Emission limits or special arrangements* | | Alternative emission limit requested during 1 st postponement period | Method used for recent independent emission measurement campaign, or other method used to determine requested alternative emission limits | Measurement range informing the proposed alternative emission limit (mg/Nm ³ NTP, respective O ₂ reference conditions for each listed activity as per MES; ng I-TEQ/Nm ³ in the case of dioxins and furans) | Description of how the proposed alternative emission limit value was derived |
|---|------------------------------|--|---|--|--------------------------|--|---|--|---|
| | | | | New plant standards | Existing plant standards | | | | |
| | | | Dioxins and furans | 0.1 | 0.1 | n/a (compliant with existing and new plant standards) | | | |
| | | | n/a | Exit gas temperatures must be maintained below 200°C | | n/a (compliant with existing and new plant standards) | | | |
| Initial postponement | Category 8: Sub-category 8.1 | Sewage solids incinerator | Particulate matter | 10 | 25 | Compliance status to be determined. Note that a set of confirmed measurements will be provided in the 2015 annual emissions report. | One single unconfirmed set of measurements based on US EPA method 26a | At the time of submitting this information, finalised and confirmed results based on a single set of measurements is not available. These will be reported in the 2015 annual emissions report. | The 2013 MES significantly reduced the feed threshold for the applicable listed activity to 10 kg/day, down from 10 kg/hour in the 2010 MES. Due to the change in the feed threshold, the source is recently included as a listed activity. |
| | | | Carbon Monoxide | 50 | 75 | | One single unconfirmed set of measurements based on US EPA method 3 | | |
| | | | Sulphur dioxide | 50 | 50 | | One single unconfirmed set of measurements based on US EPA method 6C | | |
| | | | Oxides of nitrogen | 200 | 200 | | One single unconfirmed set of measurements based on US EPA method 7E | | |
| | | | Hydrogen chloride | 10 | 10 | | One single unconfirmed set of measurements based on US EPA method 26a | | |
| | | | Hydrogen fluoride | 1 | 1 | | One single unconfirmed set of measurements based on US EPA method 26a | | |
| | | | Sum of Lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium | 0.5 | 0.5 | | One single unconfirmed set of measurements based on US EPA method 29 | | |
| | | | Mercury | 0.05 | 0.05 | | One single unconfirmed set of measurements based on US EPA method 29 | | |
| | | | Cadmium + Thallium | 0.05 | 0.05 | | One single unconfirmed set of measurements based on US EPA method 29 | | |
| | | | Total Organic Compounds | 10 | 10 | | No measurements available | | |
| | | | Ammonia | 10 | 10 | | One single unconfirmed set of measurements based on US EPA method 26a | | |
| | | | Dioxins and furans | 0.1 | 0.1 | | One single unconfirmed set of measurements based on US EPA method 23a | | |
| | | | n/a | Exit gas temperatures must be maintained below 200°C | | One single unconfirmed set of measurements. | | | |

Refer to next page for notes (a) – (e) linked to the table above.

a) Boiler PM emissions - B1 (U43) and B2 (U243): Main stack west and east.

The PM emission concentrations for the east and west main stacks are presented in figures 4 and 5 below, respectively. From April 2014 to September 2014 the following actions were implemented that resulted in improved PM emissions and reliable data:

- From March 2014 to August 2014 the iso-kinetic dust sampling method was improved to international standard;
- Analysers were replaced for improved measurement accuracy;
- Several process optimizations were implemented based on improved method and measurement accuracy, e.g. quick response to electrostatic precipitators (ESP) field trips, sparking, etc.; and
- General overhauls and repairs to ESPs of the fleet continued.

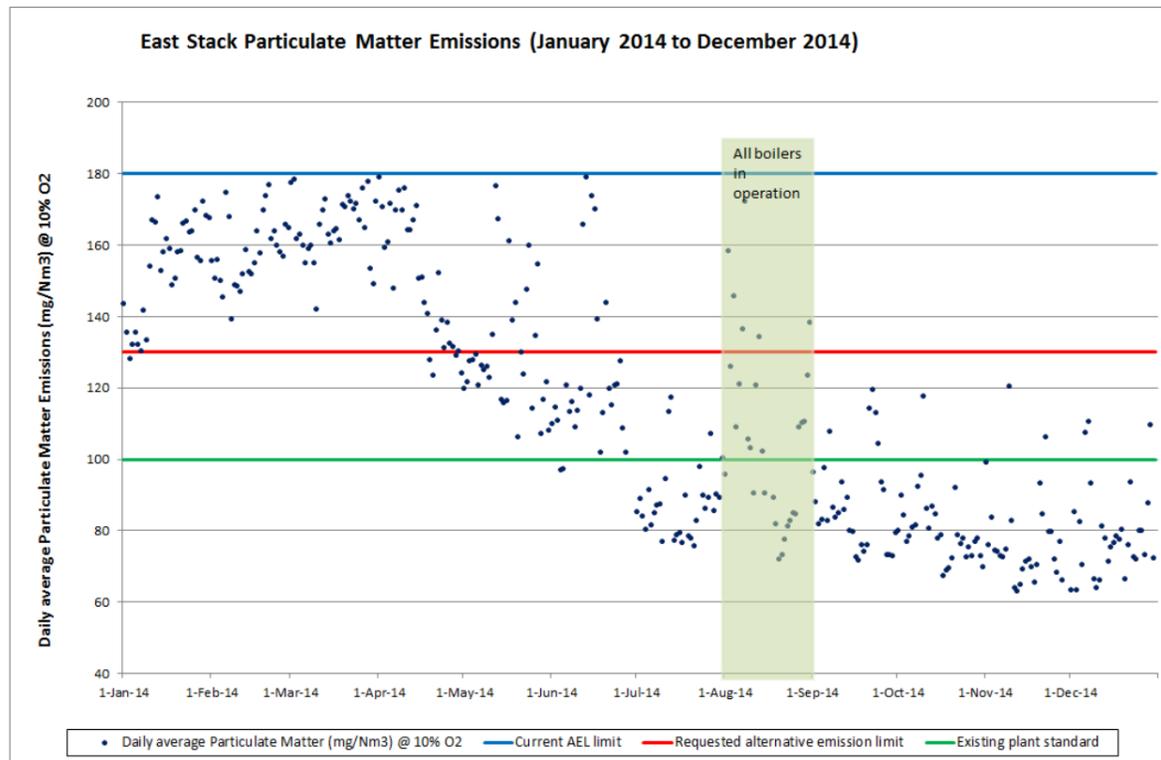


Figure 4: PM emissions from the east main stack

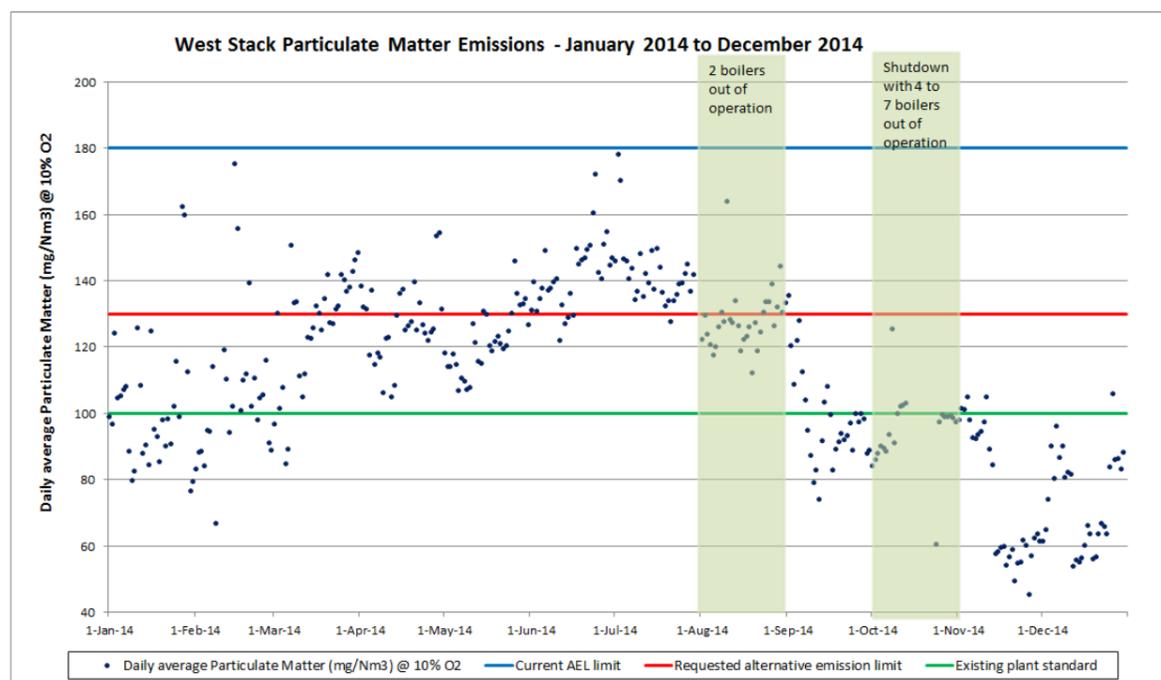


Figure 5: PM emissions from west main stack

Numerous measurements were recorded at the east main stack between 1 September 2014 and 31 December 2014 above the existing plant standard of 100 mg/Nm³, some of which occurred for more than 48 hours. At the west stack, emissions were higher than the existing plant standard of 100 mg/Nm³ on numerous occasions, again with a number of instances longer than 48 hours. For this reason, the existing plant standard of 100 mg/Nm³ cannot be achieved sustainably without the renewal of the electrostatic precipitators across the entire boiler fleet as detailed in Chapter 2 of the technical appendix to the final motivation report for initial postponements. The requested alternative emission limit of 130 mg/Nm³ is a practical, manageable limit which will ensure significant improvement from the current licence limit, while providing the required time to sustainably improve emission concentrations without requiring frequent steam and electricity production cutbacks and similarly frequent emission exceedance reporting.

b) NO₂ emissions from boilers

Third party sampling results indicate NO₂ emission concentrations ranging from a mean value of 972 mg/Nm³ to a maximum of 1555 mg/Nm³ at 10 % O₂. The on-line data from the East stack is shown in Figure 6 below, calculated back to the defined 'point of compliance'. The requested alternative emission limit of 1400 mg/Nm³ is based on the actual on-line data and the maximum concentration measured by third party, adjusted for variability in the process and emissions over the course of normal operations.

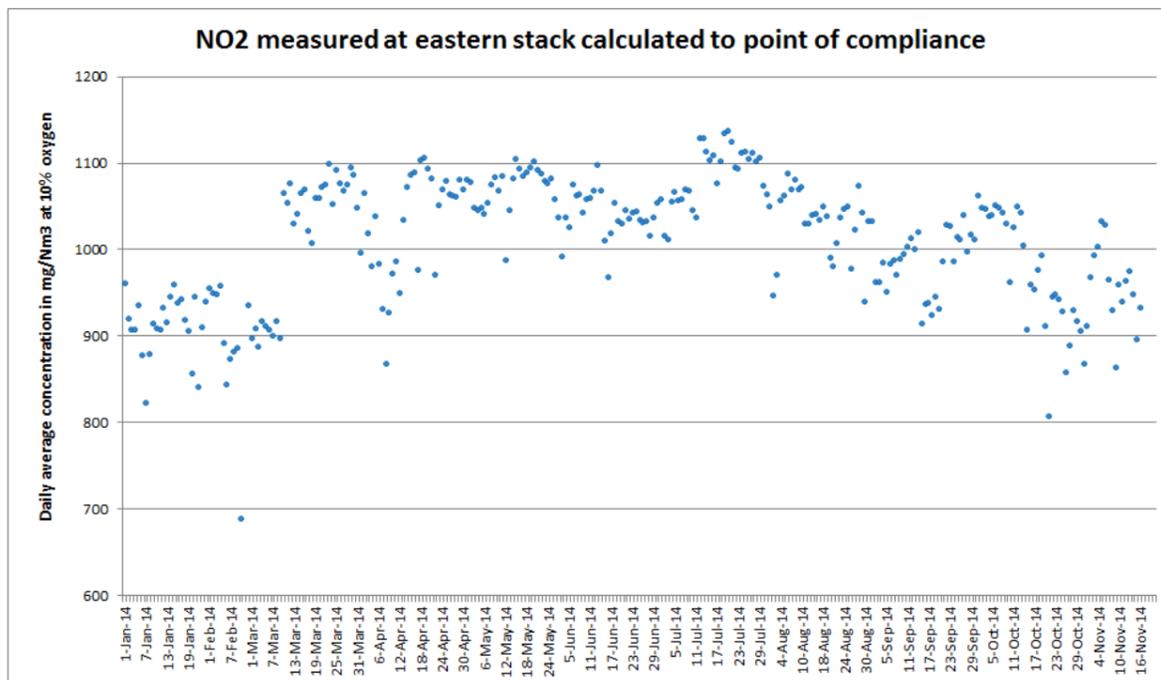


Figure 6: NO₂ concentration measured in the eastern stack, calculated back to point of compliance

c) H₂S emissions from Sulphur Recovery

SO₂ and H₂S emission concentrations are both influenced by the sulphur content in coal. The sulphur content of the coal to the factory varies due to geological conditions at the mine supplying the coal to the boilers (Steam plant, emitting SO₂) and gasifiers (ultimately, linked to the Sulphur recovery process, emitting H₂S). The geological conditions, and consequently the sulphur content, vary depending on the area currently being mined or planned to be mined. Whereas the Steam plant complies with the existing plant standard for SO₂, the Sulphur recovery plant does not meet the existing plant standard for H₂S and hence has applied for a postponement. Since postponements are valid for a 5 year period, all variations in feed and process conditions within that 5 year period have to be taken into consideration, as far as practically possible, in determining a feasible alternative emission limit for the Sulphur recovery process (the existing plant standard is currently met for the steam plant). Since the average sulphur content of the coal is expected to increase at times, higher daily values can be expected when high sulphur areas are being mined. Despite this variability, Sasol has committed in its postponement application that its average baseline emissions will not increase as a result of the postponement application.

The emissions shown in the graph below relate to a sulphur content of 0,88% (actual) based on predicted values of 0,85% to 0,86% from Sasol Mining geological analyses. Current prediction of the sulphur content to 2020 indicates a peak value during the period of 1,02%. At these times, recorded emission concentrations would represent ~20% increase. Based on this, the predictor for H₂S emissions has been adjusted accordingly, and informed the alternative emission limits requested for the period April 2015 to April 2020.

The requested alternative emission limit for H₂S of 12 500 mg/Nm³ is based on expected coal quality variations as explained above, as well as plants operating under normal conditions. The average value and standard deviation were used to statistically calculate the expected range within which H₂S emissions will be sustainably achieved during normal operating conditions. The maximum of this operating range was 12 500 mg/Nm³. Actual and expected H₂S emission concentrations are indicated in figure 7 below.

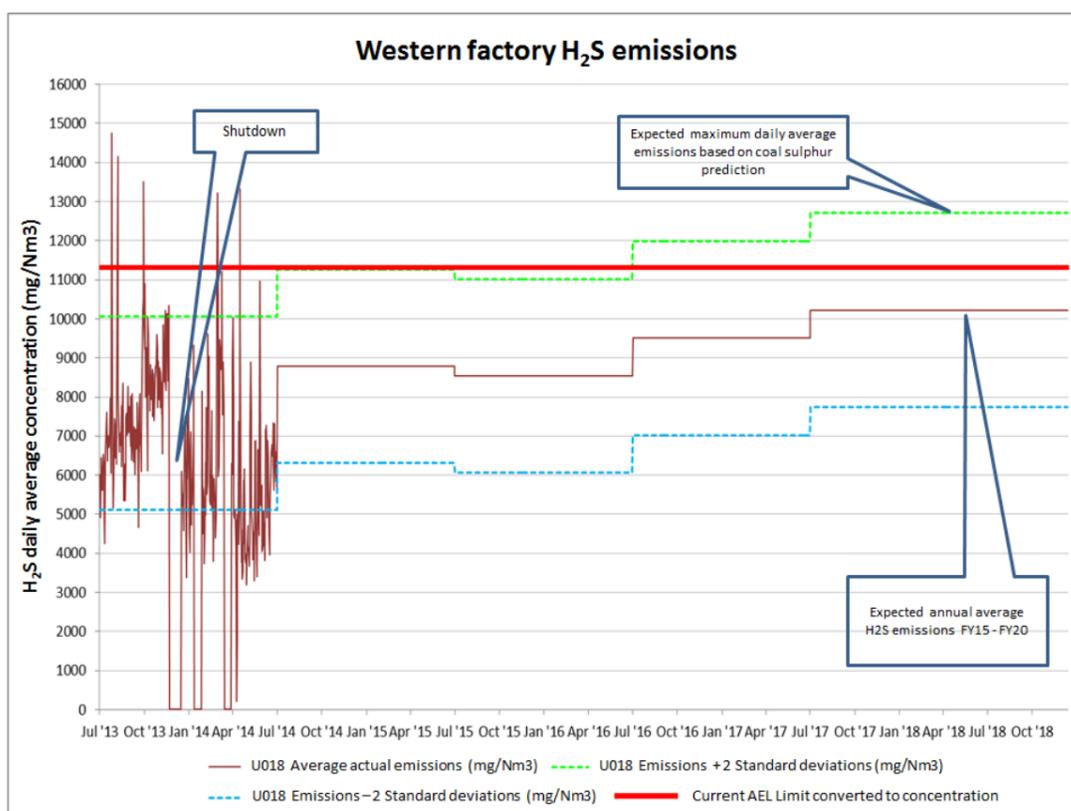


Figure 7: Previous actual and expected H₂S emission concentrations at the west factory (also applicable for east factory)

d) Storage tanks under MES sub-categories 2.4, 3.3 and 6

Due to varying conditions impacting on tank emissions, e.g. ambient temperature, loading/unloading frequency as well as standing time, it is exceptionally difficult to quantify tank emissions on a concentration basis. Simulation programs determine annual losses and not concentrations, therefore it was not possible to propose alternative emission limits for these tanks since they are considered fugitive emissions due to their sporadic and ever changing concentrations (and hence don't have any prescribed MES).

During the period of postponement, to ensure no negative impact, it is proposed that these sources be included in the site fugitive emission management plan.

e) Specification of proposed alternative emissions limits for Biosludge and HOW incinerators

In determining feasible emission limits for the incinerators, previous measurement data conducted by third parties was reviewed. Outliers in the data were also removed to ensure a realistic view of current emissions. The data sets indicate that there is variability in the measurement values, likely due to changes in incinerator process conditions, feed conditions, feed concentrations and so forth.

It should be noted that differences occur in the approaches adopted to determine the alternative emission limit values for the HOW and biosludge incinerators, based on the number of available measurements at the time the alternative emission limit value had to be proposed. Sufficient measurement data was available for statistical analysis on the Biosludge incinerators (for many, but not all, of the parameters), whereas the number of available measurements on the HOW incinerators were fewer and therefore statistical variances could not be taken into consideration.

Where an insufficient number of reliable measurements exists (as in the case of HOW emission parameters, and certain of the Biosludge emission parameters), the highest measured value was used to determine the proposed alternative emission limit (specified as a maximum average daily emission concentration), adjusted for acceptable variation in measurement and sampling.

In other cases, where a sufficient number of reliable measurements does exist (as in the case of the remainder of the Biosludge emission parameters), an approach was taken of using the average measured value and adding 3 standard deviations.

It should further be noted that higher alternative emission limit values are requested to accommodate for oxygen and temperature corrections. The actual emission concentrations as directly recorded in the emission stacks are lower, albeit also not within the current promulgated standards.