

Final Motivation for Additional Postponement of Compliance Timeframes in terms of Regulation 11 of Section 21 NEM:AQA Minimum Emissions Standards for Natref's Operation in Sasolburg, Free State Province

FINAL COMMENT AND RESPONSE REPORT

This Comment and Response Report (CRR) records the comments expressed by stakeholders during the stakeholder engagement phases of Natref's application process. Comments were received in writing (comment forms, emails, faxes and letters), during telephonic communication, as well as verbally at public meetings held during October 2013 and May 2014.

Please note that during the time of the public meetings (May 2014), Natref was still considering exemption applications and comments made by stakeholders regarding exemption applications have been left as such in the CRR. Since the conclusion of the public commenting process, the Minister of Environmental Affairs has formally notified Natref that she will not consider its exemption applications, and has advised that postponement applications should be made instead. In line with the Minister's guidance, Natref will submit these as additional postponement applications.

The comments have been categorised as follows, and include responses from the Natref and SRK project team members:

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ANNEXURES

**Annexure 1: Letter from GroundWork (15/10/2013), and Project Team Response
(20/12/2013)**

Annexure 2: Written Submission – Legal Resources Centre (June 2014)

Annexure 3: Letter from Legal Resources Centre (November 2014)

**Annexure 4: Further Air Quality Modelling Information in support of various
comments received**

Annexure 5: Information pertaining to upset conditions

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
1 APPLICATION PROCESS					
Natref fails to explain which exemptions ¹ and/ or postponements are required, and which of its facilities and substances it is required for.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter - full text included as Annexure1)	Natref's applications for postponement and exemption have been detailed its draft motivation reports.
<p>Section 21 of NEM: AQA obliges the Minister, by notice in the Gazette, to publish a list of activities which result in atmospheric emissions that may have a significant detrimental effect on the environment.</p> <p>Although there is provision in the list of activities to postpone compliance time frames, the list of activities makes no provision for exemption (please refer to footnote 1 on page 1) of compliance.</p>	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter - full text included as Annexure 1)	<p>Section 59 of NEM:AQA makes provision for exemption from application of any provision to NEM:AQA, except for sections 9, 22 or 25.</p> <p>The provision for exemption is described in the BID, as well as in the draft motivation report for Natref's exemption application.</p>
<p>The BID mentions that the requirements for postponement of MES compliance timeframes, as set out in the Framework for Air Quality Management, provide a guideline to the interpretation and application of the NEM: AQA.</p> <p>The Framework binds all organs of state, who must give effect to the Framework. Compliance to this Framework is required, in order for the relevant decision-maker to evaluate Natref's</p>	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	Natref supports the view that the Framework is a binding instrument on organs of State under the NEM:AQA.

¹ Natref's previous exemption application will be submitted as an additional postponement application.

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application, and it is not a mere guideline.					
<p>A postponement application can only be brought in circumstances where ambient air quality standards (AAQS) (in terms of Section 9 of the NEM: AQA) in the area are in compliance.</p> <p>The Framework states that such an application for postponement can only be granted if it is demonstrated that the industry's air emissions are not causing any adverse impacts on the surrounding environment.</p>	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	<p>In accordance with Regulation 12 of the Minimum Emissions Standards (MES), Natref is required to prepare an Atmospheric Impact Report (AIR) to demonstrate the ambient impacts of its applications. The AIRs have been made available to stakeholders during the second round of engagement. These will enable the Minister and National Air Quality Officer to make a determination on whether exemptions and postponements are justifiable.</p> <p>Where any pollutants are in exceedance of the National Ambient Air Quality Standards, the important question for the decision-making authority to consider is whether an emitter conducting a listed activity, by complying with the point source standards, is able to meaningfully improve ambient air quality. Where this is determined not to be the case, it indicates that other mechanisms to improve ambient air quality are more likely to have a significant impact on improving the outcomes.</p>
Natref's claim that "without cost recovery to implement abatement technology to meet new plant standards at Natref's existing facilities, the remaining economic lifetime of the facility may be materially affected" is a veil threat of undertaking the needed environmental improvements only if society in general pays for what is needed as good practice in the industry. Natref is called upon to provide full information to justify why it cannot undertake these needed improvements.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	<p>The reasons for Natref's applications are detailed in its draft motivation reports.</p> <p>An Atmospheric Impact Report has been prepared (in accordance with the Atmospheric Impact Report Regulations) by an independent specialist, to assess the impacts of Natref's applications for ambient air quality.</p>
It seems as though Natref is applying for the ceiling limits to be removed.	Mr Samson Mokoena	Vaal Environmental Justice Alliance (VEJA)	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	It is only for certain listed activities where Natref seeks exemptions from the MES for reasons provided in the motivation report. In these cases, Natref does not ask for the "removal" of ceiling limits, but rather proposes alternative emission limits as ceiling limits, to be incorporated in its atmospheric emission licence, with which it

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					must comply. It therefore proposes these alternative limits to ensure it is held accountable for compliance.
VEJA does not agree with Natref's applications for exemptions ² and postponements, as the MES were formulated while Natref was in attendance of the negotiation meetings with Government. The opportunity was provided by the SABs for Eskom, Sasol, Natref and the steel manufacturing industry to provide inputs into the drafting of the MES. For Natref to expect of Government to agree with applications for compliance with alternative standards or relaxation of standards, creates an opportunity for all industries to set their own standards, which defeats the purpose of the MES. It is unfair to expect of Government to make an exception in one case and ignore the case of the other industries. The MES should now be implemented, as the debate is closed.	Mr Samson Mokoena	Vaal Environmental Justice Alliance (VEJA)	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	The comment is noted but is not the view held by Natref. Please refer to the motivation reports which provide reasons for Natref's applications. Note that Natref's applications have been aligned with the compliance requirements of the November 2013 MES, which repealed and replaced the 2010 MES.
Which sources in particular does Natref's application for exemption ³ and postponement relate to?	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	The specifics of the postponement and exemption applications are provided in the motivation reports.

² Natref's previous exemption application will be submitted as and additional postponement application.

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Natref is not following a legal application process and SRK as the Environmental Assessment Practitioner (EAP) is not advising Natref correctly.	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	Postponements are made in terms of Regulation 12 of GN 893 and Exemptions are made in terms and Section 59 of the NEMAQA. Further information on the regulatory requirements is provided in the motivation reports.
Thirty of us vote for the project to go ahead as it is now too late to stop it.	Mr Billy Majola	Sasolburg Rangers Association	22 April 2014	Written comment (email)	Thank you for your comment.
Exemptions should not be granted for compliance with the MES Natref, as there is no legal basis for exemptions. The Minister will be acting <i>ultra vires</i> should exemptions be granted. The application is wasteful of government's limited resources.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	This interpretation is incorrect. The Minister of Environmental Affairs is empowered to granted exemptions in terms of section 59 of the National Environmental Management: Air Quality Act 39 of 2004. Nevertheless, in accordance with a recommendation from the Minister of Environmental Affairs, the existing exemption applications will be submitted to the National Air Quality Officer as postponement applications. There will be an opportunity for stakeholders to comment on this change.
Natref argue that "emissions abatement must target emissions that result in non-compliance with the NAAQs, where the costs of the abatement are justified and achieve material improvements in prevailing ambient air quality." In other words, these companies seek to circumvent enacted legislation by substituting their own scheme where emissions will only be abated when the following three factors are satisfied: 1) Where emissions cause non-compliance with the NAAQs; 2) When the costs of the abatement are "justified" and 3) When the abatement results in material improvements to ambient air quality. Each of these three requirements,	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	Natref are committed to compliance with their obligations under the law. Exercising their rights to apply for postponements and exemptions is not a circumvention of the law – it is compliance therewith. Natref's commitment to the objectives of AQA and other environmental legislation is demonstrated by the proposed alternative emissions limits with which they must comply if their exemptions are granted. Refer to section 5.3 of the exemption motivation reports for this explanation. To respond to the analogy, these applications are being made in advance of the "speed limit" coming into effect, in order to prevent an exceedance of the "speed limit". Rather than removing all speed limits, Natref are suggesting speed limits which are grounded in sound principle in respect of their operations.

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however, is fallacious. An analogy would be a driver who is driving over the speed limit, is caught by the police, and then proceeds to claim the traffic laws are invalid and substitutes his or her own three-pronged method for determining whether he or she was driving unsafely.					
It is disputed that Natref have complied with all the other requirements set out in regulations prescribing the format of atmospheric impact reports, which were published on 11 October 2013 (details included in LRC letter, attached as Appendix 2.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	Natref has taken this concern into account in updating Section 4 of the AIR and its associated appendices.
When interpreting the rights contained in the Constitution including the environmental right, regard must be had to international law and regard may be had to domestic law (clause 39 of the Constitution – interpretation). Hence regulatory approaches using best available technology (BAT) and emissions controls at source in jurisdictions such as the EU are relevant considerations when assessing the role and functioning of our air quality legislation and how it is supposed to be interpreted in order to promote and achieve compliance with the constitutional right to environment. The minimization of emissions at source, based on available technology, is an internationally recognized additional step required in order to progressively improve air quality and is also the regulatory intention for the AQA.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	The Constitution, the National Framework and NEMA principles, amongst other things, advocate a holistic and balanced approach to standard setting and technology approaches. These are all considerations to be balanced and taken into account by the NAQO in reaching her decision. We would point out that BAT is not a self-standing standard but is intended to inform the Best Practicable Environmental Option principle. BAT must be assessed within the South African context.

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Other considerations from the Framework indicate that when considering an application for postponement of compliance time frames for an industry it is important for the decision maker to bear in mind the factors that the competent authority is required to take into consideration in listing an activity in the first place. These are set out in paragraph 5.4.3.3 of the Framework where it states: “the identification and prioritisation of activities to be added or removed from the listed activities shall be based on but not limited to the factors outlined in 5.3.3 of the 2013 Framework. These include proximity to sensitive receptors eg residential areas and schools, and emitters of concern based on volumes of emission and the nature of the pollutant.”	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	It is noted that these are considerations to be taken into account by DEA.
The applications made by Natref cannot comply with the requirements for postponement of compliance time frames	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as	This interpretation of the National Framework is incorrect. In accordance with Regulation 12 of the MES, Natref is required to prepare an AIR to demonstrate the ambient impacts of its

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as set out in the National Framework for Air Quality Management (Framework) and should not be granted as the applications are made in air sheds where there is non-compliance with one or more ambient air standards. The framework does not limit the requirement only to the ambient air standard for which the postponement is sought and hence non-compliance with any ambient air standard requires the application to be rejected.				Appendix 2)	applications. The AIRs have been made available to stakeholders. These will enable the National Air Quality Officer (NAQO) to make a determination on whether postponements are justifiable. Where any pollutants are in exceedance of the NAAQS, the important question for the NAQO to consider is whether an emitter conducting a listed activity, by complying with the point source standards, is able to meaningfully improve ambient air quality. Where this is determined not to be the case, it indicates that other mechanisms to improve ambient air quality are more likely to have a significant impact on improving the outcomes.
SO ₂ and NO _x converts to PM, since PM is not in compliance, postponements and exemptions should not be granted for SO ₂ and NO _x . It is noted that the conversion of SO ₂ emissions from a refinery is not a trivial matter. SO ₂ emissions are much more than PM emissions from a refinery, as shown in AIRs. So, even if a relatively small fraction of SO ₂ emissions from the refinery converts to ultrafine particulate matter, then the refinery's SO ₂ emissions can indirectly contribute as much to ambient levels of PM than PM emissions do directly.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	Please refer to Section 5 of the AIRs for Natref, where results for ambient particulate matter impacts from the facilities expressly include an estimation of the conversion of SO ₂ and NO _x to particulates.
The applications have not been submitted to the appropriate Air Quality Officer at least 1 year before the specified compliance date.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	Natref confirmed its intention to submit its postponement and exemption applications with both the Minister and National Air Quality Officer and by advertisement prior to the 1 year deadline.

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We will advise shortly of our mandate from the Habitat Foundation, and Captrust, as we have not had sufficient time in the time period allotted to discuss this submission with all our clients.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	Noted. Updates received. Sasol cannot comment on whether all parties recorded are "affected" since there is no indication provided in this regard.
The submissions were compiled with the technical inputs of Cairncross and Chernaik.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	Noted. Without further substantiation, Sasol cannot comment on the independence or qualifications of these individuals."
The framework is a component of AQA and is also legislation	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	This is a matter of legal interpretation.
Our submission 16th June 2014 to SRK consultants, authors of the draft application for exemption, stated that the application if converted to a postponement application was not legally compliant with the requirements of the National Environmental Management: Air Quality Act 2004 (AQA), the 2012 National Framework for Air Quality Management (Framework) and regulations. Failure to comply with the Framework is fatal to an application of this nature.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	This is addressed per specific assertion below.
The Framework states in section 5.4.3.3 that postponements of compliance with the MES are conditional on ambient air quality standards in the area being in compliance, "and will remain in compliance even if the postponement is granted." The airshed in which Sasol's plant for which the postponement is sought is in an airshed that is not compliant with NAAQS. The final postponement application has not	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	This has been addressed in the documents supporting the application. In accordance with Regulation 12 of the MES, Sasol is required to prepare an AIR to demonstrate the ambient impacts of its applications. The AIRs as well as Sasol's motivation reports have been made available to stakeholders. These will enable the National Air Quality Officer (NAQO) to make a determination based on all relevant considerations on whether postponements are justifiable.

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addressed this issue, and incorrectly states the law.					
The postponement application does not comply with Section 5.4.3.3. of the Framework, in that it cannot demonstrate that the facility's current and proposed air emissions are and will not cause any adverse impacts on the surrounding environmental, which includes health of adjacent communities.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	As indicated in Appendix B of the AIR, Sasol has complied with the requirements of the AIR regulations. The analysis of the impact on human health is presented in Section 5.1 of the AIR. The analysis of the impact on the environment is presented in Section 5.2 of the AIR.
Sasol seeks to substitute its own scheme for the legislation on the issue of postponements. It makes the following statement regarding compliance with the AQA which is without a legal authority which should be ignored as an irrelevant consideration: "where the pollutants are in exceedance of the NAAQS, the important question for the NAQO to consider is whether an emitter conducting a listed activity by complying with point source standards is able to meaningfully improve ambient air quality. Where this is determined not to be the case, it indicates that other mechanisms to improve air quality are more likely to have a significant impact on improving outcomes." Sasol provides no authority for this proposition.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	Rather than Sasol substituting its own scheme, Sasol is proposing an approach which may support the NAQO in exercising her discretion.
The Framework has provided a regulatory basis for considering postponements. The application does not comply with these requirements. Sasol instead provides its own approach which argues that each air pollutant, and Sasol's contribution to it, can be looked	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	The assessment of emissions was undertaken as provided for in the Regulations describing the format of an atmospheric impact report. The compliance with these regulations, as well as the regulations on dispersion modelling, is detailed in Appendix B of the AIR.

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at separately. In this way it is argued that reducing Sasol's emissions will not have a significant benefit and is therefore not justifiable for the cost involved. This is a theory that is not based on the AQA, nor on science or international best practice and merely perpetuates the status quo of bad air quality around Sasol's facilities. Sasol tries to premise this approach on its AIR report, even though the AIR states that it cannot determine the impact on the environment of a cocktail of air pollutants, in other words cumulative and synergistic impacts.					
The applicants are required to compile an air pollution impact assessment in accordance with the regulations prescribing the format of an Atmospheric Impact Report, and the Regulations Regarding Air Dispersion Modelling, and they fail to comply with these requirements.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	A comparison between the AIR approach and the regulations is included as Appendix B of the AIR.
The application fails to consider the cumulative impacts of the Sasol and Natref postponement applications and to critically evaluate the cumulative impacts of their current emissions. For example the comments and responses report states that the cumulative impact of Sasol Infrachem and Natref has been included as Annexure 3 in the respective AIRs. In the case of Annexure 3 to the Infrachem report, while demonstrating a significant cumulative impact does not analyse the significance of these figures anywhere in the AIR report, and the	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	<p>Appendix L addresses this matter comprehensively. Further information on the cumulative pollution level is included at the end of the Comment and Response Report.</p> <p>The Appendix has now been included as Appendix L of the Natref AIR, and the same further information on the cumulative pollution level included at the end of the Comment and Response Report applies. Since the cumulative scenario analyses the same plants and pollutants, the report is identical to that of Sasol Infrachem.</p>

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<p>possible impacts of such cumulative pollution levels on health. These findings will be discussed in more detail in paragraph below. The failure to make any comments on such a significant if not central issue in any decision involving air quality management can only lead to an adverse inference and conclusion that the report is deficient, one sided and not a basis for reasonable or rational decision making.</p> <p>For Natref this Annexure was not included.</p>					
The declaration of the Vaal Triangle as a Priority Area and the ensuing efforts around the Vaal Triangle Airshed Priority Area ("VTAPA") demonstrate that the government recognizes and accepts that pollution is a serious threat in that area.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	<p>Noted. Sasol and Natref have followed the postponement application process, and provided the information necessary and relevant to the NAQO to enable her to make an assessment based on the merits of their applications</p> <p>Sasol and Natref have outlined air quality improvement roadmaps in their motivation reports, which will serve to contribute towards ambient air quality improvements in the priority areas.</p>
<p>The applications are made in air sheds where there is non-compliance with one or more ambient air standards. The Framework does not limit the requirement only to the ambient air standard for which the postponement is sought and hence non-compliance with any ambient air standard requires the application to be rejected.</p> <p>Since PM does not comply with National Ambient Air Quality Standards (NAAQSs) in Sasolburg and since SO₂ and NO₂ convert to PM, every request for postponement for a limit on a criteria pollutant (ie PM, SO₂, NO_x) should be</p>	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	<p>This is a matter for interpretation. Its motivation report is aligned with its view in this regard as detailed in the Motivation reports in Section 6.4.(both Secunda reports; Sasol Infrachem additional postponement; both Natref reports), Section 5.5 (Sasol Infrachem initial postponement) and Section 5 (Sasol Nitro). The question of secondary pollutants is addressed further below and in the Atmospheric Impact Reports for Natref, Sasol Infrachem and the Secunda operations in section 5.1.8.3.</p>

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<p>rejected. Hazardous air pollutants which are also particulates should not be allowed postponements for compliance with MES in light of the non-compliance with PM NAAQs in Sasolburg.</p> <p>No postponements should be granted for any other pollutant emission regulated in terms of the MES, given the fact that NAAQs for PM and SO₂ are not compliant in Sasolburg and compliance with NAAQs is a fundamental requirement for the granting of postponements, in terms of the Framework.</p>					
<p>Other considerations from the Framework indicate that when considering an application for postponement of compliance time frames for an industry it is important for the decision maker to bear in mind the factors that the competent authority is required to take into consideration in listing an activity in the first place. These are set out in paragraph 5.4.3.3 of the Framework where it states:</p> <p>“the identification and prioritisation of activities to be added or removed from the listed activities shall be based on but not limited to the factors outlined in 5.3.3 of the 2013 Framework. These include proximity to sensitive receptors eg residential areas and schools, and emitters of concern based on volumes of emission and the nature of the pollutant.”</p>			25 November 2014		<p>Whilst there is no reference in the postponement requirements of the NAQF to the quoted paragraph (which deals with listing and not postponing activities), nevertheless the information referred to in paragraph 5.3.3 of the NAQF has been included in the AIR.</p> <p>Information on modelled concentrations at sensitive receptors is provided in Section 5 of the AIR in the form of bar graphs. The methodology used to identify sensitive receptors is detailed in Section 5.1.8. Sensitive receptors were selected based on the following factors:</p> <ul style="list-style-type: none"> • Location of residential areas to assess impact on communities – the entire residential area is seen as a sensitive receptor as it contains various sensitive receptors such as schools within the residential areas • Location of monitoring stations for purposes of model validation • Locations of maximum modelled ambient impact to determine the maximum impact of the emissions. <p>In addition to the sensitive receptors at which concentrations were specifically extracted, schools and hospitals were also indicated on the isopleth plots for further information. As visible in the</p>

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					isopleth plots, the sensitive receptors are located in close proximity to schools and hospitals, most of which are located within the surrounding residential areas.
The standard applies to ambient air impacts from all sources seen collectively, not solely to the emissions of the applicants, seen in isolation from other emitters in the airshed. The latter interpretation would undermine the regulatory purpose of AQA, which contains a duty on the state to enhance air quality so as to secure an environment that is not harmful to health.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	
The further requirement for the postponement was that it should have been submitted to the appropriate Air Quality Officer at least a year before the specific compliance date. An intention is not an action and Sasol is therefore still not compliant with this requirement.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	
Instead of complying with the mandatory requirements of the AQA and its framework Sasol submits its own theory of the considerations that are relevant to an application of this nature. In terms of the Promotion of Administrative Justice Act 2000 an application decided on the basis of irrelevant considerations will be unlawful.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	
In Sasolburg, PM levels are not in compliance with the NAAQSs for PM ₁₀ (daily AAQS of 75 ug/mg). Ambient levels of PM _{2.5} are not being measured. So, if postponements may be granted only if "ambient air quality standards in the area are in compliance," then there	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	<p>The ambient impacts as modelled for PM consider both the PM₁₀ and PM_{2.5} fraction (with PM_{2.5} conservatively assumed to be total PM). This is as discussed in Section 5.1.8.1.3 in the AIRs. In reality, the PM_{2.5} accounts for approximately 50% of Sasol's fly ash emissions on a particle count basis.</p> <p>Although reference to PM_{2.5} was made in the AIR, clarity on the</p>

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cannot be any grant of postponement from emission standards for PM ₁₀ that are being requested by Natref for its facility in Sasolburg.					<p>contribution of simulated PM ground level concentrations to PM_{2.5} NAAQS limits is provided as follows:</p> <p>The predicted 99th percentile ground-level PM concentration, at the point of maximum ambient impact, was below the National Ambient Standard, contributing 8% of the daily PM_{2.5} NAAQS (2 µg/m³). At Sasolburg secondary particulates contribute 1 - 45% of total predicted PM. In Sasolburg, distance from the source plays more of a role in formation of aerosols than at Secunda.</p>
In Sasolburg, SO ₂ levels are not in compliance with the AAQS for SO ₂ (daily AAQS of 125 µg/m ³ at the AJ Jacobs monitoring station, 2011-2012). So, if postponements may be granted only if "ambient air quality standards in the area are in compliance," then there cannot be any grant of postponement from emission standards for SO ₂ that are being requested for the Natref facility in Sasolburg.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	<p>SO₂ exceedances measured at the AJ Jacobs monitoring station occur only in respect of the daily ambient air quality limit. When compared against the hourly or annual averages, these limits are not exceeded. Wind directions during these exceedances indicate the presence of a significant non-Natref external source of sulphur emissions that contributes toward daily exceedances. The AIR presents the ambient impacts of Sasol Infrachem and Natref in isolation and in combination, on air quality at the AJ Jacobs station.</p> <p>In order to mitigate the impact of Natref's operations on ambient air quality, the following approach is taken:</p> <ul style="list-style-type: none"> • The commitments in respect of the VTAPA air quality management plan have been implemented, including the procurement of lower sulphur crude, as described in Section 4.2.2 of the motivation report. • cutting back production loads during upset conditions, as described in Section 4.2 of the motivation report • advancing the roadmap to air quality improvement as detailed in Chapter 7 of the motivation report, including ongoing technical investigations, to consider whether the roadmap could be further optimised
The conversion of SO ₂ emissions from a refinery into particulate matter is not a trivial matter. SO ₂ emissions from a refinery are much greater than PM emissions.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	<p>The AIR indeed considers the impact of secondary particulates (in the form of sulphates and nitrates) from Sasol's SO₂ and NO_x emissions, and this is included in the predicted values for ambient PM impacts in all applicable graphs, as explained in Section 5.1.8.1.3 of the AIR, and in responses to comments above. Note</p>

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In Sasolburg, NO ₂ levels are in compliance with NAAQSs. However, we must apply the same principle with NO ₂ emissions as with SO ₂ emissions since conversion of NO ₂ emissions to nitric acid aerosols (particulates) is also well established. In areas such as Sasolburg where PM levels are not in compliance with AAQS, no postponements on limits on NO ₂ emissions should be granted.					that the methodology for estimating the conversion of SO ₂ and NO _x to secondary particulates was included in the further independent peer review of the AIR. That peer review document is also made available to the public.
The objects of AQA are to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to health and well-being. The Preamble to AQA recognises the impacts of air pollution on the health of vulnerable and disadvantaged communities and the fact that the burden of the health impacts associated with air pollution fall most heavily on the poor who carry the high social, economic and environmental cost that is seldom borne by the polluter. The communities of Sasolburg and Secunda which are located in close proximity to the applicants include such communities. The Preamble to AQA states that "the minimisation of pollution (emphasis added) through vigorous control, cleaner technologies and cleaner production practices is key to ensuring that air quality is improved." There is a general duty on state officials in applying this Act to apply these principles and the NEMA principles. Principle 2(4)(c) requires environmental justice to be pursued so	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	<p>Noted. Sasol and Natref re-iterate that the NAQO, in exercising her discretion, must take into account all relevant considerations including all the NEMA principles.</p> <p>The objects of the NEMAQA also include reasonable measures for securing ecologically sustainable development while promoting justifiable economic and social development.</p>

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
that adverse environmental impacts are not distributed in such a manner as to unfairly discriminate against any person particularly vulnerable and disadvantaged communities.					
The listing of activities and the setting of minimum emission standards under section 21 of AQA is therefore very much aimed at regulating large scale emitters of toxic and diverse pollutants located near residential areas such as the Sasol facilities which have sought postponement. In itself this makes the application for postponement inappropriate.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	Noted. It is denied that this application is inappropriate. Amongst others, the reasons, background and assessment of impacts which confirm its necessity and appropriateness are addressed in the motivation reports Note that Sasol and Natref have outlined air quality improvement roadmaps to sustainably contribute towards improved ambient air quality. As large industries supporting local communities, if postponements are not available, the socio-economic implications will be very significant.
Hence in circumstances where the air quality in an airshed exceeds the NAAQS for any of the ambient air standards, there is a duty to take action to rectify the situation. Allowing polluters who contribute to these exceedances to continue doing so is contrary to this regulatory duty. Allowing the postponement of compliance with any measure aimed to reduce pollution impacts in an airshed would likewise go against the regulatory intention of AQA.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	Sasol and Natref have assessed and provided all necessary information to enable the National Air Quality Officer to reach a decision which is informed by all relevant considerations. The approach to understanding the potential health and environmental impacts of their applications has been detailed in Section 5 of the AIR. Note that Sasol and Natref have outlined air quality improvement roadmaps in their motivation reports, which will serve to contribute towards ambient air quality improvements in the priority areas.
Natref's opinion that the MES should target "emissions that result in not compliance with the NAAQS, where the costs of the abatement are justified and achieve material improvement in prevailing ambient air quality" is incorrect. The purpose and methodology for developing MES was set out in the AQA and Framework and did not include	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	While this may have been noted in a CAIA submission made to the Department in 2007, it is not correct that Sasol has argued that ambient air quality is not a consideration which should be taken into account when setting MES.

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
this rationale, which is both impractical and has not been adopted anywhere in the world where air quality is being successfully managed. In fact Sasol stated its review application to the High Court that a consideration of ambient air quality and standards is not a requirement for the setting of MES elsewhere in the world.					
2 STAKEHOLDER ENGAGEMENT					
When stakeholder engagement takes place and meetings are held, the Sasol Community Working Group (SCWG) should be notified well in advance, in order to notify the Zamdela community members to participate. The notification of this meeting was not received well in advance, and therefore the Zamdela community could not have been mobilized by SCWG.	Mr Billy Majola	Sasol Community Working Group (SCWG)	8 Oct 2013	Public Meeting, Boiketlong Community Hall, Sasolburg	Stakeholders will be invited to attend the second round of public meetings and comment on the Draft Motivation Reports, by means of letters, emails, telephone calls and sms notifications. Invitations to public meetings will also be extended to the general public via advertisements in two national newspapers, and three local newspapers, namely Sasolburg Ster, Vaal Weekblad and Puisano. The stakeholder comment period will extend from Tuesday 15 April 2014 to Friday 13 June 2014.
The BID does not provide sufficient information to allow meaningful stakeholder comment.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	The first round of stakeholder engagement and the information contained in the BID is to inform the public of Natref's application process, the high-level reasons for application, and the subsequent engagement process where stakeholders will have an opportunity to comment on the motivation reports. The second public commenting period provides this opportunity for commenting on the detailed documentation shared with stakeholders, during the period 15 April to 13 June 2014.
The public comment period of 30 days on the Atmospheric Impact Report and Comment and Response Report is totally inadequate and would deprive stakeholders of the right to have a reasonable opportunity to comment. A comment period of at least 90 days is	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	In November 2013, in the amendments to the standards published in GN 893, the requirements for postponement were amended. This requires that the public participation process follows that prescribed in the EIA Regulations. Accordingly, 40 working days will be provided for public commenting during the second round of stakeholder engagement, from 15 April 2014 to 13 June 2014.

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
requested.					
The Terms of Reference for the Motivation Report and Atmospheric Impact Report must be made available for public comment.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	The study has been conducted in terms of the Draft Dispersion Modelling Guidelines, as referenced by the Atmospheric Impact Report Regulations promulgated in October 2013. A plan of study for the AIR is included in Natref's documentation, along with a further peer review report that was commissioned to provide additional assurance of the rigour of the modelling methodology. That report is also available for the public's review. The draft motivation reports have been prepared by Natref, and reviewed by SRK Consulting. As such, no terms of reference were prepared.
It seems as if Natref will not be inviting public comment on its modelling plan of study. It is submitted that it is unlikely that an adequate investigation will be done regarding the potential adverse impacts of the application.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	
All Atmospheric Emission Licences, monitoring and government inspection reports for all the various processes seeking postponement and exemptions ⁴ must be made available to the public immediately.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	All information requested in relation to the processes seeking postponement and exemption from default application of the MES, is available in the relevant AIRs and draft motivation reports.
GroundWork has not received a response to our written enquiry of 15 October 2013 and request feedback by the end of business on 20 December 2013.	Mr Bobby Peek	GroundWork	20 December 2013	Telephone call to project team	Natref provided feedback to the request by GroundWork on 20 December 2013. This letter is attached in Annexure 1.
3 ENVIRONMENTAL ISSUES					
3.1 AIR QUALITY					
There may have been challenges regarding Government air quality monitoring stations previously, but they are functioning adequately at present.	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre,	Thank you for this information. Natref employs information collected by monitoring stations operated by Sasol, which also conform to data quality specifications. The monitoring stations are accredited (ISO/IEC17025) to ensure data quality and availability,

⁴ Natref's previous exemption application will be submitted as an additional postponement application.

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
				Sasolburg	with 90% data availability for the three years.
Which background sources of pollution that affect ambient air quality has been included in the air modelling process?	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	As described in the AIR, the measured ambient air quality, including all sources, was used to determine a background concentration, which takes other sources into consideration. Although not directly modeled, other sources were considered as they contribute to the background data.
The data presented in the AIR needs to be verified by another party to ensure that the information presented is correct such as Natref's contribution to ambient air quality. How has the data used in the air modelling study been verified?	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	As described in the AIR, quality assurance is in place for the plant emissions data used, the dispersion model and ambient air quality monitoring stations. The AIR includes an appendix which outlines a comparison of the dispersion model's conformance with the dispersion modelling regulations published by the Department of Environmental Affairs. Note that Natref took the additional step of appointing an international peer reviewer to independently assess the results. The peer reviewer's report was made available to stakeholders.
Why were the same monitoring stations used for both Sasol and Natref air quality monitoring and analysis?	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	The air quality monitoring stations have been sited for optimal consideration of Sasol's and Natref's ambient air quality impacts, and are therefore appropriate to use for Natref's applications. Sasol is a shareholder in Natref and therefore Sasol's ambient air quality monitoring network data is available for use by Natref.
Why was the DEA monitoring station at Zamdela not used to collect air quality data, as it is in working order?	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	
The MES was promulgated to improve air quality. Relaxation of the MES will not achieve this goal. The MES should be more stringent in order to improve air quality.	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	This comment is noted. Please refer to the conclusions of the AIR. Natref has made commitments to improvement in the VTAPA which are aligned with ambient air quality impacts. The AIR includes an assessment of current ambient air quality in the vicinity of Natref's plant, and the modelled impacts of Natref's

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
					<p>postponement and exemption applications on this ambient air quality.</p> <p>Regarding compliance with NAAQS, measured ambient air quality from the Sasol monitoring stations is seen to comply with the NAAQS - the exception being for PM₁₀. In respect of PM₁₀ it is known that there are multiple sources of PM including other industries, vegetation burning, dust, discard coal combustion and domestic fuel use.</p> <p>Given the high background loading of PM₁₀, Natref maintains control of PM emissions. Modelling of PM emissions reveals low resultant concentrations of ambient PM₁₀, even when the chemical transformation of SO₂ and NO_x into particulates is considered. This implies that reducing PM₁₀ emissions from Natref activities will not reduce ambient concentrations of PM₁₀ significantly, and will not result in compliance with the NAAQS.</p>
There is no H ₂ S data in the atmospheric impact report (AIR) for Natref's crude oil refinery and this is unacceptable and fatal to an application for postponement of compliance time frames for this facility as there is a lack of essential data to determine whether Natref is eligible under the Framework for postponements of H ₂ S limits. It is not possible without this information to determine that the postponement will not have an adverse effect on health of adjacent communities.	Angela Andrews	Legal Resource Centre	16 June 2014	Written comment (Letter – full text included as Annexure 2)	<p>Natref is only seeking a postponement of the requirements related to continuous flaring of H₂S rich gases. The H₂S is converted to SO₂ when flared and a negligible amount of uncombusted H₂S could potentially be emitted.</p> <p>It is emphasized that Sasolburg does not detect H₂S odours from the refinery and historical ambient H₂S measurements are typical low level background H₂S concentrations.</p>
There is no legal basis for the polluter to set alternative limits. This will lead to individual limits that differ from facility to facility, based on criteria that are not uniform. This would bring the system of setting standards into disrepute.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	<p>The alternative emission limits and alternative special arrangements proposed by Natref have been informed by independent specialist air quality studies on the basis that these limits do not affect ambient air quality beyond the NAAQS. These standards are either the same as, or stricter than the current limits contained in the applicable atmospheric emission licences. Where the current licences contain no emission limit for particular pollutants, these alternative emission limits make provision for</p>

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
					regulating those criteria in order to ensure alignment with the MES. Their intended purpose is to define the limits with which Sasol will comply for the duration of the postponement period. If no alternative emission limits were proposed, it would be tantamount to Natref seeking a blanket exemption from complying with any standards.
Modelled concentrations of each pollutant individually are assessed against NAAQSs (Table 5-2), where they are prescribed by South African legislation. Where no NAAQS exists for a relevant non-criteria pollutant, health screening effect levels based on international guidelines are used. This approach looks at polluters and their air emissions individually and not cumulatively with other emitters and emissions and so doing underestimates the true impact of the industrial emissions concerned. An impression is given that is inaccurate and more benign than the reality, which contains the cumulative impact of a wide range of chemicals in a non-compliant air shed. For this reason it is inappropriate that the applications recommend postponements or exemptions of coming into compliance with MES.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	The AIR Regulations were followed in completing the AIR. Other sources were considered as they contribute to the background against which the Natref contributions to ambient air quality were assessed, as measured by accredited monitoring stations. Refer to Section 5 of the AIR for the presentation and discussion of ambient air quality measurements.
Ambient air standards are not the only measures that Natref must comply with. Guideline values cannot fully protect human health and a precautionary	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	As required by section 9 of the NEMAQA, the NAAQS are standards set by the Minister which were required to be informed by taking considerations of health, wellbeing and the environment into account.

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
approach should be followed.					
<p>The Vaal Triangle Airshed Priority Area (VTAPA) demonstrates that government recognizes that pollution is a serious threat in the area, specifically particulates for which exemption is sought.</p> <p>Natref were identified as being the main contributing sources to ambient air quality.</p>	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	<p>In the VTAPA the impacts of Natref were identified and in accordance with those impacts, commitments aligned to ambient air quality improvement were made. Natref have agreed to uphold these commitments. These commitments are informed by their impact and followed a risk based approach.</p> <p>As indicated in the results of the AIRs which are aligned with the VTAPA commitments, Natref are negligible contributors to ambient PM concentrations. This is recognised in the VTAPA.</p>
<p>Natref also misleadingly argue that pollution load should be considered rather than emission concentrations. Natref states that industrial processes with small pollution loads are “indiscriminately targeted” by the MES. In fact, the MES only applies to major polluters that have been listed. In other words, the MES are designed to apply specifically to polluters such as Natref.</p>	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 2)	<p>There is no attempt to mislead. The impact of emissions is, in part, load dependent. Therefore, for example, even though certain of Natref’s incinerators exceed the MES in terms of concentration, the ambient impact of the emissions is small due to the smaller loads. Reducing emissions from these units will not materially improve ambient air quality, as presented and discussed in the AIR.</p>
Sasol and Natref pollute the same airshed and should be addressed cumulatively.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 2)	<p>The cumulative impact of Sasol Infrachem and Natref has been included as Annexure 3 in the respective AIRs.</p>
<p>The AIRs do not assess the cumulative impact of granting postponements to both Natref and SASOL Infrachem despite the fact that they are both located within the very same airshed. Strangely, there is no discussion of the significance of these figures anywhere in</p>	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	<p>As required by section 9 of the NEMAQA, the NAAQS are standards set by the Minister which were required to be informed by taking considerations of health, wellbeing and the environment into account.</p> <p>The AIR provides an analysis of the impact of Sasol’s emissions on human health in accordance with the AIR Regulations.</p> <p>The hourly NAAQS for SO₂ is 350 ug/m³.</p>

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
the AIR itself. However, this Appendix only looks at the baseline (existing situation) – not a comparison of the cumulative impact of granting postponements to both facilities versus a compliance scenario. The AIR shows that there are portions of Sasolburg where emissions from both facilities result in hourly levels of SO ₂ above 175 ug/m ³ , which is quite near the U.S. EPA hourly limit of 196 ug/m ³ .					
3.2 CLIMATE CHANGE					
How will Natref mitigate their greenhouse gas emissions? In addition, how is Natref assisting Government in meeting their commitments made in the climate change response plan?	Mr Mduduzi Tshabalala	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	<p>There is indeed a climate change response plan formulated by Government, as industries in South Africa do emit greenhouse gases, but the process of drafting legislation for purposes relating to the regulation of these specific emissions, is separate from the MES, which currently prescribe emission limits for local air pollutants. This application is not related to the climate change response plan.</p> <p>National Treasury is considering taxation of carbon emissions and the DEA is considering setting limits on the amount of carbon emissions by individual companies. In June 2014 the negotiating process will start for consultants and relevant stakeholders to give input into setting acceptable limits on greenhouse gas emissions. Thus, it is a separate process with different criteria. The relationship between carbon emissions and pollutants should also be managed in a balanced manner, for instance, the amount of carbon emissions should not be increased when attempting to reduce local air pollutants, and the amount of local air pollutants should not be increased when attempting to reduce carbon emissions.</p>
3.3 VEGETATION					
During the presentation of the results of the AIR, it was mentioned that sulphur	Mr Mduduzi	VEJA	20 May	Public Meeting, Casa Mia	All supporting references are included in the AIR.

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
and nitrogen depositions do not affect grasslands. Are there references supporting this claim in the AIR report?	Tshabalala		2014	Conference Centre, Sasolburg	
4 SOCIO - ECONOMIC ISSUES					
Natref's spending on environmental management would have a positive socio-economic consequence.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	Natref recognises that continuous improvement in environmental management performance is an important and ongoing business imperative, and has a track record of steadily improved emission performance for SO ₂ , NO _x and PM emissions over the past 15 years. Natref's draft motivation reports detail the reasons for postponement and exemption applications, and the independently compiled Atmospheric Impact Report (AIR) provides an assessment of the impacts of Natref's applications for ambient air quality.
VEJA rejects the idea of off-setting, as it is Government's responsibility to improve housing and install insulation. Industry is using off-setting as an excuse for non-compliance with the MES.	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	Offsets are considered a mechanism to ensure holistic and integrated ambient air quality improvements, in line with the objectives of the AQA. The whole community should be working together to improve air quality in the Vaal Triangle Airshed Priority Area.
5 HEALTH					
A detailed health risk assessment of Natref's emissions must be done.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	The NAAQS establish the ambient pollutant concentration levels for protection of human health with permissible impacts. As part of its applications, Natref has appointed independent specialists to prepare atmospheric impact assessments as prescribed by the Atmospheric Impact Report (AIR) Regulations, which provide for an assessment of the potential air quality risks caused by the emissions for which postponement or exemption is sought from the MES, on the basis of the South African NAAQS. The AIRs are made available to stakeholders during the second public commenting period, and summaries of the AIR findings are included in the draft motivation reports.
Natref does not show what impact its pollution has on human health and fails to indicate the approach it will adopt in evaluating the impact of non-compliance and/ or delayed compliance with the MES on human health.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
Natref must explain with evidence the uniqueness of “being an inland refinery”, why effluent standards differ from that of coastal refineries, and what the differing effluent standards are. A full analysis must be done on Natref’s waste processes for air, solids and effluent to understand the relationship and cost between the trade-off from one pollution medium to another, and who is impacted upon by these costs, and who subsequently pays the costs (including health) for the choices Natref is allowed by the State.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as (Annexure 1)	Refer to Natref’s draft motivation reports which detail the reasons for postponement and exemption applications.
Compliance with each NAAQS will not result in protection of health because of the cumulative and synergistic effect of multiple pollutants. Cumulative effect can result in greater health risks than individual chemical constituents. In circumstances where the applicant is unable to evaluate the cumulative impact of so many pollutants in an already degraded air shed it cannot discharge the duty to prove that any postponement will not harm health.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	The assessment of health impacts of emissions was assessed as provided for in the Regulations describing the format of an atmospheric impact report.
Natref’s application for exemption from the MES should not be granted as they have not addressed the adverse health effects of their continued pollution. Natref’s application for exemption from the MES should not be granted as their approach seeks to circumvent the health-focused objectives of the Constitution,	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	Natref have assessed and provided all necessary information to enable the National Air Quality Officer to reach a decision which is informed by all relevant considerations. The approach to understanding the potential health and environmental impacts of its application has been detailed in the AIR.

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
<p>NEMA, AQA and international guidelines.</p> <p>Legislation puts onus on polluter to demonstrate that it will not harm health.</p> <p>Natref has provided insufficient data from which to conclude that granting the application would not result in (or prolong) adverse health impacts to surrounding community members.</p> <p>Relevant information, including but not limited to a baseline assessment of the health of vulnerable populations in the area, their proximity to facilities, wind directions and socio economic status of the affected populations is absent.</p> <p>Air pollutants are only discussed in the context of Airshed's dispersion modelling efforts, with scant attention paid to the health impacts of these compounds on adjacent communities. A baseline health assessment is reasonably implied by Section 30 of AQA and Section 5.4.6.10 of the Framework.</p> <p>Thus, its reported findings are insufficient to determine the actual impacts of its emissions on the environment and human health.</p> <p>With insufficient information to determine what the actual health impacts at issue are, the competent authority must adhere to the precautionary principle and deny the applications.</p>					
Natref reports on total sulphur (S) and nitrogen (N) emissions focus on acid	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full	The AIR was prepared in accordance with the Regulations prescribing the format of an atmospheric impact report. The health

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
deposition and not on the health impacts of compounds at issue (SO ₂ , NO ₂).				text included as Appendix 2)	impacts are discussed in Section 5.1 of each of the AIRs.
It is not possible to prevent the impact on health of several toxic and health damaging air pollutants unless their cumulative effect is known. When this cannot be assessed a precautionary approach is mandated by the NEMA principles and pollution should be minimised. As is clear from the AIR report it is not possible to predict the cumulative effect of so many pollutants on an ecosystem. The same would apply to cumulative and synergistic effect of pollutant cocktails on human health.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	<p>The World Health Organisation guidelines, which informed the NAAQS, have been set on a pollutant by pollutant basis and do not consider co-exposure. Data dealing with the effects of co-exposure to air pollutants is limited and, in most cases, it is not possible to recommend guidelines for such combinations.</p> <p>Sasol and Natref have assessed and provided all necessary information to enable the National Air Quality Officer to reach a decision which is informed by all relevant considerations. The approach to understanding the potential health and environmental impacts of their applications has been detailed in Section 5 of the AIR, as prescribed by the AIR regulations.</p>
1) AQA in section 30 and 45 2) Section 5.4.6.10 of the Framework. A baseline health assessment is reasonably implied by these two statutory provisions, read together. Although Section 30 does not specifically require a baseline health assessment it is clear that without it the atmospheric impact of an activity and the granting of the postponement cannot be gauged.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	As described in Appendix B of the AIR, Sasol has complied with the AIR regulations, which prescribe how the analysis of the impact on human health is to be conducted. This analysis is presented in section 5.1 of the AIR.
6 INFRASTRUCTURE AND TECHNOLOGY					
What actions has Natref taken since promulgation of the MES to illustrate progress in compliance to the MES?	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	Please refer to the motivation reports for details on Natref's environmental improvements to date, planned compliance projects, as well as the reasons for postponement and exemption applications.
Natref has explained the circumstances	Mr Samson	VEJA	20 May	Public Meeting,	Natref has been conducting technical investigations to examine

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
and reasons for refinery shutdowns, but previous shutdowns could have provided an opportunity to apply appropriate MES mitigating technologies.	Mokoena		2014	Casa Mia Conference Centre, Sasolburg	emission abatement options, but without firm scope being set through finalised standards, technology design basis decisions and hence investment decisions could not be taken, such that projects could not be advanced further. The amendments were finalized in November 2013, which repealed and replaced the 2010 MES. These amendments affected Natref as discussed in Section 4.3. of the postponement motivation report. The amended standards now form the basis for technology design decisions.
At the end of 2012, there was a motivation from industry to open up engagement regarding the MES once again. What was the extent of Natref's engagement with the DEA during this time?	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	Natref engaged with the DEA in its own right and, where possible, through SAPIA throughout the amendment process in relation to its own challenges as an inland refinery in meeting the standards.
The BAT approach, according to the framework - , "implies the consideration of technologies or techniques that deliver pollution controls to the best degree technologically possible, without economic or other considerations." This methodology necessarily excludes Natref's risk- assessment approach.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	The appropriate principle is the BPEO principle which is informed by BAT. Natref's approach is consistent with this.
Modifications of an existing plant almost invariably have to overcome space constraints and the constraints imposed on construction on an existing plant site. However these difficulties are not in themselves sufficient reason to render the required modifications infeasible.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	A definition of feasibility is provided in the technical appendices accompanying the motivation reports, which encompasses challenges broader than a narrow definition of "technical possibility". It is in recognition of the constraints faced in modifying existing plants that the setting or retention of less stringent emission standards for older facilities is recognised internationally.
The statement "Constructability issues and associated safety and production stability risks" is vague and in any event these factors should be addressed	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	It is noted that these effects are acknowledged. It is also emphasised that these obstacles are not insurmountable for all

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
through careful detailed planning and management and do not in themselves render the technology “not feasible”.					listed activities; the motivation reports for the initial postponements clearly outline a commitment to implement feasible solutions within a ten year period, which would render these listed activities fully compliant with the new plant standards.
The environmental cross-media effects of FGD are acknowledged but these should be minimised and do not in themselves preclude that use of an emission control technology or technique.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	
It is disputed that the AIR amended report addresses the issue of cumulative impacts of the postponement applications. Version 2.0 of the AIR for the Natref postponement application (Report Number: 13STL01N) still lacks any assessment of the cumulative impact of combined emissions from Natref and Sasol Infrachem. Appendixes A to K do not provide an assessment of the cumulative impact of combined emissions from Natref and Sasol Infrachem. Version .2.0 of the AIR for the Sasol Infrachem postponement application (Report Number: 13STL01SB) contains new material at the very end of the report: a series of 7 figures contained in APPENDIX L: COMBINED INFRACHEM – NATREF SCENARIO. Strangely, there is no discussion of the significance of these figures anywhere in the AIR itself. However, this Appendix only looks at the baseline (existing situation) – not a comparison of the cumulative impact of granting postponements to both facilities versus a compliance scenario.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	Appendix L of the Sasol Infrachem AIR addresses this matter comprehensively, and is identical for Natref since it considers the same point sources. This appendix has been included in the Natref AIR as Appendix L. Further information on the cumulative pollution level is also included at the end of the Comment and Response Report.

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
<p>On the issue of cumulative impacts generally we make the following comments by way of clarification. There are two distinct meanings of the word “cumulative” in the field of air quality analysis. The first meaning is the cumulative impact of different pollutants (e.g. PM, SO₂, lead, mercury, benzene) in an airshed. This first meaning is also referred to as the synergistic effect of exposure to different pollutants. While the level of individual pollutants might be low enough to not cause health effects, exposure to a combination of pollutants that cause the same health endpoint or act on the same target organ, might indeed cause health effects. This is how we have used the term ‘cumulative’ in paragraphs 8 and 31-32 of the submission.</p> <p>The second meaning is the cumulative impact of different polluters in an airshed. Usually, this refers to the cumulative impact of the same pollutant that is being emitted by more than one source. For example, the cumulative (additive) impact of SO₂ emissions from both Sasol and Natref to the Sasolburg airshed. This is how the term ‘cumulative’ is used in paragraphs 37 - 40 of the submission. Within this meaning, is the cumulative (additive) impact of pollutant emissions from a source combined with baseline/existing pollutant levels. So, for example, the impact of SO₂ emission from both Sasol with Natref and all other sources of SO₂. This is how the term</p>	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	<p>The assessment of emissions was undertaken as provided for in the Regulations describing the format of an atmospheric impact report. The compliance with these regulations, as well as the regulations on dispersion modelling, is detailed in Appendix B of the AIR.</p> <p>Sasol and Natref have assessed and provided all necessary information to enable the National Air Quality Officer to reach a decision which is informed by all relevant considerations. The approach to understanding the potential health and environmental impacts of their applications has been detailed in Section 5 of the AIR.</p> <p>The matter of cumulative emissions (in both senses of the term) has been addressed in the responses provided to comments above.</p>

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
'cumulative' is used in paragraph 27 of the submission. In this respect, in response to Sasol's argument that "their contribution in many cases is only a portion of the ambient pollution" it does not matter much if the isolated emissions are only a portion of the MES. In most cases, every polluters' emissions are only a portion of the ambient pollution. In an Atmospheric Impact Report, what matters is whether the impacts of a polluters' emissions, combined with all other emissions, create an airshed that does not comply with an ambient air quality standards or other air quality guidelines. This is the case in the airsheds of Secunda and Sasolburg which are not compliant with NAAQS.					
Sasol incorrectly uses a "delta" approach. The problem for SASOL is that the so-called "Delta approach" (which makes the impacts of pollution from any stationary source seem small in comparison to an AAQS (See Figure 5.2 on page 49 of the AIR) and which is nowhere required by the Regulations.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	Sasol's motivation reports and accompanying reports contains all the information that Sasol considered relevant for purposes of enabling the NAQO to exercise her discretion and in so exercising her discretion determining what she considers relevant.
Therefore the term 'fit for purpose' refers only to the choice of which air pollutant dispersion model to use (any recommended model is acceptable as long as it is 'fit to purpose'). The term 'fit for purpose' has nothing to do with how to present the significance of the modelling out (predicted ambient air quality) and whether air quality would comply with NAAQS or otherwise be healthy. Sasol's implication that it's use	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	Noted. The meaning of "fit for purpose" in this context is detailed in the AIR. The results have been presented in the AIR in a manner that makes a direct comparison between the current baseline scenario and compliance scenarios possible. The background concentrations would remain unchanged for all modelled scenarios, with the only change being reduced emissions from the point sources under consideration. Sasol therefore is of the view that this approach is not incorrect nor untenable, but rather provides information considered relevant. The relative contribution of the modelled values in relation to the measured

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
of the delta approach is requested by the term 'fit for purpose' in the July 2014 National Air Quality Modeling Guidelines is incorrect and untenable.					ambient data is also presented on these graphs, which clearly indicate the significance of Sasol's emissions.
The AIR fails for example to set out the point source maximum emission rates under start up, shut down, upset and maintenance condition with reference to the emissions profile expected for s21 pollutants, and providing an estimated raw gas emission rate for all of these operating conditions. Nor did the applicants summarise the frequency of such conditions over the preceding two years. Abnormal emissions can result in very significant emissions of H ₂ S and other toxic compounds from several of the applicant's operations, which have an additional impact on the health of the receiving community.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	In addition to the information already incorporated in Section 4 of the AIR, further information is provided at the end of this Comment and Response Report.
A large number of compounds are included in the list for which exemptions and postponements are sought. Information should have been provided for each of the pollutants in which postponement is sought, relating potential health effects on the adjacent communities.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	The analysis of the impact on human health, as prescribed by the AIR regulations, is presented in Section 5.1 of the AIR. To the extent that NAAQS have been set, as required, these have been used. Where NAAQS have not been set, a literature search was undertaken to identify the appropriate strictest health effect screening levels as detailed in Section 5.1.8.2 of the AIR.
Sasol submits that it complies with a risk based approach to managing its environmental impacts. This consideration is irrelevant because the MES have been promulgated and the basis for these limits is no longer up for discussion. Also the "risk based approach" is not defined in the AQA or	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	Sasol's motivation reports and accompanying reports contain all the information that Sasol considered relevant for purposes of enabling the NAQO to exercise her discretion and in so exercising her discretion determining what she considers relevant.

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
the NF and cannot be applied to standards after they have been promulgated.					
Natref's statement that "no such alternate fuel [gas] is available" does not stand up to scrutiny. The closely associated company Sasol Gas , pipes natural gas to Sasolburg. The availability of natural gas spare capacity in Sasolburg is not known, but on 25 November 2013 Sasol announced that "Sasol Gas Holdings, together with its partners, will be increasing the capacity of the current pipeline at a cost of R1.98bn," . It added \$135m was being spent on the processing facility with construction expected to be completed in the first half of 2015." Thus a supply of an alternate clean fuel that would enable Natref to comply with the MES, gas, appears to be available from a closely associated company.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	<p>Natref is a legal entity with shareholders Sasol Oil and Total South Africa. Sasol Gas is a separate legal entity.</p> <p>The assertion regarding natural gas being readily available is premised on an incorrect assumption that natural gas supply to South Africa exceeds demand.</p> <p>The natural gas marketed by Sasol Gas is currently fully allocated to customers.</p>
These arguments related to fuel oil marketability do not constitute technically insurmountable obstacles. Sasol Oil already exports significant quantities of fuel and bitumen and hence the logistics of transporting fuel oil to the coast for export are clearly not insurmountable. All coastal crude oil refineries have had to reduce or even eliminate the burning of cheaper fuel oil in their furnaces and boiler in order to reduce their SO ₂ emissions. The relative commercial advantage or disadvantage that the inland Natref refinery may have relative to coastal refineries in relation to the	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	<p>This assertion is premised on an incorrect assumption that fuel and bitumen are exported, which they are not. For one, South Africa is a net importer of fuel, and for another, export of such materials from an inland refiner is uneconomical due to the cost of transport over long distances. The fact that typical refineries at the coast are able to reduce consumption of fuel oil is precisely because the shipping market is accessible as a customer base for this fuel oil.</p> <p>A definition of feasibility is provided in the technical appendices accompanying the motivation reports, which encompasses challenges broader than a narrow definition of "technical possibility". This includes, holistically, and not in isolation, an assessment of the economics, environmental impacts and practicality of alternative solutions, among other considerations.</p>

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
export of fuel oil compared, for example, to its proximity to its main markets for the majority of its products is debatable, and in any case does not constitute a cogent technical obstacle to reducing or eliminating its use of highly polluting fuel oil. The argument that transport of fuel oil to the coast will result in increased transport emissions (direct and indirect) is spurious – the transport of all Natref's products, whether fuel oil or not – incur transport emissions. This does not inhibit Natref from distributing its other products, and in any case the transport emissions associated with fuel oil exports are only a fraction of the emissions that would occur if the fuel oil were burnt at the refinery.					
There is no H ₂ S data in the atmospheric impact report (AIR) for Natref's crude oil refinery and this is unacceptable and fatal to an application for postponement of compliance time frames for this facility as there is a lack of essential data to determine whether Natref is eligible under the Framework for postponements of H ₂ S limits. It is not possible without this information to determine that the postponement will not have an adverse effect on health of adjacent communities.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	Natref is only seeking a postponement of the requirements related to continuous flaring of H ₂ S rich gases, for a very small stream containing 1% H ₂ S (by volume). Since this source is routed to a flare, the H ₂ S is converted to SO ₂ and a negligible amount of uncombusted H ₂ S could potentially be emitted. It is emphasised that the town of Sasolburg does not detect H ₂ S odours from the refinery and historical ambient H ₂ S measurements are typical low level background H ₂ S concentrations. This is evidenced by the fact that no odour complaints related to H ₂ S emissions have been recorded. For these reasons, no data on H ₂ S is recorded.
The SO ₂ emissions from Natref (32 tons per day) is at least double what the other refineries are emitting currently, for the same number of barrels per day throughput.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	It is incorrect to compare refineries on a crude throughput basis, since refinery operations differ in a number of respects, including refinery complexity. This is described in detail in Section 2.2 of the motivation report, For the same volume of crude processed, Natref sees a 98% (by

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
					volume) product yield, as compared with a typical refineries yielding 65 – 70% (by volume) of refined product. Of necessity, this means that more sulphur is extracted from the crude in the form of atmospheric emissions, but with the economic benefit of the country having to import less crude for equivalent volumes of refined product.
If the purpose of the Clean Fuels program is to improve air quality by reducing SO ₂ emissions from vehicles (many of which are driven throughout South Africa and not in Sasolburg), then allowing the SO ₂ emissions to increase from the refinery defeats the purpose of the Clean Fuels program. There are many examples of jurisdictions (e.g. the United States and the European Union) that require refineries to produce clean (low-sulfur) fuels AND strictly control SO ₂ emissions.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	As indicated in Section 4.2.3 of the motivation report, a significant reduction in vehicle tailpipe SO ₂ emissions will arise through implementation of the Clean Fuels programme, relative to the emissions from the Natref refinery. The sulphur removed from vehicle tailpipe emissions will result in ambient air quality improvements in the inland fuel market, where products from Natref's refinery are marketed. Sulphur extracted from the fuel product will necessarily materialise as an increased volume of sulphur product from the sulphur recovery process, and a concomitant increase in atmospheric emissions, since no sulphur recovery process is 100% efficient. Note that Natref's air quality improvement roadmap includes the construction of a sulphur recovery unit to meet the specifications in the MES regarding availability of sulphur recovery processes.
It is also disputed that the findings of the AIR are that the alternative emissions limits requested by Natref result in permissible health risks. This is an incorrect inference drawn from the AIR reports and also has no basis within globally accepted air quality management policies and legislation. This sentence in fact contradicts the previous sentence in the same paragraph which states that: it cannot be argued that compliance with the NAAQS means no health risk.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	Natref disagrees with this interpretation. The average baseline emissions, proposed alternative emission limits and compliance scenarios are all assessed as prescribed by the AIR regulations. These modelled ambient impacts are compared against the NAAQS as required, as presented in Section 5.1 of the AIR. The NAAQS have been set by government at levels established as appropriate for our country. It is in this context that the modelled ambient impacts of Natref's alternative emission limits are considered permissible.
Natref states that certain MES are not reasonable and achievable with	Prof EK Cairncross	LRC	25 November	LRC Submission	A definition of feasibility is provided in the technical appendices accompanying the Natref motivation report, which encompasses

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
presently available technology. This statement is misleading. Natref is not being required to implement BAT in all cases. Much of what it required in the MES for existing plants is no more stringent than standards presently achievable on a voluntary basis by other refineries presently. The statement that the standards are not reasonable and achievable is disputed.			2014		challenges broader than a narrow definition of "technical possibility". It is in recognition of the constraints faced in modifying existing plants that the setting or retention of less stringent emission standards for older facilities is recognised internationally. It is also emphasised that these obstacles are not insurmountable for all of Natref's processes; the motivation reports for the initial postponements clearly outline a commitment to implement feasible solutions within a ten year period, which would render these processes compliant with new plant standards.
This road map can never achieve sustainable air quality as it is based on an approach which is followed nowhere else in the world where air quality is effectively managed and is based on an incorrect representation of what air quality management entails. Natref is in fact committed to retaining the status quo and spending as little as possible on air quality improvements.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	These assertions are disputed. More particularly, Natref disputes that it has committed to retaining the status quo and believes that the roadmap outlined in Chapter 7 of its motivation report reflects a significant commitment to improving its environmental footprint sustainably.
The MES will result in significant reduction of pollutants for which Natref is the primary source. In Sasolburg, Natref is the main source of SO ₂ . Per version 1 of the AIR report for Natref, baseline SO ₂ emissions are approximately 351 grams per second. SO ₂ emissions would go down to 342 grams per second (a 2.5% reduction) if Natref complied with the 'existing' plant standards. SO ₂ emissions would go down to 207 grams per second (a 41% reduction) if the sources complied with the 'new' plant standards. Natref's Alternative Emission Limits envision a 0% reduction.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	It is not correct to state that Natref is the main source of SO ₂ in the Sasolburg airshed. The ambient impacts of Natref's emissions are presented in Section 5 of the AIR, where the impact relative to measured SO ₂ levels is shown. Natref believes that the roadmap outlined in Chapter 7 of its motivation report reflects a significant commitment to improving its environmental footprint sustainably.
In its consideration of a further reduction	Ms Angela	LRC	25	LRC Submission	The use of lower sulphur crude feedstock implies that there is

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
of the sulphur content of the crude oil that it processes as a means to reduce sulphur emissions, Natref argues that “Despite the capability of processing higher sulphur crudes, Natref has chosen to steadily decrease high sulphur crude in its crude mix, reducing the sulphur content of the feed from more than 1.2% in 2007 to less than 1% in 2012 (see figure below). The process of reducing higher sulphur crudes has been to comply with VTAPA commitments The use of low sulphur crudes reduces the SO ₂ emissions from the refinery as less sulphur enters the refinery through the feed.” However,, since 2008 at least , Natref total SO ₂ emissions permit level has remained at 32tons/day to the present. The use of lower sulphur in crude feedstock did not therefore translate into a reduction in permitted SO ₂ emission rates.	Andrews		November 2014		physically less sulphur in the mass balance across the refinery, which in fact does mean lower SO ₂ emissions, as described in the motivation report. While the permit value for SO ₂ has not changed, this does not mean the quantum of SO ₂ emitted has not reduced.
Since the MES have not been set universally according to BAT, but in many instances at far more pollutant permissive levels, Natref’s arguments concerning BAT cannot be considered in the absence of an indication of to which standards BAT is applicable. For many sub-categories, the South African emission standards for ‘new’ facilities are weaker than the EU standards for ‘existing’ facilities. As regards CONCAWE, not only is CONCAWE an industry-based research group, but it’s recommendations as to what BAT is in relation to refineries are	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	Noted. With respect, Natref disagrees with this view. Refer to Section 4.2.4 of the motivation report for a description of Natref’s key reference documents guiding its environmental improvement priorities, namely CONCAWE and BREF. These documents provide a practical refinery sector benchmark against which individual refineries can assess their performance.

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
now 15 years old . Setting emission standards based on these BAT determinations would be equivalent of turning back the clock 15 years on improvements in air pollution control technology.					
It is further noted that even if compliance is indicated at a few monitoring stations within the airshed, non-compliance may be occurring in areas not in the immediate vicinity of these monitoring stations. Air quality monitoring is not an exact science.	Ms Angela Andrews	Legal Resource Centre	25 Nov 2014	LRC Submission	<p>Sasol' s monitoring stations have been specifically sited to assess impacts on ambient air quality, and on neighbouring communities. The SANS 1929 guideline also guides to 1 ambient air quality monitoring station per 250 000 people. In Sasolburg there is a total of 5 ambient air quality monitoring stations which exceeds this guideline significantly. Sasol is not only relying on the important practice of monitoring ambient air quality, but also on dispersion modelling to complement the monitoring, which is internationally accepted practice.</p> <p>Information on modelled concentrations at sensitive receptors is provided in Section 5 of the AIR. The methodology used to identify sensitive receptors is detailed in Section 5.1.8. Among the factors governing selection of sensitive receptors, was explicit consideration of the locations of maximum modelled ambient impact, in order to determine the maximum impact of Sasol's and Natref's emissions on the environment.</p>
7 GENERAL					
What is the difference between the impact of Sasol and Natref operations? The two presentations at the public meetings are very different and create suspicion.	Mr Samson Mokoena	VEJA	20 May 2014	Public Meeting, Casa Mia Conference Centre, Sasolburg	<p>The ambient data presented at both meetings reflect the same measurements, as the accredited Sasol stations were used for the assessment. Sasol and Natref's contributions to the ambient pollution levels were assessed separately and those results shown at the respective public meetings.</p> <p>Natref's combined contribution is reflected in an appendix to both of these AIRs.</p>
Will the price of fuel increase when Clean Fuels 2 are implemented?	Mr Mduduzi Tshabalala	VEJA	20 May 2014	Public Meeting, Casa Mia	Natref is not able to address such a question and it should be put to Parliament.

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
				Conference Centre, Sasolburg	
<p>Costs and PROFITS have not been provided. It is unclear what determines whether a cost can be justified or not. Health risks have to be taken into account, specifically for already vulnerable communities. Cumulative and synergistic impacts of all pollutants must be considered, which are difficult to quantify. Determining whether costs are justified cannot be done with any sort of precision.</p> <p>Natref will decide what abatement measures are too expensive and not the State.</p> <p>Costs and risks must not be passed to communities.</p>	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Appendix 2)	<p>The principle of sustainable development requires balancing environmental, social (including health) and economic considerations. The information provided by Natref is sufficient to perform this exercise. In applying its risk based approach, Natref has already implemented and is implementing those projects which require that environmental and social considerations take precedence over economic considerations.</p>
<p>Sasol's invocation of the concept of "ceiling emission limits" is misplaced and is erroneous. The MES do not require compliance with "ceiling emission limits" as defined by Sasol. The MES does not define compliance in terms of the highest measured value or the "ceiling emission limit".</p> <p>Compliance is determined on the basis of averaging periods.</p>	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	<p>Part 2 of the MES defines averaging periods as being expressed on a daily basis, and all recorded daily average emission concentrations must be below the specified limits under all normal operating conditions. A single daily average value recorded above the specified limits under normal operating conditions constitutes non-compliance with the MES.</p> <p>Thus, "ceiling emission limits" (i.e. maximum emission concentrations) have been expressed so as to align with the definition contained in Part 2 of the MES. The glossary definition in the motivation reports has been updated to make this alignment clearer.</p> <p>Note that all alternative emissions limits requested have been correctly expressed in this manner, and hence accord with the</p>

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
					administrative basis of the MES.
The AIR fails to provide a baseline health assessment of communities which will be affected by the granting of the postponement. Without knowing of the health status of vulnerable populations the report is of little use to the decision maker, who, as a result, cannot carry out the regulatory duties set out under AQA.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	Sasol's compliance with the AIR regulations is detailed in Appendix B of the AIR. The analysis of the impact on human health, as prescribed by the AIR regulations, is presented in Section 5.1 of the AIR.
The correct way to analyse the impact of emissions on human health is to sum the background concentrations of air pollutants and the predicted concentrations of air pollutants attributable to emissions from the stationary source (e.g. the Natref refinery) and assess the health impact of the combined pollutant concentrations (that is whether the combined pollutant concentrations result in air pollutant levels that exceed AAQS or is otherwise unhealthy). This is the procedure specifically required by the July 2014 National Air Quality Modeling Guidelines.	Ms Angela Andrews	LRC	25 November 2014	LRC Submission	<p>Compliance with the dispersion modelling regulations is detailed in Appendix B to the AIR. The analysis of emissions is placed in the context of prevailing air quality (the sum of all pollution, emanating from the applicant and all other sources), as measured by Sasol's ambient monitoring stations, and indicated in the graphs in Section 5.1.8 of the AIR.</p> <p>A background air concentration is normally defined as that concentration which would result from air emission sources outside the chosen modelling domain. This concentration can, for instance, be estimated by analysing observed air concentrations for those wind directions when it is blowing towards the sources included in the modelling domain. In other words, the observation point would be upwind from the sources being simulated by the dispersion modelling.</p> <p>However, as used in the current investigation, background concentrations could also incorporate the contributions from air emission sources present in the modelling domain, but which were not included in the dispersion simulations. For example, air emissions from vehicle tailpipes can significantly contribute to the local ambient NO₂ concentrations. Similarly, domestic fuel burning is known to contribute to airborne particulate air concentrations (PM₁₀ and PM_{2.5}). Other industrial activities in and near the vicinity of the modelling domain may contribute significantly to ambient concentrations of SO₂. Although most of the sources of air emissions within the Sasol operation were included in the</p>

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
					<p>simulations (as detailed in Chapter 6 of the motivation reports), there remain some that were excluded, for instance fugitive emissions. It is expected that all of these emissions that were not part of the simulation emissions inventory, would add to the background concentration level which was considered and determined as discussed below.</p> <p>Since these sources are not neatly located for easy analysis of upwind contributions, the procedure normally adopted to estimate background air concentrations could not be followed. Instead, the “background’ concentration was established by comparing the predicted air concentrations with the observed air concentrations. The background concentration as used in this application therefore corresponds to the observed concentration value at a monitoring site when the simulated value at this site reached a near zero value. In other words, the observed residual air concentration was assumed to arise from other sources in the modelling domain.</p> <p>With this method, the assumption is made that the model performs realistically and that the residual concentration determined this way is a good reflection of the emissions not included in the simulations. In an attempt to illustrate the model accuracy, the fractional bias was calculated for each monitoring station as described in Section 5.1.6.2 of the AIRs. This methodology has been prescribed by the US EPA (U.S. EPA 1992) as an acceptable manner to illustrate the validity of atmospheric dispersion model. Given the good model performance, as measure by the fractional bias, it is assumed that the background concentration obtained using this methodology is a reasonable estimate.</p>
Sasol’s “roadmap to sustainable air quality improvements” (paragraph 7) which is predicated on Sasol’s risk based approach is therefore also irrelevant, as it relates to a vague approach to air	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	The incorporation of a roadmap of air quality improvements was specifically requested by stakeholders and hence was included as Chapter 7 of the motivation report. Sasol does not agree that this is a vague approach to air quality management, and it sets out specific actions linked to each activity in the figure at the end of

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
quality management whereas the requirements for postponements have been set out by the AQA and its regulations and Sasol does not comply with them					Chapter 7 of the motivation report, as a summary of the information provided therein and in the technical appendices.
Most toxic air pollutants, usually because of their localised effect do not have ambient air standards. The statement in paragraph 6.4.1 that “at the level of principle reducing emissions of these pollutants will serve to further reduce ambient concentrations that already comply with NAAQS” is thus a an irrelevant and misleading consideration.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	The analysis of the impact on human health, as prescribed by the AIR regulations, is presented in Section 5.1 of the AIR. To the extent than NAAQS have been set, as required, these have been used. Where NAAQS have not been set, a literature search was undertaken to identify the appropriate strictest health effect screening levels as detailed in Section 5.1.8.2 of the AIR.
Minimum emission standards for industries scheduled under section 21 of AQA were promulgated in 2010 after a number of years of multi stakeholder dialogue which Natref participated in. Thereafter these standards were amended in November 2013 (GNR893) without being made more stringent for Natref. Indeed, in several respects, they are significantly less stringent.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	Natref does not agree with the assertion that the refinery sector standards have been made significantly less stringent as a result of the 2013 MES. Following the 2010 MES, substantive changes were incorporated into the draft amendment notice of 2012, and further substantive changes followed in the 2013 MES. In the 2013 MES, these changes involve a move from the stack as the point where compliance is monitored, to closer to the processes themselves, necessitating significantly increased monitoring requirements, and compliance across individual listed activities rather than as a bubble, as was the case in the 2010 MES. As a result, flexibility to optimise emission reductions across the refinery has been eliminated, through the introduction of standards applicable at points aligned with the new definition for “point of compliance”. In addition, refineries are also required to comply with a bubble, meaning a system of double measurement is required, to achieve and monitor compliance with two different requirements for the same emission sources.
In Table 2 of Natref’s Draft motivation comprises of a summary listing of the MES for which Natref is applying for postponement together with alternative emissions limits proposed by Natref for	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	The table is being misinterpreted. “Ceiling emission limits” (i.e. maximum emission concentrations) have been expressed so as to align with the definition contained in Part 2 of the MES. The glossary definition in the motivation report has been updated to make this alignment clearer. As explained in Section 5.2 of the

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
incorporation into its Atmospheric Emission Licence, to prevail till 1 April 2018. This table is unfortunately unintelligible since the applicable Subcategory of the MES is not given and the "Alternative Emission Limit Requested" is as a "(ceiling limit)" (2nd column), yet the Averaging period for compliance monitoring (3rd column) is given as "Daily average".					motivation report, these limits are proposed to apply at the main stack, where compliance monitoring is currently conducted, until monitoring equipment is installed at locations aligned with the newly defined "point of compliance" which was included in the November 2013 MES. These proposed limits align with the administrative basis of the MES, in that they reflect the highest expected daily average value under normal operating conditions.
At the end of the most recent quarter, Total S.A., 50% owner of Natref, earned a net profit of \$12.68 billion on revenues of \$232.53 billion, and had cash reserves of \$23.17 billion. https://finance.yahoo.com/q/ks?s=TOT+Key+Statistics . This is not a company that can make a credible argument about 'economic constraints' to investments in pollution control technologies at one of its facilities in South Africa. Hence its arguments that the cost is prohibitive are neither consistent or viable.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	The percentage shareholding of Total in Total South Africa and in turn, in Natref, is significantly overstated. This notwithstanding, Natref must be independently financially viable and cannot rely on international earnings from Total. For this reason, Total's global profits are not relevant for the purposes of assessing the feasibility of Natref's various emission abatement options. Note that the initial postponement application outlines that compliance with those applicable MES will be achieved within a ten year timeframe, and significant capital will be invested for these projects. It is only in the case of certain point sources where feasibility is of concern.
It is disputed that the purpose of the MES is confined to, achieving compliance with NAAQS.	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	One of the primary objects of the National Environmental Management: Air Quality Act in terms of which the MES were developed is achieving ambient air quality improvement, aligned with the Constitutional right to an environment not harmful to human health or wellbeing. This in turn informs the objectives to be met by the listings published in terms of Section 21 of the Act. The submission does not suggest what the additional purposes of the NEMAQA and MES are.
Natref concludes that the "net effect of GN 893 was to alter compliance requirements with less than two years in which to comply." This is a consequence that Natref has	Prof EK Cairncross	LRC	25 November 2014	LRC Submission	With respect, Natref disagrees that the impact of the changes to the MES in November 2013 was to relax the standards. The amendments have resulted in, amongst other things, changes to monitoring and sampling requirements, and concurrent compliance with point source standards as well as a bubble for

Comments raised by stakeholders	Stakeholder name	Organisation / Community	Date	Source	Response
<p>brought upon itself and cannot be relied upon to form the basis of an argument for a postponement. Natref states that “legal compliance is of paramount importance to it.” In that case it should have started planning for compliance with the 2010 standards as soon as they were promulgated. Its arguments are also incorrect. The compliance requirements of MES 2010 have been relaxed in respect of oil refineries. More is not being required of refineries than was required in the 2010 MES.</p> <p>The decision maker has a duty to promote compliance with the constitutional right to an environment which is not detrimental to health and well-being and cannot indulge polluters who have created their own urgency by waiting and hoping that the law will be relaxed in their favour.</p>					<p>SO₂. This differed significantly from the 2010 MES. These are discussed in section 4.3 of the motivation report for the initial postponement.</p> <p>Please also refer to Chapter 1 of the technical appendix for an explanation of Natref’s project development and governance framework which describes the typical schedules associated with these complex projects.</p> <p>This is not issue of Natref seeking a relaxation of the standard but rather on of it having to react to a standard being substantively amended in a manner which has required Natref to seek a postponement.</p>
<p>Natref states: “there is no discretion for local authorities to apply discretion to emission standards for licence holders.” This is an incorrect representation of the statutory scheme. The intention of the MES is to establish the first level of regulatory control. Thereafter if there is still poor air quality municipalities can further reduce air emissions to improve air quality in line with the objectives of the AQA. A more detailed analysis of particular airsheds is contemplated at the licencing level.</p>	Prof EK Cairncross	LRC	27 October 2014	LRC Submission	Local licensing authorities are empowered to impose stricter emission standards either through licence conditions or local bylaws.

Annexure 1: Letter from GroundWork (15/10/2013), and Project Team Response (20/12/2013)



groundWork

Environmental justice action

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Tuesday, 15th October 2013

Lysette Rothmann-Guest
SRK Consulting

By e-mail: lrothmann-guest@srk.co.za

Dear Ms Rothmann-Guest

APPLICATIONS FOR POSTPONEMENT OR EXEMPTION FROM CERTAIN REQUIREMENTS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT - MINIMUM EMISSION STANDARDS FOR NATIONAL PETROLEUM REFINERS OF SOUTH AFRICA (PROPRIETARY) LIMITED (NATREF)

We, groundWork – Friends of the Earth, South Africa and the Vaal Environmental Justice Alliance hereby register as interested and affected parties. We are environmental justice organisations working with people in the Vaal Triangle Airshed Priority Area (VTAPA).

We would like to place on record that the Background Information Document (BID) is scant on information and our initial comments seek to enquire about attaining more information to ensure that our response is more considered and that we are afforded the reasonable opportunity to participate to which we are entitled. These comments are therefore made without the benefit of having viewed more detailed information and therefore, these comments can only be provisional, and we reserve our rights to make more comprehensive submissions on receipt of the requested information before a decision is made on Natref's application.

Upfront, we wish to point out that it is impossible to provide meaningful input on the BID in circumstances where Natref has failed to explain which exemptions and/or postponements are required for which of its facilities, and for which substances.

The comments are organised as follows:

- a. Minimum emission standards
- b. Legal provisions for postponement and exemption applications
- c. Non-compliance with ambient air quality standards (AAQS) and priority areas
- d. Health implications



- e. Financial implications
- f. Timing of the process
- g. General comments
- h. Conclusion

a. Minimum emission standards (MES)

Section 21 of National Environmental Management: Air Quality Act, 2004 (AQA) obliges the Minister, by notice in the Gazette, to publish a list of activities which result in atmospheric emissions and which the Minister reasonably believes have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage. This notice must establish minimum emission standards (MES) in respect of a substance or mixture of substances resulting from a listed activity and identified in the notice, including: the permissible amount, volume, emission rate or concentration of that substance or mixture of substances that may be emitted; and the manner in which measurements of such emissions must be carried out.

The consequence of a section 21 listing is that no one may conduct such activity without a provisional atmospheric emission licence (AEL) or an AEL. The provisional AEL or AEL may contain stricter emission standards than the section 21 standards.

New plants must comply with the new plant MES immediately. Existing plants must comply with the MES for existing plants by 1 April 2015, and with the MES for new plants by 1 April 2020.

Although there is provision in the list of activities to postpone compliance time-frames, the list of activities makes no provision for exemption from compliance.

b. Legal provisions for postponement and exemption applications

Under “Background to Air Quality Management Legislation in South Africa” the Constitution and other legislation is presented.

We note your comments that the requirements for postponement of MES compliance time-frames, as set out in the Framework for Air Quality Management (Framework) ‘provides a guideline to the interpretation and application of the NEMAQA, and has been developed to assist the responsible parties to achieve the objectives and regulations set out in the Act. The framework includes mechanisms, systems and procedures to attain compliance with ambient air quality standards, including an outline of the process required to set point source emissions standards.’



The Framework is published in terms of section 7 of the AQA for achieving the objects of the AQA. The AQA's definition of "this Act" includes the Framework. The Framework binds all organs of state in all spheres of government; and an organ of state must give effect to the Framework when exercising a power or performing a duty in terms of AQA or any other legislation regulating air quality management. Compliance with the Framework is therefore *required* in order for the relevant decision-maker to evaluate Natref's applications, and is not a mere guideline. Postponements applications are therefore regulated both by regulation 6 of the MES and by the Framework.

In terms of section 5.4.3.5 of the Framework: "provision will be made for specific industries to apply for possible extensions to compliance time frames [in section 21 of the AQA], provided ambient air quality standards in the area are in compliance. The proponent of a Listed Activity will be allowed to apply for a postponement of the compliance date and such an application will be positively considered based on the following conditions being met:

- An air pollution impact assessment being completed (in accordance with the format for Atmospheric Impact Reports (AIRs), as contemplated in Section 30 of the AQA and specified by the National Air Quality Officer) and submitted to the national department at least 1 year before the compliance date; and
- Demonstration that the industry's air emissions are not causing any adverse impacts on the surrounding environment.

This provision would ensure that any requirement to upgrade is informed by an understanding of any environmental impact of the affected plant. At the end of the extension period granted, a further extension could be made possible subject to a repeat of the impact assessment process." (our underlining).

This makes clear that a postponement application can only be brought in circumstances where ambient air quality standards (AAQS) (in terms of section 9 of the AQA) in the area are in compliance. AAQS are not in compliance in many of the areas affected by Natref's. In the circumstances, it is submitted that the postponement applications could not and should not have been made.

The Framework also makes clear that such application can only be granted if it is demonstrated "that the industry's air emissions are not causing any adverse impacts on the surrounding environment". In circumstances where Natref only seeks to undertake air dispersion modelling as part of the AIRs, and apparently does not intend to invite public participation in relation to its modelling plan of study, it is submitted that it is unlikely that an adequate investigation will be done regarding the potential adverse impacts of the application.



If the postponement applications could have been submitted (which we deny because AAQS are not in compliance), it is submitted that detailed health and environmental risk assessments must be undertaken, so that it can be evaluated whether the emissions of each power station cause any adverse impacts. It is submitted that they do.

In relation to the AIRs, we point out that the Regulations prescribing the format of the AIR were published on 11 October 2013. Natref's BID fails to provide any detail about the AIRs – it merely indicates that these “will determine Natref's impacts on air quality in the areas affected by its facility”.

According to the BID, “the Motivation Report will include detail on the specific applications for postponements from Compliance Timeframes and/or exemptions, and the reasons for them.”

Kindly make the terms of reference (TOR) for these AIR and for the motivation report/s available.

We object to the fact that public participation will not be invited on the “air dispersion modelling approach”. It appears from the BID that “an independent fourth party as peer reviewer” will be appointed to comment on the approach. We require that the draft plan of study be made available for public input, and that it be recirculated once public input has been incorporated.

c. Non-compliance with ambient air quality standards (AAQS) and priority areas

The AQA provides that the Minister, by notice in the Gazette:

- must identify substances or mixtures of substances in ambient air which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health, well-being or the environment or which the Minister reasonably believes present such a threat; and
- must, in respect of each of those substances or mixtures of substances, establish national standards for ambient air quality, including the permissible amount or concentration of each such substance or mixture of substances in ambient air.

AAQS have been established for PM10 and PM2.5, SO2, nitrogen dioxide (NO2), ozone (O3), and benzene (C6H6).

The AQA provides for the declaration of an area as a priority area if the Minister (or MEC) reasonably believes that:



- AAQS are being, or may be, exceeded in the area, or any other situation exists which is causing, or may cause, a significant negative impact on air quality in the area; and
- the area requires specific air quality management action to rectify the situation.

A priority area air quality management plan (AQMP) must be developed to: co-ordinate air quality management (AQM) in the area; address air quality issues; and provide for its implementation by a committee representing relevant role-players.

The aim of declaring priority areas is to target limited AQM resources to the areas that require them most. Once an AQMP is implemented, air quality in the area should - within agreed timeframes - be brought into sustainable compliance with AAQS.

The Minister (or MEC) may withdraw the declaration of an area as a priority area if the area is in compliance with AAQS for a period of at least two years.

Three priority areas have been declared – the VTAPA, the HPA and the Waterberg Priority Area. AQMPs have been developed for the VTAPA and the HPA. The VTAPA AQMP mid-term review is currently underway.

Natref's operations are situated in the VTAPA area. In other words, air quality in the area where Natref seeks exemptions and postponements are situated is already problematic area – with numerous exceedances of AAQS - and attempts are underway to rectify the significant negative impact on air quality.

As set out above, the Framework only permits an application for postponement of section 21 compliance time-frames if AAQS in the area are in compliance. This is not the case.

Last year, groundWork requested ambient air quality data from January 2010 until July 2012 through the South African Air Quality Information System (SAAQIS) for the VTAPA. These data were then analysed to determine their compliance with the AAQS – with a focus on PM₁₀ and PM_{2.5}.

The analysis of such data as is available revealed that, over this period, there have been multiple exceedances of the AAQS - and particularly PM₁₀ and PM_{2.5} - in the VTAPA.

A summary of this analysis is available at:

https://dl.dropboxusercontent.com/u/41036903/Annexure%201%20Eskom%20MES_submissions%20on%20the%20BID.pptx



In meetings we attended regarding the VTAPA, the Department of Environmental Affairs (DEA) has maintained that the exceedances of PM10 and PM2.5 in the Vaal (especially over the winter period) happen over 5-7 days – that pollutants are regional and the meteorology acts as a driver to exceedances. The DEA has also indicated in these meetings that the pollution signatures are indicative for broader areas and that, in the VTAPA, episodes extending across all monitoring network (Sebokeng, Sharpville, Klipriver and Diepkloof) are suggestive of non-localised influences.

d. Health implications

Natref references the Constitution and various pieces of air pollution legislation that seeks to protect peoples' health from air pollution, but is silent on the role Natref's pollution has on peoples' health.

Natref's reference to on-going assessment of air quality issues around their plants, suggesting that "the MES will not necessarily yield significant improvements in ambient air quality, due to the material impact of activities such as domestic coal and wood burning" needs to be adequately justified by independent evidence. In addition, Natref's methods and research need to be considered by all parties before government can make an informed and meaningful decision.

Natref fails to indicate the approach it will adopt in evaluating the impact that non-compliance and/or delayed compliance with the MES will have on human health.

The section 21 listed activities are those which result in atmospheric emissions and which the Minister or MEC reasonably believes have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage.

As set out above, there is widespread non-compliance with the AAQS, particularly in the Vaal area impacted by the Natref plant which are the subject of their postponement and exemption applications. Section 9 of AQA provides that AAQS are those that present a threat to health, well-being or the environment or which the Minister reasonably believes present such a threat.

It is clear that non-compliance or delayed compliance with the MES will have a negative impact on AAQS compliance, with likely impacts on human health.

In the context of Specialist Air Quality Impact Assessments, the Framework provides that the level of detail required for an assessment of potential health impact depends on the nature



and extent of atmospheric emissions and could range from a simple comparative assessment of predicted ambient air quality levels with AAQS through to a full health risk assessment.¹

Regard should be had to a recognised health risk assessment methodology – for instance the approach of the United States Environmental Protection Agency. The assessment should include estimates of the health risks associated with exposure – at different concentration levels - to air pollutants for both the general population and vulnerable or sensitive groups within the exposed population. The vulnerable groups would include: children under six years of age, people with pre-existing diseases like asthma, cardio-vascular and respiratory diseases, and older people. This would require the identification of facilities within the impacted areas such as crèches, hospitals and old age homes and the collation of demographic data on impacted communities (such as age distribution, presence of pre-schools, primary schools, poverty levels (as surrogate to nutritional and health status), and the prevalence of asthma, cardiovascular and respiratory disease).

It is submitted that a failure to conduct detailed health risk assessments would result in the decision-maker not having all relevant considerations before her when she determines whether or not to grant the applications, which means that the decision will fall foul of the requirements set out in the Promotion of Administrative Act, 2000 (PAJA).

It is critical to the process, that beyond the AIR, specific detailed health risk assessments must be done – failing which, decisions will be made on the basis of inadequate information, and therefore subject to judicial review.

Cost to society is critical, and Natref needs to provide the public with what costs it would entail and for whom if the MES are not met.

e. Financial implications

Natref claim that ‘without cost recovery to implement abatement technology to meet new plant standards at Natref’s existing facilities, the remaining economic lifetime of the facility may be materially affected’ is a veil threat of undertaking the needed environmental improvements *only if* society in general pays for what is needed as good practice in the industry. Natref is called upon to provide full information to justify why they cannot undertake these needed improvements.

We recognise that Natref is part of Sasol and Total. Sasol has been a profitable venture because of huge subsidies in the past, which included state financial subsidies for ensuring

¹ s.5.5.3.1.



South Africa had liquid fuel on tap during the illegitimate apartheid era. Sasol externalised its environmental cost to the environment and society. With the Rand weakening severely since the 1990's, Sasol's profits have surged. In 2012, it had an operating profit of R37 billion. Their financial situation was positive that the then Minister of Finance considered a windfall tax, which was levied on Sasol after some strong backroom dealing. Total made a R167 billion net profit in 2012. It is our understanding that spending on environmental management would have a positive socio-economic consequence.

f. Timing of the process

Time frames for executing large projects cannot be an excuse for not undertaking such critically- needed work in order to meet its legislative obligations. Natref was aware of the implications of meeting MES and new MES since March 2010. It is critical that Natref explains - with evidence - what research has been undertaken since then, and why steps could not have been taken more timeously. Natref's failure to take appropriate steps to comply with the MES – or to make more timeous applications for postponement – cannot be held against interested and affected parties, and especially communities who are impacted on by Natref's operations.

Looking at the "broad timeframe" on page 8 of the BID, it appears that the application process is already behind schedule. We advise you now that the envisaged 30 day public comment period on the motivation reports, AIRs and comment-and-response reports (CRRs) is hopelessly inadequate and would deprive us of the right to have a reasonable opportunity to comment. Given the technical nature of the applications, we require expert scientific and legal assistance. We (and our attorneys) are all non-profit organisations with resource and capacity constraints.

In addition to the motivation reports, AIRs, and CRRs, we also require copies of the applications themselves.

We are entitled to administrative action that is lawful, reasonable and procedurally fair,² and PAJA was enacted to give effect to this right. Procedurally fair administrative action requires, amongst other things, that we are given adequate notice of the nature and purpose of the proposed administrative action and a reasonable opportunity to make representations.³ Depriving us of a reasonable opportunity to make submissions on the documents would be procedurally unfair and therefore subject to judicial review.

² s.33(1) of Constitution of the Republic of South Africa, 1996.

³ s.3 PAJA.



The National Environmental Management Act, 1998 (NEMA) requires that: the participation of all interested and affected parties in environmental governance be promoted, all people have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and that participation by vulnerable and disadvantaged persons must be ensured.⁴ NEMA also requires that decisions take into account the interests, needs and values of all interested and affected parties.⁵ A failure to provide us (and other interested and affected parties) with an adequate and fair opportunity to comment will also mean that there has not been compliance with NEMA.

In the circumstances, we request that Natref be required to provide a commenting period of at least 90 days on the AIRs, CRRs, motivation reports and applications, and that the period between 15 December 2013 and 2 January 2014 be excluded from this calculation.

g. General comments

'Natref's reasons for applying for selected postponements and exemptions' are vague and dismissive of society's environmental and health concerns regarding Natref's operations, in that there is scant meaningful information to be able to inform meaningful input by interested and affected parties. It is critical that background information is provided that allows Natref to claim these statements as facts, before decision makers can act on this request. A failure to do so would make any decisions reviewable.

As set out above the TOR for the motivation reports for each of the operations must be made publically available in order that decision-makers and the public can understand fully Natref's approach, and input to be made on these. Similarly, the TOR for the AIRs must be shared with the public and decision-makers in order that input to these critical pieces of research are informed by stakeholders.

Critically, and in addition to all the documents requested above, all AELs, monitoring reports, and government inspection reports for all the various processes seeking postponement from compliance timeframes and/or exemptions must be made available immediately in order that the present operations are understood, and the applications placed in context.

Natref must also with evidence explain the uniqueness of "being an inland refinery" and why and what are the differing effluent standards with coastal refineries. A full analysis must be done on Natref's waste processes, for air, solid and effluent to understand the relationship and cost between the trade-off from one pollution media to another, and who is impacted

⁴ s.2(4)(f) NEMA.

⁵ s.2(4)(g) NEMA.



upon by these costs, and thus subsequently pays the cost (including health) for the choices Natref is allowed by the State.

h. Conclusion

As Natref has not specified the exact units/processes for which postponement of and/or exemption from compliance time-frames are requested, we reserve our right to comment. We also reserve our right to provide more detailed input once we are in receipt of the additional information requested in these comments.

In the circumstances, and, as set out above, given that AAQS in the majority of the relevant areas are currently not in compliance, the applications should never have been made. In any event, in the absence of evidence that:

- granting Natref's applications will not result in the AAQS being exceeded; and
 - there will not be any health, environmental or other risks if the applications are granted,
 - alternatives have been adequately evaluated and assessed,
- it is submitted that the applications should not succeed.

We look forward to receiving the requested information and to further participation in this process.

Kind regards

A handwritten signature in black ink, appearing to read 'S. Peek'.

S. (Bobby) Peek
Director
groundWork, Friends of the Earth, South Africa

20 December 2013
460365/REDD/fall/1312063

groundWork
P.O. Box 2375
Pietermaritzburg
3200

Attention: Mr. S. (Bobby) Peek

Director
GroundWork-Friends of the Earth, South Africa

Per email: team@groundwork.org.za

Dear Sir,

APPLICATIONS FOR POSTPONEMENT AND EXEMPTION FROM CERTAIN REQUIREMENTS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT NO. 39 OF 2004 – MINIMUM EMISSION STANDARDS FOR NATIONAL PETROLEUM REFINERS OF SOUTH AFRICA (PROPRIETARY) LIMITED (NATREF)

We acknowledge receipt of and thank you for your letter dated 15 October 2013.

We confirm that we have registered groundWork as an interested and affected party in the above process. We will be pleased to do the same for the balance of the constituents your aforementioned correspondence indicates that it represents. Please provide us with proof of your appointment as their representative. We have, however, in good faith, included them at this stage.

Your comments are noted and your feedback is welcomed. A number of the points you have raised will be addressed in the forthcoming Motivation document which will be made available to the public for consideration and comment early in 2014. For this reason we have not responded to your concerns in this letter. A more detailed reply will be provided in a Comments and Response Report which is being prepared for publication as part of Natref's Motivation document. This document will contain all the feedback we have received thus far as well as a response by the project team.

Please do not construe the failure to respond to each of your comments as an acceptance on Natref's part of their accuracy or correctness.

As a general comment, in so far as you have requested further information at this stage, please note that relevant information will be included in the Motivation document, as necessary, to ensure that a

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comprehensive and relevant submission is placed before the competent authority considering Natref's applications.

With respect to your request for additional time to consider the documents we make available to the public in this process, Natref will extend such periods to at least 40 days. We are satisfied that this will afford interested and affected parties an adequate and reasonable opportunity to review the documentation.

In a further effort to ensure that all interested parties have an opportunity to participate, we welcome focus group discussions with key stakeholders where requests for such meetings are made. If there is such an interest on the part of groundWork and the other organizations indicated to be represented by it in your letter, please register your focus group meeting request with Ms. Lysette Rothmann at lrothmann-guest@srk.co.za.

In the interim we look forward to your further input.

Yours faithfully,

SRK Consulting (South Africa) (Pty) Ltd

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Lysette Rothmann
Senior Stakeholder Engagement Specialist

Annexure 2: Written Submission – Legal Resource Centre (June 2014)



LEGAL RESOURCES CENTRE

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Att: Lysette Rothmann-Guest

Dear Ms Rothman-Guest

RE: SUBMISSION ON SASOL AND NATREF'S APPLICATIONS FOR POSTPONEMENT OF COMPLIANCE WITH MINIMUM EMISSION STANDARDS (MES) UNDER SECTION 21 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT AIR QUALITY ACT (AQA)

We act for the South Durban Community Environmental Alliance, and the Vaal Environmental Justice Alliance and the Greater Middleburg Residents Association. Our clients are interested and affected parties in several applications for postponement brought by Sasol companies and Natref (Pty) Ltd in respect of the time frames for compliance with minimum emission standards (MES) published in terms of section 21 of the National Environmental Management Air Quality Act 39 of 2004 (AQA). Our submissions were prepared with technical assistance from Professor Eugene Cairncross, chemical engineer and Dr M Chernaik.

We submit our clients' objections to the following applications for postponement of compliance with the MES by the following companies.

- a. Sasol Synfuels (Pty) Ltd
- b. Sasol Oil (Pty) Ltd
- c. Sasol solvents, a division of Sasol Chemical Industries (Pty) Ltd
- d. Sasol Group Services (Pty) Ltd
- e. Sasol Nitro, a division of Sasol Chemical Industries(Pty) Ltd

These companies will be referred to hereafter collectively as “Sasol

f. Natref (Pty) Ltd (Natref).

Submissions in regard to applications for exemption from the MES by Sasol and Natref will be made separately.

Summary

As will be set out below, the applications by Sasol and Natref cannot comply with the requirements for postponements of compliance time frames as set out in the National Framework for Air Quality Management (Framework) and should not be granted:

- The applications are made in air sheds where there is non-compliance with one or more ambient air standards.
- None of the applicants can demonstrate that the industry concerned's air emissions are not and will not cause any adverse impacts on the surrounding environment and health of communities.
- The applications have not been submitted to the appropriate Air Quality Officer at least 1 year before the specified compliance date.
- The applicants are required to compile an air pollution impact assessment in accordance with the regulations prescribing the format of an Atmospheric Impact Report, and they fail to comply with this requirement.

More particularly:

- Since PM does not comply with National Ambient Air Quality Standards¹ (NAAQs) in Secunda and Sasolburg and since SO₂ and NO₂ convert to PM, every request for postponement for a limit on a criteria pollutant (ie PM, SO₂, NO_x) in these towns should be rejected. Hazardous air pollutants which are also particulates should not be allowed postponements for compliance with MES in light of the non compliance with PM NAAQs in both Sasolberg and Secunda.
- There is no H₂S data in the atmospheric impact report (AIR) for Natref's crude oil refinery and this is unacceptable and fatal to an application for postponement of compliance time frames for this facility as there is a lack of essential data to determine whether Natref is eligible under the Framework for postponements of H₂S limits. It is not possible without this information to determine that the postponement will not have an adverse effect on health of adjacent communities. Since H₂S does not comply with health protective air quality standards in Secunda, any request for postponements for H₂S limits should be rejected there as well. (This will be dealt with in a separate submission on exemption applications by Sasol and Natref)
- Any other pollutant regulated in terms of the MES should not be granted a postponement for compliance time frames, given the fact that NAAQS for PM

¹ National Ambient Air Standards published under AQA GN 1210 in GG 32816 of 24 December 2009

are not compliant in both Sasolberg and Secunda, and compliance with NAAQs is a fundamental requirement for the granting of postponements, in terms of the Framework.

- The Sasol Nitro plant does not lie in a priority area but lies within an industrial complex. Ambient concentrations have been modeled without considering other sources of organic vapours in the area. The request for a postponement to install what is essentially a small alkaline scrubber (section 3.1 of the AIR) on a 0.4 m diameter vent (table 4.1 of the AIR) should not be granted. Apart from Sasol being aware of the need to comply with the MES for several years, the design and installation of such a small installation should not require more than 12 months.
- There is no data on methalamine levels in Ekandustria in the AIR for Sasol Nitro's postponement application and similarly this application should not be granted.

These submissions will be discussed in greater detail hereunder.

Introduction

1. Minimum emission standards for industries scheduled under section 21 of AQA were promulgated in 2010 after a number of years of multi stakeholder dialogue which Sasol participated in. Thereafter these standards were amended in November 2013 (GNR893)² without being made more stringent for the Sasol and Natref industries regulated thereunder, except in respect of Category 8.³ The 2012 National Framework for Air Quality Management⁴ (Framework), and section 11 of the list of activities published under section 21 of AQA set out requirements for postponement of compliance time frames for the MES.⁵ The Sasol and Natref applications for postponement are noncompliant with these requirements and should not be granted.

Outline of Legislation: Postponement of compliance time frames for minimum emission standards promulgated under section 21 of (AQA).

2. Sasol claims that it meets the requirements for postponement of compliance time frames for MES contained in paragraph 11 of GN893. Paragraph 11 states that as contemplated in the Framework, an application may be made to the National Air

²GN893 22 November 2013 No. 37054 LISTED ACTIVITIES AND ASSOCIATED MINIMUM EMISSION STANDARDS IDENTIFIED IN TERMS OF SECTION 21 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 2004 (ACT NO. 39 OF 2004) published in terms of section 21 of AQA repeals the prior publication of minimum emission standards contained in GNR 248, 31 March 2010.

³See Sasol Synfuels draft motivation for postponement of compliance time frames in terms of regulation 11 of section 21 NEM:AQA parag 4.4

⁴established in terms of Section 7 of AQA

⁵See 2013 National Framework for Air Quality Management at 5.4.3.3.

Quality Officer (NAQO) for the postponement of the compliance time frames referred to in paragraphs (9) and (10), for an existing plant.

3. Paragraph 12 states that the application contemplated in paragraph 11 must include-

(a) An air pollution impact assessment (AIR) compiled in accordance with the regulations prescribing the format of an Atmospheric Impact Report (as contemplated in Section 30 of the AQA⁶), by a person registered as a professional engineer or as a professional natural scientist in the appropriate category;

(b) a detailed justification and reasons for the application; and

(c) a concluded public participation process undertaken as specified in the NEMA Environmental Impact Assessment Regulations.

4. Paragraph 13 provides that the NAQO, with the concurrence of the Licensing Authority as contemplated in section 36 of the AQA, may grant a postponement of the compliance time frames for an existing plant for a period not exceeding 5 years.
5. The Framework is binding legislation as the AQA definition of “this Act” includes the Framework published in terms of section 7 of the AQA.⁷ The Framework binds all organs of state in all spheres of government who must give effect to it when exercising a power or performing a duty in terms of AQA.⁸
6. The Framework provides conditions for postponements of compliance with the time frames for MES. It states in paragraph 5.4.3.3 (emphasis added):

“Given the potential economic implications of emission standards, and mindful that emission standard setting in South Africa was not based on comprehensive sector-based [Cost Benefit Analysis] (at least not for the initial group of Listed Activities as the intention was to ensure that there is no regulatory vacuum when the APPA was repealed), provision has been made for specific industries to apply for possible extensions to compliance time frames, provided ambient air quality standards in the area are in compliance and will remain in compliance even if the postponement of the compliance date according to Section 21 of the Act, and for such application to be positively considered, the following conditions must be met:

- An air pollution impact assessment being completed (in accordance with the regulations prescribing the format for Atmospheric Impact Reports, as contemplated in Section 30 of the AQA and specified by the National Air*

⁶S 30 states: “An air quality officer may require any person to submit to the air quality officer an atmospheric impact report in a prescribed form if- (a) the air quality officer reasonably suspects that the person has on one or more occasions contravened or failed to comply with this Act or any conditions of a licence and that such contravention or failure has had, or may have, a detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage, or has contributed to the degradation of ambient air quality; or emission licence is undertaken in terms of section 45; a review of a provisional atmospheric emission licence or an atmospheric.”

⁷S1

⁸S7(4)

Quality Officer) by a person registered as a professional engineer or a professional natural scientist in the appropriate category;

- *Demonstration that the industry's air emissions are and will not cause any adverse impacts on the surrounding environment;*
- *The application must be submitted to the Air Quality Officer at least 1 year before the specified compliance date”*

7. As will be set out below several ambient air standards in the Secuda area and SO₂ levels in Sasolberg are not in compliance and hence the applications for postponement for should be rejected. The framework does not limit the requirement only to the ambient air standard for which the postponement is sought and hence non-compliance with any ambient air standard requires the application to be rejected.
8. Other considerations from the Framework indicate that when considering an application for postponement of compliance time frames for an industry it is important for the decision maker to bear in mind the factors that the competent authority is required to take into consideration in listing an activity in the first place. These are set out in parag 5.4.3.3 of the Framework where it states:

“the identification and prioritisation of activities to be added or removed from the listed activities shall be based on but not limited to the factors outlined in 5.3.3 of the 2013 Framework. These include proximity to sensitive receptors eg residential areas and schools, and emitters of concern based on volumes of emission and the nature of the pollutant.”⁹

9. Pollutants of concern are then identified in table 16¹⁰ which includes the pollutants for which Sasol and Natref seek postponement. The listing of activities and the setting of minimum emission standards under section 21 of AQA is therefore very much aimed at regulating large scale emitters of toxic and diverse pollutants located near residential areas such as the Sasol and Natref facilities which have sought postponement. In itself this makes the application for postponement inappropriate.
10. The procedure for setting the MES under section 21 took place over a period spanning four years, from the period before the 2010 standards to the final promulgation of the 2013 standards. The 2007 Framework required the initial phase of the process to include the listing of industry types “which are known to be potentially significant in terms of their atmospheric emissions.” The Framework required emissions standards to be set “the targeting of industries where the benefits of regulation are expected to outweigh the costs, based on experience from developed and developing countries substantially reduces the risks of

⁹Page 64

¹⁰Paragraph 5.3.2 Table 16

economic impacts arising due to the emission standard set.”¹¹ The plants in question are located close to large numbers of vulnerable and disadvantaged communities whose health has been adversely impacted by decades of health damaging emission from Sasol and Natref and as such these communities are sensitive receptors that the MES were designed to protect.

11. As will be set out below, the applications by Sasol and Natref fail to comply with the following requirements as set out in the Framework and should not be granted:

- The applications are made in air sheds where there is non-compliance with one or more ambient air standards;
- None of the applicants can demonstrate that the industry concerned's air emissions are not and will not cause any adverse impacts on the surrounding environment;
- The applications have not been submitted to the appropriate Air Quality Officer at least 1 year before the specified compliance date;
- The applicants are required to compile an air pollution impact assessment in accordance with the regulations prescribing the format of an Atmospheric Impact Report, and they fail to comply with this requirement.

More particularly:

- Since PM does not comply with National Ambient Air Quality Standards¹² (NAAQSs) in Secunda and Sasolburg and since SO₂ and NO₂ convert to PM, every request for postponement for a limit on a criteria pollutant (ie PM, SO₂, NO_x) should be rejected. Hazardous air pollutants which are also particulates should not be allowed postponements for compliance with MES in light of the non compliance with PM NAAQSs in both Sasol and Secunda.
- Since H₂S does not comply with health protective air quality standards in Secunda, a request for postponements for H₂S limits should be rejected as well. There is no data on H₂S from Sasolberg so Natref's application for postponement of MES relating to H₂S should not be granted.
- Any other pollutant covered by the MES should be excluded from postponement from compliance time frames given the fact that NAAQS for PM are not compliant in both Sasol and Secunda, and compliance with NAAQSs is a fundamental requirement for the granting of postponements, in terms of the Framework.

Requirement 1: Compliance with ambient air quality standards

12. Sasol and Natref must demonstrate that ambient air quality standards in the area in which applicant industry is situated are in compliance with National Ambient Air

¹¹2007 Framework paragraph 5.4.3.3

¹² National Ambient Air Standards published under AQA GN 1210 in GG 32816 of 24 December 2009

Quality Standards (NAAQSs).¹³ The standard applies to ambient air from all sources seen collectively, not solely to the emissions of the applicants, seen in isolation from other emitters in the airshed. The latter interpretation would undermine the regulatory purpose of AQA, which contains a duty on the state to enhance air quality so as to secure an environment that is not harmful to health.¹⁴

13. Ambient air standards are set in terms of section 9(1)(b) of AQA. Section 9(1)(a) requires substances to be identified by the Minister which present a threat to health, well being or the environment. Clearly then, the substances for NAAQSs have been set in South Africa present a threat to health, and concentrations thereof should at the very least not exceed the NAAQS. The air quality in the air shed is already compromised if it is not compliant with any of the NAAQSs and therefore poses a threat to health.
14. Hence in circumstances where the air quality in an airshed exceeds the NAAQS for any of the ambient air standards, there is a duty to take action to rectify the situation. Allowing polluters who contribute to these exceedences to continue doing so is contrary to this regulatory duty. Allowing the postponement of compliance with any measure aimed to reduce pollution impacts in an airshed would likewise go against the regulatory intention of AQA.
15. There is non compliance with ambient air standards in Sasolberg, and Secunda and hence the postponement applications should not be granted in respect of any of the pollutant emissions for which postponements are sought. The following is a table setting out the pollutants for which postponements or exemptions are applied, and the pollutants for which there is not compliance with NAAQSs.

Table of exemption or postponement requests that cannot be granted because of degraded air quality

¹³ National Ambient Air Standards published under AQA GN 1210 in GG 32816 of 24 December 2009

¹⁴ S2(b) AQA

Town	Do PM levels comply with AAQS?	Do SO2 levels comply with AAQS?	Do H2S levels comply with AAQS or health-based standards?
<u>Secunda</u>	<u>No</u> Request to exempt/postpone compliance with a PM limit that therefore <u>cannot be granted</u> Sasol's Steam plant Sasol's Superflex Catalytic Cracker Sasol's HOW incinerators Sasol's Biosludge Incinerators Sasol's Sewage solids incinerator	Yes Request to exempt/postpone compliance with an SO2 limit that therefore <u>cannot be granted</u>	<u>No</u> Request to exempt/postpone compliance with an H2S limit that therefore <u>cannot be granted</u> Sasol's Rectisol & Sulphur Recovery Plants
Town	Do PM levels comply with AAQS?	Do SO2 levels comply with AAQS?	Do H2S levels comply with AAQS or health-based standards?
<u>Sasolburg</u>	<u>No</u> Request to exempt/postpone compliance with a PM limit that therefore <u>cannot be granted</u> Sasol's Steam Station 1 Sasol's Steam Station 2 Sasol's B6930 Incinerator Sasol's B6990 Incinerator Sasol's B6993 Incinerator Natref's Fuel oil fired boilers Natref's Furnaces Natref's FCC	<u>No</u> Request to exempt/postpone compliance with an SO2 limit that therefore <u>cannot be granted</u> Sasol's Steam Station 1 Sasol's Steam Station 2 Sasol's B6930 Incinerator Natref's Fuel oil fired boilers Natref's Furnaces Natref's Furnaces + FCC (bubble cap)	No data is presented Request to exempt/postpone compliance with an H2S limit that therefore <u>cannot be granted</u> Natref's Amine treating unit Flash Drums Natref's SRU

Table of exemption or postponement requests that cannot be granted because of SO₂ and NO₂ conversion to PM

Town	SO2 limit request that cannot be granted	NO2 limit request that cannot be granted
<u>Secunda</u>	Sasol's Steam plant Sasol's Rectisol & Sulphur Recovery Plants Sasol's Wet Sulphuric Acid Plant Sasol's Biosludge Incinerators Sasol's Sewage solids incinerator	Sasol's Steam plant Sasol's HOW incinerators Sasol's Biosludge Incinerators Sasol's Sewage solids incinerator
<u>Sasolburg</u>		Sasol's Steam Station 1 Sasol's Steam Station 2 Sasol's B6930 Incinerator Sasol's B6990 Incinerator Sasol's B6993 Incinerator Natref's Fuel oil fired boilers Natref's Fuel gas fired boilers

Discussion.

16. Sasol Synfuels (Secunda Plants) lies in the Highveld Priority Area and Natref and Infrachem lie in the Vaal Triangle Priority Area.
17. The Sasol Nitro plant does not lie in a priority area but lies within an industrial complex. Ambient concentrations have been modeled without considering other sources of organic vapours in the area. The request for a postponement to install what is essentially a small alkaline scrubber (section 3.1 of the AIR) on a 0.4 m diameter vent (table 4.1 of the AIR) should not be granted. Apart from Sasol being aware of the need to comply with the MES for several years, the design and installation of such a small installation should not require more than 12 months
18. In Secunda and in Sasolburg, PM levels are not in compliance with the NAAQSs for PM10 (daily AAQS of 75 ug/mg). Ambient levels of PM2.5 are not being measured. So, if postponements may be granted only if "ambient air quality standards in the area are in compliance," then there cannot be any grant of postponement from emission standards for PM10 that are being requested by the following facilities: Sasol Synfuels facility in Secunda; Sasol Infrachem facility in Sasolburg; Sasol Solvents (Pty) Ltd Incinerator and Natref facility in Sasolburg.
19. In Sasolburg, SO2 levels are not in compliance with the AAQS for SO2 (daily AAQS of 125 ug/m3 at the AJ Jacobs monitoring station, 2011-2012). So, if postponements may be granted only if "ambient air quality standards in the area are in compliance," then there cannot be any grant of postponement from emission standards for SO2 that are being requested by the following facilities: Sasol Infrachem facility in Sasolburg; Sasol Solvents (Pty) Ltd Incinerator and Natref facility in Sasolburg.

20. Ekandustria Sasol has provided no ambient air quality data whatsoever. Hence, if postponements may be granted only if “ambient air quality standards in the area are in compliance,” then no postponements may be granted for applications for this facility.
21. In Secunda, SO₂ levels are in compliance with the NAAQSs. However, postponements may be granted only with a “demonstration that the industry’s air emissions are not causing any adverse impacts on the surrounding environment.” Since PM levels in Secunda are not in compliance with NAAQSs (see above); and since it is well established that a substantial fraction of SO₂ emissions from a refinery will convert to particulate matter¹⁵ then a request for postponement of emissions standards for SO₂ by the Sasol Synfuels facility in Secunda cannot be granted because SO₂ emissions that further worsen PM levels would necessarily cause adverse impacts on the surrounding environment.
22. NOTE: The conversion of SO₂ emissions from a refinery into particulate matter is not a trivial matter. SO₂ emissions from a refinery are much greater than PM emissions. See the table below showing how overall SO₂ emissions from the Sasol Synfuels facility in Secunda are about 10 times higher than overall PM emissions (about 300 grams per second of SO₂ emissions versus 50 grams per second of PM emissions). See Table 5-16 of the AIR for the facility. So, even if a relatively small fraction of SO₂ emissions from the refinery converts to ultrafine particulate matter, then the refinery’s SO₂ emissions can indirectly contribute as much to ambient levels of PM than PM emissions do directly.

¹⁵ (ultrafine sulfate aerosols [see, for example: González, Y., & Rodríguez, S. (2013). A comparative study on the ultrafine particle episodes induced by vehicle exhaust: A crude oil refinery and ship emissions. *Atmospheric Research*, 120, 43-54]),

Table 5-16: Source emissions per scenario provided for Infrachem (ND – emission rates could not be determined)

Source Group	Source name	Particulates (g/s)	SO _x (g/s)	NO _x (g/s)	Sum of Pb, As, Sb, Cr, Co, Cu, Mn, Ni, V (g/s)	Hg (g/s)	Cd+Ti (g/s)	HF (g/s)	NH ₃ (g/s)	HCl (g/s)	TOCs (g/s)	Dioxins/Furans (g/s)
Baseline												
Steam Stations	Steam Station 1 (stacks 1,2 and 3)	9.187	66.202	91.137								
		9.477	68.291	94.013								
		4.738	34.146	47.007								
	Steam Station 2	26.601	223.395	280.987								
Incinerators	B6930	0.090	4.884	0.965	0.004	0.000	0.000	0.005	0.005	0.006	0.277	0.000
	B6990	ND	0.203	3.503	ND	ND	ND	0.021	0.012	0.021	0.588	ND
	B6993	1.519	0.133	3.627	0.137	0.000	0.000	0.007	0.325	0.087	0.064	0.000
At Existing Plant Emission Standards												
Steam Stations	Steam Station 1 (stacks 1,2 and 3)	7.291	255.183	80.200								
		7.521	263.236	82.731								
		3.761	131.618	41.366								
	Steam Station 2	25.826	903.910	280.987								
Incinerators	B6930	0.047	0.095	0.957	0.002	0.000	0.000	0.003	0.003	0.003	0.146	0.000
	B6990	ND	0.385	3.519	ND	ND	ND	0.041	0.022	0.041	1.117	ND
	B6993	1.519	0.133	3.627	0.137	0.000	0.000	0.007	0.325	0.087	0.064	0.000
At New Plant Emission Standards												
Steam Stations	Steam Station 1 (stacks 1,2 and 3)	3.645	36.455	54.682								
		3.761	37.605	56.408								
		1.880	18.803	28.204								
	Steam Station 2	12.913	129.130	193.695								
Incinerators	B6930	0.019	0.095	0.379	0.002	0.000	0.000	0.003	0.003	0.003	0.032	0.000
	B6990	ND	0.385	3.519	ND	ND	ND	0.041	0.022	0.041	0.559	ND
	B6993	0.095	0.133	1.899	0.003	0.000	0.000	0.007	0.068	0.068	0.064	0.000
At Alternative Emission Limits												
Steam Stations	Steam Station 1 (stacks 1,2 and 3)	12.030	145.819	163.155								
		12.410	150.421	168.305								

23. In Secunda and in Sasolburg, NO₂ levels are in compliance with NAAQSs. However, we must apply the same principle with NO₂ emissions as with SO₂ emissions since conversion of NO₂ emissions to nitric acid aerosols (particulates) is also well established. In areas such as Secunda and Sasolburg where PM levels are not in compliance with AAQS, no postponements on limits on NO₂ emissions should be granted.
24. For H₂S emissions from the Sasol Synfuels facility in Secunda, Table 3.1 of the 2005 State of the Air report is copied below, showing that hourly levels of H₂S above 42 ug/m³ should be considered high in South Africa.

Table 3.18: Pollutant thresholds

Pollutant*	PM ₁₀	SO ₂	NO ₂	CO	O ₃	H ₂ S
Units	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	µg/m ³
Low	<50	<245	<140	<21	<140	<30
Moderate	50–75	245–350	140–200	21–30	140–200	30–42
High	>75	>350	>200	>30	>200	>42

* Each entry corresponds to an hourly averaging period

Copied below are the observed H₂S concentrations at monitoring stations around Secunda

Table G-3: Predicted and observed H₂S concentration statistics

		H ₂ S Concentration (µg/m ³)					
		Bosjesspruit		Secunda Club		Langverwacht	
		Predicted	Observed	Predicted	Observed	Predicted	Observed
Maximum	2010	253.6	750.0	207.4	613.9	305.5	750.0
	2011	238.4	312.4	214.6	172.9	224.4	511.7
	2012	273.9	166.8	241.4	245.5	318.4	455.8
	Average	255.3	409.7	221.1	344.1	282.8	572.5
99th Percentile	2010	68.9	64.6	31.7	35.9	36.2	72.3
	2011	58.2	104.0	38.4	54.5	43.9	85.3
	2012	56.7		43.8	41.0	42.6	65.6
	Average	61.2	84.3	38.0	43.8	40.9	74.4
90th Percentile	2010	0.0	0.0	0.0	2.0	0.0	5.5
	2011	0.0	1.7	0.0	3.5	0.0	1.3
	2012	0.0		0.0	2.4	0.0	2.5
	Average	0.0	0.9	0.0	2.6	0.0	3.1

25. The 99th percentile value of a concentration can be used as a surrogate for a daily maximum value because there are more than 100 days in a year. In fact, the AIR for the Sasol Synfuels facility in Secunda makes this explicit (on page 76): “For short-term (1-hour and 24-hour) predicted averaging periods, the 99th percentile value from the cumulative frequency distribution of the monitoring data (per year) were used.”
26. If the observed 99th percentile H₂S concentrations are all above 42 ug/m³ (which they are), then hourly H₂S levels should be considered high in South Africa. If hourly H₂S levels are high around the Sasol Synfuels facility in Secunda, then granting a postponement (or exemptions) for H₂S emissions from SASOL plants in Secunda would cause adverse impacts on the surrounding environment and should not be granted.
27. Under the alternative emission limits that Sasol is proposing, overall H₂S emissions would rise from a baseline of about 2650 grams per second to at least 3000 grams per second to as much as 3900 grams per second. See: Table 5-22: Source emissions per scenario provided for Sasol Secunda facility of the AIR report for the facility. Detailed information as to the impacts on health of H₂S are given in annexure A hereto. In the light of the transgression of ambient air standards for PM in the Secunda area and the high levels of H₂S (high by SA as well as international standards) no postponement for H₂S should be granted.
28. Detailed information on the compliance with ambient air standards are contained in footnotes, below.¹⁶

¹⁶ The Atmospheric Impact Report for the Sasol Synfuels facility in Secunda.

On page 51: “The daily 99th percentiles for PM₁₀ exceeded the limit value (75 µg/m³; 2015 standard) at both Secunda Club (Figure 5-20) and Langverwacht stations (Figure 5-21) for all three years. While the SO₂ and NO₂ annual averages were below the NAAQs, the PM₁₀ annual averages exceeded the 2015 limit value of 40 µg/m³ for all three years at Langverwacht and were close to the limit value at Secunda Club.”

Conclusion

29. As regards H₂S there are no South African ambient air standards for this very dangerous chemical. However in the light of the exceedences of other ambient air standards and the fact that H₂S levels far exceed acceptable levels from a health point of view no postponement should be granted. Sasol is the principle contributor of H₂S in Secunda and Natref is the principle contributor in Sasolberg.
30. The same argument applies to all other chemicals for which postponements are sought including VOC's.

Requirement 2 Air pollution impact assessment requirements¹⁷

31. The applicants are required to compile an air pollution impact assessment in accordance with the regulations prescribing the format of an Atmospheric Impact Report (as contemplated in Section 30 of the AQA), by a person registered as a professional engineer or as a professional natural scientist in the appropriate category.¹⁸
32. The atmospheric impact reports submit insufficient information for a postponement to be considered as they fail to provide a baseline health assessment of communities which will be affected by the granting of the

On page 45: "The hourly 99th percentiles for SO₂ were below the limit value of 350 µg/m³ at all three stations for all three years (Figure 5-11, Figure 5-13, and Figure 5-15). The daily 99th percentiles for SO₂ were below the limit value (125 µg/m³) at all the stations: Bosjesspruit (Figure 5-12), Secunda Club (Figure 5-14) and Langverwacht (Figure 5-16)."

The Atmospheric Impact Report for the Sasol Infrachem facility in Sasolburg

Page 35: "The hourly 99th percentiles for SO₂ were below the limit value of 350 µg/m³ at both stations for all three years (Figure 5-9 and Figure 5-10). The daily 99th percentiles for SO₂ were below the limit value (125 µg/m³) at the Leitrims station for all three years (Figure 5-12), but were exceeded at AJ Jacobs for 2011 and 2012 (Figure 5-11)."

At pages 36-37: "The daily 99th percentiles for PM₁₀ exceeded the limit value (75 µg/m³; 2015 standard) at both stations and for all three years (Figure 5-15 and Figure 5-16). While the SO₂ and NO₂ annual averages were below the NAAQS, the PM₁₀ annual averages exceeded the 2015 limit value of 40 µg/m³ for all three years at Leitrims. The PM₁₀ annual averages were just below the limit value for 2010 and 2012, but exceeded the value in 2011."

The Atmospheric Impact Report for the Natref facility in Sasolburg

Page 33: The hourly 99th percentiles for SO₂ were below the limit value of 350 µg/m³ at both stations for all three years (Figure 5-9 and Figure 5-10). The daily 99th percentiles for SO₂ were below the limit value (125 µg/m³) at the Leitrims station for all three years (Figure 5-12), but were exceeded at AJ Jacobs for 2011 and 2012 (Figure 5-11)."

At pages 36-37: "The daily 99th percentiles for PM₁₀ exceed the limit value (75 µg/m³; 2015 standard) at both stations and for all three years (Figure 5-15 and Figure 5-16). While the SO₂ and NO₂ annual averages were below the NAAQS, the PM₁₀ annual averages exceeded the 2015 limit value of 40 µg/m³ for all three years at Leitrims. The PM₁₀ annual averages were just below the limit value for 2010 and 2012, but exceeded the value in 2011."

NOTE: With respect to ambient air quality, the Atmospheric Impact Report for the Natref facility in Sasolburg is identical to the Atmospheric Impact Report for the Sasol Infrachem facility in Sasolburg.

The Atmospheric Impact Report for the Sasol Nitro facility in Ekandustria

No ambient measurements of MMA included. Model-predicted 2nd highest ground-level concentrations were compared against health effect screening levels, as there are no ambient MMA concentrations available for comparison.

¹⁷Framework paragraph 5.4.3.3; Regulations prescribing format of Atmospheric Impact Reports GN 747 11 October 2013.

¹⁸PARAGRAPH 11 of the List of Activities published under section 21

postponement. Without knowing of the health status of vulnerable populations the report is of little use to the decision maker, who, as a result, cannot carry out the regulatory duties set out under AQA. These include:

33. The objects of AQA are to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to health and well-being.¹⁹ The Preamble to AQA recognises the impacts of air pollution on the health of vulnerable and disadvantaged communities and the fact that the burden of the health impacts associated with air pollution fall most heavily on the poor who carry the high social, economic and environmental cost that is seldom borne by the polluter.²⁰ The communities of Sasolberg and Secunda are located in close proximity to the applicants include such communities. The Preamble to AQA states that “the minimisation of pollution (emphasis added) through vigorous control, cleaner technologies and cleaner production practices is key to ensuring that air quality is improved.” There is a general duty on state officials in applying this Act to apply these principles and the NEMA principles.²¹ Principle 2(4)(c) requires environmental justice to be pursued so that adverse environmental impacts are not distributed in such a manner as to unfairly discriminate against any person particularly vulnerable and disadvantaged communities.

34. Section 30 states that:

“An air quality officer may require any person to submit to the air quality officer an atmospheric impact report in a prescribed form if- (a) the air quality officer reasonably suspects that the person has on one or more occasions contravened or failed to comply with this Act or any conditions of a licence and that such contravention or failure has had, or may have, a detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage, or has contributed to the degradation of ambient air quality; or emission licence is undertaken in terms of section 45; a review of a provisional atmospheric emission licence or an atmospheric.”

¹⁹section 2

²⁰WHEREAS the quality of ambient air in many areas of the Republic is not conducive to a healthy environment for the people living in those areas let alone promoting their social and economic advancement; And whereas the burden of health impacts associated with polluted ambient air falls most heavily on the poor; And whereas air pollution carries a high social, economic and environmental cost that is seldom borne by the polluter; And whereas atmospheric emissions of ozone-depleting substances, greenhouse gases and other substances have deleterious effects on the environment both locally and globally; And whereas everyone has the constitutional right to an environment that is not harmful to their health or well-being; And whereas everyone has the constitutional right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that- (a) prevent pollution and ecological degradation; (b) promote conservation; and (c) secure ecologically sustainable development and use of natural resources And whereas minimisation of pollution through vigorous control, cleaner technologies and cleaner production practices is key to ensuring that air quality is improved; And whereas additional legislation is necessary to strengthen the Government's strategies for the protection of the environment and, more specifically, the enhancement of the quality of ambient air, in order to secure an environment that is not harmful to the health or well-being of people,

²¹Section 5(2)

35. Section 5.4.6.10²² of the Framework which given guidance on the assessment of impacts of air pollution on health states that as a key requirement of the AQA:

“One of the objectives of the AQA is to give effect to our constitutional right to an environment which is not harmful to health and well being of people. The emphasis on human health requires that the specialist Air Quality Impact Assessment for a proposed listed activity includes an assessment of potential health impacts. The level of detail required is dependent on the nature and extent of atmospheric emissions and could range from a simple comparative assessment of the predicted ambient air quality levels with ambient air quality standards through to a full health risk assessment”²³

36. A baseline health assessment is reasonably implied by these two statutory provisions, read together. Although Section 30 does not specifically require a baseline health assessment it is clear that without it the atmospheric impact of an activity and the granting of the postponement cannot be gauged. Section 30 recognises the need to consider impacts on the immediate “receiving” environment, including the health, social conditions, economic conditions, ecological conditions or cultural heritage of adjacent communities.

37. It is disputed that Sasol and Natref have complied with all the other requirements set out in regulations prescribing the format of atmospheric impact reports, which were published on 11 October 2013.²⁴ AIRs for the Sasol Synfuels facility in Secunda and the AIR for the Natref facility failed for example to set out the point source maximum emission rates under start up, shut down, upset and maintenance condition with reference to the emissions profile expected for s21 pollutants, and providing an estimated raw gas emission rate for all of these operating conditions. Nor did the applicants summarise the frequency of such conditions over the preceding two years. Abnormal emissions can result in very significant emissions of H₂S and other toxic compounds from several of the applicant’s operations,

²² Human health Impact assessments

²³ Framework at 5.5.3.1; see also Air Quality Act at Section 30, which states that an Atmospheric Impact Report must include

²⁴ On 11 October 2013, regulations prescribing the format of the AIR (“the AIR Regulation”) were published. According to these regulations, the applicant is required to: 1. list the location of all point source parameters, only considering those points sources that emit s.21 pollutants; 2. set out the point source maximum emission rates (under normal operating conditions); 3. set out the point source maximum emission rates (under start-up, shut-down, upset and maintenance conditions), with specific reference to the emissions profile expected for s.21 pollutants, and providing an estimated raw gas emission rate for each of these operating conditions. An applicant must also summarise the frequency of such conditions over the preceding two years; 4. describe and quantify fugitive emissions, including: from stockpiles, haul roads, conveyors, crushers, material handling; evaporation losses from storage tanks, transfer stations, effluent treatment works, dams etc; and current and approved planned measures to manage or mitigate each source; and 5 summarise emergency incidents in the preceding two years, including: nature and cause of incident; actions undertaken immediately after incident to minimise impact; and actions subsequently undertaken to reduce the likelihood of recurrence. The applicant must also provide details of any complaints the plant has received in respect of air pollution for the preceding two years, including the frequency, nature and source of the complaint, as well as all measures taken in response to these complaints.

which have an additional impact on the health of the receiving community. Without this information the competent authority cannot properly assess how to proceed with an application for postponement of compliance time frames.

For example, the AIR for the Synfuels facility in Secunda specifically admits they have not done so:

“5.1.6.2 Model validation

“Ambient concentrations of NO₂, SO₂, H₂S and PM₁₀ measured by Sasol in Secunda help provide an understanding of existing ambient air concentrations as well as providing a means of verifying the dispersion modelling. Since the aim of the investigation is to illustrate the change in ground level concentrations from the current levels (i.e. baseline emission scenario) to those levels theoretically resulting from implementation of technical solutions to lower emissions to the promulgated emission limits (i.e. existing and new plant standards), the intension was not to comprehensively include all air emissions from the Sasol Secunda operation or those associated with activities other than Sasol.....“Discrepancies between predicted and observed concentrations may also be as a result of process emission variations, and may include upset emissions and shutdown emissions. These conditions could result in significant under-estimating or over-estimating the ambient concentrations.”

There is nearly identical language to this in section 5.1.6.2 of the AIR for the Natref facility in Sasolburg.

Requirement 3: Failure to prove that the applicants air emissions are and will not cause any adverse impacts on the surrounding environment.²⁵

38. Sasol and Natref must prove that the postponements will not cause any adverse impacts on the surrounding environment which includes communities. This requirement cannot be fulfilled for the following reasons in addition to those mentioned above.
39. Air quality in both Sasolberg and Secunda is already severely degraded by the presence of multiple toxic and health damaging air pollutants, for which Sasol and Natref seek further postponements and exemptions. These pollutants have a cumulative and synergistic effect which is not measurable.
40. In addition the presence of exceedences of NAAQSs for SO₂ and PM in Secunda and SO₂ in Sasolberg proves there is a direct threat to health from air pollution in these areas emanating from the applicants. Levels of H₂S in Secunda exceed health protective standards ie international benchmarks for the protection of health for H₂S.²⁶ Therefore there is a direct threat to health from H₂S in Secunda.
41. Natref and Sasol are significant contributors to these exceedences but they seek postponements and exemptions for the very compounds which exceed ambient air

²⁵Framework at paragraph 5.4.3.3, page 67

²⁶See parag

standards, and health protective standards, including but not limited to PM and SO₂. As set out below Sasol is the principle source of H₂S in Secunda and Natref is the principle source in Sasolberg

42. In areas where SO₂ and NO_x are in compliance, the conversion of these pollutants to secondary PM pollutants means that they contribute to elevating of PM levels. Allowing a postponement of the reduction in current emission levels for SO₂, and NO_x will impact adversely on the health of communities by continuing to contribute to PM levels which are in exceedence in both towns.
43. The postponements are sought in a context where there is an application for exemption from emission standards for H₂S. The applications for postponements for SO₂ NO_x and others must therefore be seen in the context of non compliant ambient air standards for PM as well as unhealthy levels of H₂S in Secunda and unknown levels of H₂S in Sasolburg. The applications for postponements for the various entities of Sasol and Natref cannot be seen in isolation from each other. A further discussion on the health impact of H₂S and the status of H₂S emissions will be discussed in the paragraphs that follow hereunder.
44. The cumulative impact of the air pollution as a result of Sasol and Natref cannot be ascertained. The precautionary principle must be applied in the absence of scientific certainty where there is a threat of harm (see NEMA principle 2(4)(viii)). This requires the implementation rather than postponement of standards which will protect health.
45. The Sasol and Natref bear the onus of proving that their continued emission will not pose an adverse health risk. If they cannot prove this requirement no postponement of the MES should be considered. The approach taken in the air impact assessments by the applicants for the postponement artificially diminishes the apparent impact of the current emission levels. Modelled concentrations of each pollutant individually are assessed against NAAQSs (Table 5-2),²⁷ where they are prescribed by South African legislation. Where no NAAQS exists for a relevant non-criteria pollutant, health screening effect levels based on international guidelines are used. This approach looks at polluters and their air emissions individually and not cumulatively with other emitters and emissions and so doing underestimates the true impact of the industrial emissions concerned. An impression is given that is inaccurate and more benign than the reality, which contains the cumulative impact of a wide range of chemicals in a non compliant air shed. For this reason it is inappropriate that the applications recommend postponements or exemptions of coming into compliance with MES. In circumstances where the applicant is unable to evaluate the cumulative impact of so many pollutants in an already degraded air shed it cannot discharge the duty to prove that any postponement will not harm health.
46. Priority area: The Vaal Triangle is an Area of Concern.

²⁷ AIR report for

Sasol highlights its participation in the development of the Vaal Triangle Air-shed Priority Area (VTAPA) Air Quality Management Plan.²⁸ While its stated commitment to the VTAPA Air Quality Management Plan is laudable, this does not excuse Sasol from complying with the governing regulatory requirements.

47. The declaration of the Vaal Triangle as a Priority Area and the ensuing efforts around the Vaal Triangle Airshed Priority Area (“VTAPA”) demonstrate that the government recognizes and accepts that pollution is a serious threat in that area. In fact, the Vaal Triangle was declared the first priority area on 21 April 2006. The Air Quality Management Plan (“AQMP”) was developed to address elevated pollutant concentrations in the area, specifically particulates (a category for which Sasol is seeking an exemption). The AQMP recognizes that within the VTAPA, the Sasolberg region is a “hotspot” and that Sasol is a main contributing source for emissions of concern: PM10, SO2, NO2, VOCs and H2S.²⁹ Notably, Sasol is seeking an exemption from complying with standards for each of these compounds.³⁰ The communities of Sasolberg, Zamdela and Coalbrook were identified as sensitive receptors within the zone.³¹

The substances for which postponements of MES are sought are harmful to health

48. A large number of compounds are included in the list for which exemptions and postponements are sought. A short note on PM, NOx and SO2 is provided as well as a more detailed discussion of H2S emissions in Annexure A to this submission. Information should have been provided for each of the pollutants in which postponement is sought, relating potential health effects on the adjacent communities. Highly toxic substances are emitted by Sasol and Natref and yet there is no discussion of the vast majority of the health impacts of these compounds.
49. Particulate matter refers to “fine particles found in the atmosphere, including soil dust, dirt, soot, smoke, pollen, ash, aerosols and liquid droplets. The most distinguishing characteristic of PM is the particle size and the chemical composition. Particle size has the greatest influence on the behaviour of PM in the atmosphere with smaller particles tending to have longer residence times than larger ones.” Particulate matter is very harmful to respiratory health and as discussed above, can exacerbate the effects co-pollutants. In a recent report, the government stated that “[p]articulate matter is the greatest national cause for concern in terms of air quality.”³² As discussed herein, particulate matter is a significant and specific source of concern in the VTAPA, where Sasol’s facilities are located.

²⁸ See Sasol Infrachem Exemption Application at 12.

²⁹ Vaal Triangle Airshed Priority Area Air Quality Management Plan at 13.

³⁰ See e.g. Sasol Infrachem Exemption Application at 7-8.

³¹ Vaal Triangle Airshed Priority Area Air Quality Management Plan at P 13

³² 2013 State of the Air in South Africa Summary Report.

50. Hydrogen sulphide, or H₂S, has been established to be a highly toxic compound. It is a colourless gas and has a characteristic odour of rotten eggs. Human exposure to exogenous H₂S is principally through inhalation, and the gas is rapidly absorbed through the lungs.³³ Exposure to H₂S can cause loss of consciousness, eye irritation, respiratory failure, chest pain, bradycardia, arrhythmias, reproductive effects, nausea, headache, and mental symptoms including depression. In certain cases, exposure to H₂S can result in death.³⁴ Further information on the health impacts of H₂S are provided in Annexure A below.
51. Sulfur dioxide: Sulphur dioxide (SO₂) is a colourless gas with known health effects at even lower concentrations than previously believed.³⁵ The WHO has noted the following health effects associated with SO₂: It can affect the respiratory system and the functions of the lungs, and causes irritation of the eyes. Inflammation of the respiratory tract causes coughing, mucus secretion, aggravation of asthma and chronic bronchitis and makes people more prone to infections of the respiratory tract. Hospital admissions for cardiac disease and mortality increase on days with higher SO₂ levels. When SO₂ combines with water, it forms sulphuric acid; this is the main component of acid rain which is a cause of deforestation.³⁶
52. NO_x is a toxic gas that causes significant inflammation of the airways.³⁷ The WHO has noted that symptoms of bronchitis in asthmatic children increase with long-term NO₂ exposure and that reduced lung function is linked to NO₂ at concentrations currently measured (or observed) in cities of Europe and North America.³⁸
53. Sasol and Natref cannot, and do not provide data from which it can be concluded that granting the postponement application would not result in (or prolong) adverse health impacts to surrounding community members. As stated above the standards are clear in that they are to be health-focused. The continued postponement of the application of the MES will result in non compliance with the duty to improve air quality, which is one of the objects of AQA.³⁹ The compounds that Sasol seeks exemptions for have been shown to cause adverse health effects. Granting Sasol and Natref's applications would mean recklessly endangering the lives of the community members surrounding Sasol's facilities. Of the compounds at issue, particulate matter, VOC's and hydrogen sulfide are particularly dangerous and toxic.
54. With insufficient information to determine what the actual health impacts at issue are, the NAQO must adhere to the precautionary principle and deny all the applications for postponement of compliance time frames.

³³ Bhimsan, R. (2005): Implications of the new air quality bill on the management of H₂S emissions from Sasol's operations in Secunda, South Africa (Doctoral dissertation, University of Pretoria) at 22.

³⁴ Bhimsan, R. (2005): Implications of the new air quality bill on the management of H₂S emissions from Sasol's operations in Secunda, South Africa (Doctoral dissertation, University of Pretoria) at 23-26.

³⁵ <http://www.who.int/mediacentre/factsheets/fs313/en/>

³⁶ <http://www.who.int/mediacentre/factsheets/fs313/en/>

³⁷ <http://www.who.int/mediacentre/factsheets/fs313/en/>

³⁸ <http://www.who.int/mediacentre/factsheets/fs313/en/>

³⁹ AQA s2(a)(i)

ANNEXURE A: Hydrogen Sulphide -H₂S

1. Sasol (Synfuels) seeks exemption from emissions standards for its Rectisol plant in Secunda (category 3.6.) Natref seeks postponement of emissions standards for H₂S in its refinery at Sasolberg. (category 2.1 and 2.3⁴⁰). Neither postponements or exemptions should be granted from MES for H₂S given the toxicity of the compound, the proximity to adjacent communities, the lack of compliance with ambient air standards both areas, the volumes of H₂S emitted, and the fact that Sasol and Natref are the main emitters of this compound in the towns of Secunda and Sasolburg respectively. This submission will address only the application by Natref for a postponement of compliance time frames for H₂S in Secunda. Submissions regarding the Sasol exemption application for H₂S in Secunda will be made separately.
2. Further information on the health impacts of H₂S are provided below. South Africa does not have NAAQSs for H₂S. However the table 3.18 of the 2005 Department of Environmental Affairs State of the Air Report is copied below, showing that hourly levels of H₂S above 42 µg/m³ should be considered high in South Africa.⁴¹

Table 3.18: Pollutant thresholds

Pollutant*	PM ₁₀	SO ₂	NO ₂	CO	O ₃	H ₂ S
Units	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	µg/m ³
Low	<50	<245	<140	<21	<140	<30
Moderate	50–75	245–350	140–200	21–30	140–200	30–42
High	>75	>350	>200	>30	>200	>42

* Each entry corresponds to an hourly averaging period

3. This State of the Air Report sets thresholds for several air pollutants. Table 3.16 on page 28 of this report sets out “inhalation-based health thresholds for selected non-criteria pollutants (µg/m³)” and refers to the California OEHHA (first adopted as of August 2003).⁴² The report defines “high pollution days” with reference to these

⁴⁰“Natref applies for a five-year postponement (until 1 April 2020) from the special arrangement applicable under Category 2.1 of the MES stipulating that *No continuous flaring of hydrogen sulphide rich gas shall be allowed.*” Also “MES Categories 2.3 contains a special arrangement applicable to sulphur recovery units. The following special arrangement shall apply: Sulphur recovery units should achieve 95% recovery efficiency and availability of 99%. This postponement application pertains to the requirements that sulphur units should have an availability of 99%. The requirement of 95% recovery efficiency is already achieved.”

⁴¹https://www.environment.gov.za/sites/default/files/docs/stateofair_executive_iaquality_standardsonjectives.pdf

⁴²The report on page 29 states that a comprehensive overview of international best practice and local developments in the use of air pollution indices for the purpose of communicating air quality information is given in the Technical Compilation Document to Inform the State of Air Report (DEAT, 2006a), reproduced in the Appendix. Pending the national adoption in South Africa of an air quality indexing system for the routine reporting of air pollution levels in the country, the following approach was employed in this report to define “low”, “moderate”, and “high” pollution days. Air pollution data for PM₁₀, SO₂, NO₂, CO, O₃, and hydrogen sulphide (H₂S) were

standards as well as to a comprehensive overview of international best practice and local developments in the use of air pollution indices for the purpose of communicating air quality information. For H₂S hourly average values were given as follows: the “low is given as < 30 ug/m³, medium is 30-42 ug/m³ and high is given as 42 ug/m³.⁴³ These hourly values also correspond with the State of California 1 hour OEHHA standard.⁴⁴

4. The Sasol Synfuels AIR indicates non-compliance with this standard in the Secunda area where the exemption is sought for H₂S emissions from the Rectisol plant. It states that the observed 99th percentile H₂S concentrations are all above 42ug/m³. This would be considered high in terms of the State of the Air Report criteria referred to above.⁴⁵ These readings all relate to SECUNDA and not Sasolberg, where there are postponements sought for Natref for compliance with emission standards for H₂S. The NATREF air emission report does not mention H₂S in its application and accompanying atmospheric impact report and therefore it is not compliant with the basic requirements for postponements referred to above. No postponement should be considered.
5. SASOL is the only significant source of H₂S in the Secunda area and its emissions are frequently above the higher short term exposure standards that it refers to. SASOL is a substantial emitter. It is disputed that emission of H₂S from large scale industrial processes is a unique phenomenon and that H₂S emissions cannot be substantially eliminated, and it is it is disputed that Sasol has committed the necessary resources to addressing this problem over the past 20 plus years. Huge resources have been spent on research to develop Sasol’s core processes. However less than adequate resources have been spent on developing a technological solution to the H₂S problem.
6. Sasol is unique in that it exposes a large population to elevated levels of H₂S. As stated above information about the baseline health should have been included in

selected for use in calculating high pollution days. Hourly- and daily averaged air pollution data were analyzed, with hours and days initially classified into pollutant-specific categories based on health-related thresholds. All days with one or more exceedances of the hourly-average threshold given for “high” gaseous pollution concentrations, or of the daily-average , were classified as “high pollution days”, and the pollutants resulting in this classification noted.

⁴³The report on page 29 states that A comprehensive overview of international best practice and local developments in the use of air pollution indices for the purpose of communicating air quality information is given in the Technical Compilation Document to Inform the State of Air Report (DEAT, 2006a), reproduced in the Appendix. Pending the national adoption in South Africa of an air quality indexing system for the routine reporting of air pollution levels in the country, the following approach was employed in this report to define “low”, “moderate”, and “high” pollution days. Air pollution data for PM₁₀, SO₂, NO₂, CO, O₃, and hydrogen sulphide (H₂S) were selected for use in calculating high pollution days. Hourly- and dailyaveraged air pollution data were analyzed, with hours and days initially classified into pollutant-specific categories based on health-related thresholds. All days with one or more exceedances of the hourly-average threshold given for “high” gaseous pollution concentrations, or of the daily-average threshold given for “high” PM₁₀ concentrations, were classified as “high pollution days”, and the pollutants resulting in this classification noted

⁴⁴http://www.oehha.ca.gov/air/hot_spots/2008/AppendixD2_final.pdf#page=144

⁴⁵See Sasol Synfuels AIR report Table G-3: Predicted and observed H₂S concentration statistics. This report suggests that there would be numerous hourly average H₂S levels that are above the California 1-hour standard for the prevention of headache and nausea

the AIR including census figures as to the exposed population including vulnerable subpopulations.

7. Two independent sources show emissions of H₂S in excess of 80 000 tons per year. The prevalence of so much H₂S in the air in Secunda is relevant not only to the application for exemption from H₂S for the Rectisol plant in Secunda but also all the other applications for postponement of compliance with the MES in Secunda for Sasol plants. This is because not only is PM not in compliance with NAAQs in Secunda but H₂S levels are above health damaging levels and together this creates a particularly unhealthy environment. Postponements of MES are being sought for an extremely wide array of toxic and health damaging air emissions from the Sasol plants in Secunda, (as set out below). In the case of H₂S this is almost entirely attributable to Sasol's operations. Sasol is also a significant contributor to PM which is not in compliance with NAAQs in Secunda. Emissions postponements are sought for the following compounds from Sasol's plants in Sasolberg and Secunda. They should definitely not be granted in Secunda in the light of the exceedences of PM and health damaging levels of H₂S, and population proximity and densities.

Categ 2.2 PM

Categ 2.4 VOC's for storage tanks

Categ 3.3 VOC's

Categ 3.6 SO₂, VOC's

Categ 8.1 (sewerage solid incinerators: PM, CO, SO₂, NO_x, HCl, HF, Hg, Cd, Tl, TOC, NH₃ Sum of Lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium

8. Sasol states "after extensive research and development, the Sulfolin process was developed, and sulphur recovery plants based on that process were built on the Sasol Synfuels East and West factories. The sulphur recovery plants now remove some 75% of the H₂S that was previously emitted to atmosphere. As importantly, the recovered sulphur is turned into a high purity (up to 99%), saleable product through a filtering and granulation process. The remaining H₂S in the off-gas stream is emitted from one of two main stacks in combination with emissions from the steam plant boilers as described in Section 2.5.1"⁴⁶
9. However Sasol is still a substantial emitter of H₂S. The Sasol Synfuels Facility in Secunda is a coal gasification plant that generates off-gases containing hydrogen sulfide (H₂S) that are sent to a sulfur recovery plant, which converts the H₂S to elemental sulfur. The international best practice would be to ensure that the sulfur recovery plant operates with a recovery efficiency of at least 95% and this standard for sulfur recovery plants is adopted in Subcategory 2.3: (Sulphur Recovery Units) of the 2013 regulation. Sasol Synfuels operates at levels significantly below this standard.
10. Sasol Synfuels Facility in Secunda processes 120,000 metric tons per day of coal (roughly 44 million metric tons per year) with a sulfur content of roughly 1%. See attached: "Characterization of inorganic material in Secunda coal and the effect of

⁴⁶Parag 2.6.7 Postponement Application for Sasol Synfuels and others

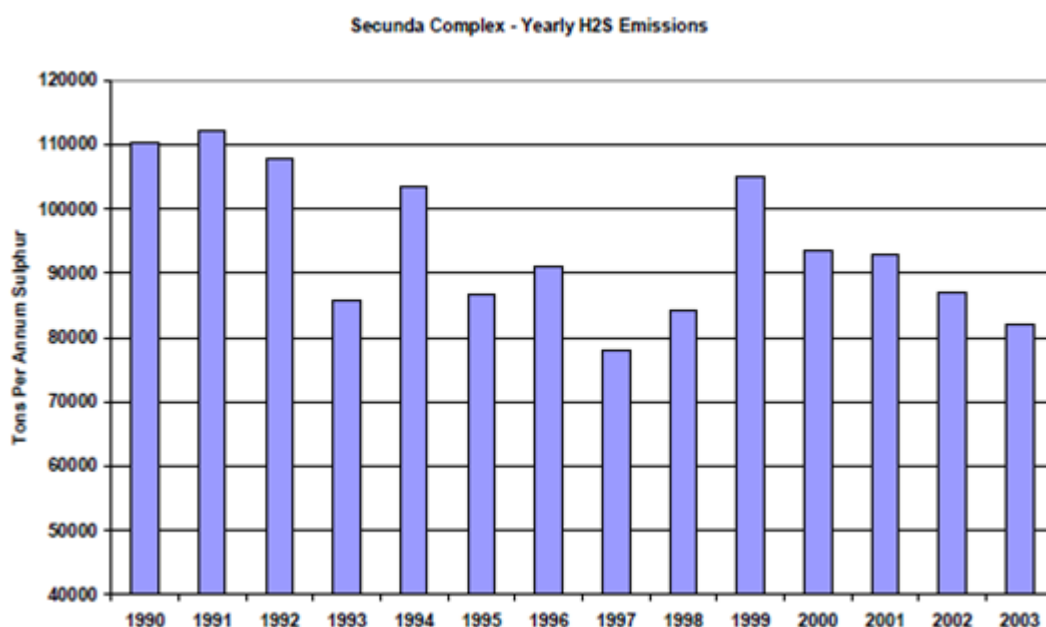
washing on coal properties.” This implies that 1,200 metric tons per day of sulfur (440,000 metric tons per year) comes in to the Sasol Synfuels Facility in Secunda facility. Two independent sources indicate that the amount of H₂S that comes out of the Sasol Synfuels Facility in Secunda is over 80,000 metric tons per year (or around 20% of the sulfur input). The first of these independent sources is Table 5.22 of the AIR for the facility (see below): If these are added up and the H₂S emission rate converted from grams per second to tons per year, then the result is around 83,200 tons per year.

Table 5-22: Source emissions per scenario provided for Sasol Secunda facility

Source Group	Source name	Particulates (g/s)	SO ₂ (g/s)	NO _x (g/s)	Sum of Pb, As, Sb, Cr, Co, Cu, Mn, Ni, V (g/s)	Hg (g/s)	Cd+Tl (g/s)	HF (g/s)	NH ₃ (g/s)	HCl (g/s)	H ₂ S (g/s)	
Scenario 1 – Baseline emissions												
Steam Stations	Main Stack East	70.06	2 899.19	1 939.08								
	Main Stack West	62.32	2 578.74	1 725.55								
Sulfur Recovery	Sulfur recovery East										1 401.22	
	Sulfur recovery West										1 246.34	

11. The second of these independent sources is the dissertation “IMPLICATIONS OF THE NEW AIR QUALITY BILL ON THE MANAGEMENT OF H₂S EMISSIONS FROM SASOL’S OPERATIONS IN SECUNDA, SOUTH AFRICA” Bhimsan, R. (2005), Doctoral dissertation.⁴⁷

⁴⁷University of Pretoria <http://upetd.up.ac.za/thesis/submitted/etd-03132006-110841/restricted/dissertation.pdf>



This also shows H2S emissions of around 80,000 to 100,000 tons per year, or, again, at least 20% of the input.

12. International best practice would require H2S emissions to be no more than 5% of the sulfur input (that is, recovery efficiency of at least 95%). Under this international best practice standard, H2S emissions would be far closer to the limits of Subcategory 3.6 below:

includes gasification, separation and clean up of a raw gas stream through a process that involves sulphur removal and Rectisol as well as the stripping of a liquid tar stream derived from the gasification process.			
Application:		All installations	
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3 kPa.
Common name	Chemical symbol		
Hydrogen Sulphide	H ₂ S		
		New	3 500
		Existing	4 200

13. In fact, if reliance is placed on Table 5.22 of the AIR for the facility, the limit of 4,200 mg/Nm³ as applied to the Sasol Synfuels Facility in Secunda would be equivalent to a recovery efficiency of about 90%, (as opposed to a best practice of 95% efficiency) since under Scenario 2a (Compliance with Existing Plant Standards), H2S emissions would be cut in half from the existing baseline, which represents a recovery efficiency of 80%.
14. There is no legal basis for the polluter to set an alternative set of limits. If this were the case then instead of uniform national emission limits there would be a

hodgepodge of individual emission limits that would differ from facility to facility based in the most part on criteria which are not uniform and could even be based on factors such as political power. This would bring the system of setting emission standards into disrepute.

Sasol and Natref's H₂S emissions and health impacts

15. Sasol unique in that it exposes a large population to H₂S and other air pollutant emissions in Secunda. Natref is a significant source of H₂S in Sasolberg. There has been no baseline assessment to gauge the health and vulnerability of this population. A postponement would only be justifiable for a substance of the toxicity of H₂S in a remote area where human health is not at risk, as opposed to locations close to large communities of vulnerable and disadvantaged persons.
16. If hourly H₂S levels are high, and above health protective thresholds around the Sasol Synfuels facility in Secunda, then granting an exemption or postponement allowing higher H₂S emissions to continue would cause adverse impacts on the surrounding environment in conflict with the requirements of the National Framework.

Health studies regarding H₂S

17. Health studies have established that even low levels of H₂S exposure can result in adverse health effects. For example, one study established that children exposed to annual average hydrogen sulfide levels of only 6 ppb (8.4 µg/m³), but to daily maximum hydrogen sulfide levels of up to 70 ppb (100 µg/m³), suffered excessively from irritation of the nose, cough, and headache compared to children in a non-polluted community.⁴⁸ Another one concluded that a community exposed to an annual average hydrogen sulfide level of only 1.5 to 2 ppb (2.1 to 2.8 µg/m³), but to daily maximum hydrogen sulfide levels of up to 17 ppb (24 µg/m³), suffered excessively from cough, respiratory infections, and headache. The health experts in the latter study concluded that: "These results indicate that adverse health effects of malodorous sulfur compounds occur at lower concentrations than previously reported."⁴⁹ Another study established that a community exposed to annual average hydrogen sulfide levels of only 4 to 8 ppb (5.6 to 11.2 µg/m³), but to daily maximum hydrogen sulfide levels of up to 80 ppb (112 µg/m³), suffered excessively from respiratory infections compared to a non-polluted community. These health experts concluded that: "Our results suggest that exposure to malodorous compounds increases the risk of acute respiratory infections."⁵⁰

⁴⁸ Marttila, O., et al. (August 1994) "The South Karelia Air Pollution Study: the effects of malodorous sulfur compounds from pulp mills on respiratory and other symptoms in children." *Environ Res.*, 66(2):152-9.

⁴⁹ Partti-Pellinen, K., et al. (July/August 1996) "The South Karelia Air Pollution Study: effects of low-level exposure to malodorous sulfur compounds on symptoms." *Arch Environ Health*, 51(4):315-20

⁵⁰ Jaakkola, J., et al. (July/August 1999) "The South Karelia Air Pollution Study: changes in respiratory health in relation to emission reduction of malodorous sulfur compounds from pulp mills." *Arch Environ Health*, 54(4):254-63.

18. In 1992, health experts published a scholarly study showing that a community exposed over a two-day period to hydrogen sulfide levels of approximately 30 ppb ($42 \mu\text{g}/\text{m}^3$) suffered excessively from irritation of the eye and nose, cough, breathlessness, nausea, headache, and mental symptoms, including depression.⁵¹ The hydrogen sulfide emissions originated from an industrial facility - a pulp mill. These health experts concluded that: "The strong malodorous emission from a pulp mill caused an alarming amount of adverse effects in the exposed population."
19. Also in 1994, health experts published a scholarly study showing that children exposed to annual average hydrogen sulfide levels of only 6 ppb ($8.4 \mu\text{g}/\text{m}^3$), but to daily maximum hydrogen sulfide levels of up to 70 ppb ($100 \mu\text{g}/\text{m}^3$), suffered excessively from irritation of the nose, cough, and headache compared to children in a non-polluted community.⁵² These health experts concluded that: "The results suggest that exposure to malodorous sulfur compounds may affect the health of children."
20. In 1996, health experts published a scholarly study showing that a community exposed to an annual average hydrogen sulfide level of only 1.5 to 2 ppb (2.1 to $2.8 \mu\text{g}/\text{m}^3$), but to daily maximum hydrogen sulfide levels of up to 17 ppb ($24 \mu\text{g}/\text{m}^3$), suffered excessively from cough, respiratory infections, and headache.⁵³ These health experts concluded that: "These results indicate that adverse health effects of malodorous sulfur compounds occur at lower concentrations than previously reported."
21. In 1999, health experts published a scholarly study showing that a community exposed to annual average hydrogen sulfide levels of only 4 to 8 ppb (5.6 to $11.2 \mu\text{g}/\text{m}^3$), but to daily maximum hydrogen sulfide levels of up to 80 ppb ($112 \mu\text{g}/\text{m}^3$), suffered excessively from respiratory infections compared to a non-polluted community.⁵⁴ These health experts concluded that: "Our results suggest that exposure to malodorous compounds increases the risk of acute respiratory infections."
22. The 2005 Department of Environmental Affairs State of the Air Report sets thresholds based on a comprehensive overview of international best practice and local developments in the use of air pollution indices for the purpose of communicating air quality information. For H₂S hourly average values were given as follows: the "low is given as $< 30 \mu\text{g}/\text{m}^3$, medium is $30\text{-}42 \mu\text{g}/\text{m}^3$ and high is given as $42 \mu\text{g}/\text{m}^3$.⁵⁵ These hourly values also correspond with the State of California hourly concentrations for health.

⁵¹ Hahtela T, et al. (April 1992) "The South Karelia Air Pollution Study: acute health effects of malodorous sulfur air pollutants released by a pulp mill." *Am J Public Health*. 82(4):603-5.

⁵² Marttila, O., et al. (August 1994) "The South Karelia Air Pollution Study: the effects of malodorous sulfur compounds from pulp mills on respiratory and other symptoms in children." *Environ Res.*, 66(2):152-9

⁵³ Partti-Pellinen, K., et al. (July/August 1996) "The South Karelia Air Pollution Study: effects of low-level exposure to malodorous sulfur compounds on symptoms." *Arch Environ Health*, 51(4):315-20.

⁵⁴ Jaakkola, J., et al. (July/August 1999) "The South Karelia Air Pollution Study: changes in respiratory health in relation to emission reduction of malodorous sulfur compounds from pulp mills." *Arch Environ Health*, 54(4):254-63.

⁵⁵ The report on page 29 states that A comprehensive overview of international best practice and local developments in the use of air pollution indices for the purpose of communicating air quality

NATREF application for postponement of compliance timeframes for H2S

23. NATREF is a significant source of H2S in Sasolberg. There has been no baseline assessment to gauge the health and vulnerability to air pollutant impacts of residential populations in Sasolberg, which are defined as sensitive receptors in terms of the Vaal Triangle Air Quality Management Plan.⁵⁶ A postponement of compliance time frames would only be justifiable for a substance of the toxicity of H2S in a remote area where human health is not at risk. In order for the application for a postponement to be granted, all relevant considerations must be placed before the decision maker under the requirements of the Promotion of Administrative Justice Act.⁵⁷ The protection of vulnerable and disadvantaged communities from toxic air pollution is a key imperative of the AQA and therefore the health status of the affected population, and its levels of exposure to H2S from the plant as well as the predicted health effects thereof should have been placed before the competent authority.
24. There is no H2S data in the AIR for Natref's crude oil refinery and this is unacceptable and fatal to an application for postponement of compliance time frames for this facility as there is a lack of essential data to determine whether Natref is eligible under the Framework for postponements of H2S limits. It is not possible without this information to determine that the postponement will not have an adverse effect on health of adjacent communities.
25. The application for a postponement of compliance time frames for H2S emissions from Natref therefore should not be granted.

LEGAL RESOURCES CENTRE

Per:

ANGELA ANDREWS

information is given in the Technical Compilation Document to Inform the State of Air Report (DEAT, 2006a), reproduced in the Appendix. Pending the national adoption in South Africa of an air quality indexing system for the routine reporting of air pollution levels in the country, the following approach was employed in this report to define "low", "moderate", and "high" pollution days. Air pollution data for PM10, SO2, NO2, CO, O3, and hydrogen sulphide (H2S) were selected for use in calculating high pollution days. Hourly- and daily-averaged air pollution data were analyzed, with hours and days initially classified into pollutant-specific categories based on health-related thresholds. All days with one or more exceedances of the hourly-average threshold given for "high" gaseous pollution concentrations, or of the daily-average threshold given for "high" PM10 concentrations, were classified as "high pollution days", and the pollutants resulting in this classification noted

⁵⁶see paragraph of this submission

⁵⁷s 6(2)(e)(iii)

Annexure 3: Written Submission – Legal Resource Centre (November 2014)

Cape Town Office

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LRC

Legal Resources Centre

Your Ref:

Our Ref:

27th October 2014

SRK Consulting (South Africa) Pty Ltd

265 Oxford Road, Illovo, 2196

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Att: Lysette Rothmann-Guest

Dear Ms Rothman-Guest

RE: SUBMISSION ON NATREF'S APPLICATION FOR POSTPONEMENT OF COMPLIANCE WITH MINIMUM EMISSION STANDARDS (MES) UNDER SECTION 21 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT AIR QUALITY ACT (AQA)

We act for the South Durban Community Environmental Alliance, groundWork, the Tableview Residents Association, the Habitat Foundation and Captrust. We are expecting to receive instructions from Vaal Environmental Justice Alliance and the Greater Middleburg Residents Association as we did in regard to previous submissions regarding the proposed postponement application. Our clients are interested and affected parties in regard to the several applications for postponement brought by Sasol companies in respect of the time frames for compliance with minimum emission standards (MES) published in terms of section 21 of the National Environmental Management Air Quality Act 39 of 2004 (AQA). Our submissions were prepared with technical assistance from Professor Eugene Cairncross, chemical engineer and Dr M Chernaik.

We submit herewith our clients' comments on Natref's final application for postponement of compliance with the MES.¹ As many of the issues raised in response to the draft postponement application have not been addressed they are highlighted at the outset. The submission will be repeated and amplified in full thereafter.

Final Comments and responses report does not address legal compliance issues

¹ Dated September 2014

1. Our submission 16th June 2014 to SRK consultants, authors of the draft application for postponement, stated that the application was not legally compliant with the requirements of the National Environmental Management: Air Quality Act 2004 (AQA), its National Framework (Framework) and regulations. The Framework is a component of the AQA and is also legislation.² AQA is the empowering legislation in terms of which the Regulations Prescribing the Format of the Atmospheric Impact Report³ (AIR regulations) and Regulations Regarding Air Dispersion Modelling, 2004⁴ (Air Dispersion Modelling Regulations) were promulgated. These regulations are thus subordinate legislation to the AQA and Framework and the postponement application must comply with the empowering legislation, in addition to complying with the AIR and Air Dispersion Modelling Regulations. Failure to comply with the Framework is fatal to an application of this nature. The application does not comply with the Framework requirements for postponements.
2. Should the postponement be granted it may be reviewed and set aside as unlawful administrative action. The full basis for this complaint of non compliance with the AQA and Framework is reiterated in paragraphs that follow hereunder.
3. The Framework states in section 5.4.3.3 that postponements of compliance with the MES are conditional on ambient air quality standards in the area being in compliance, “and will remain in compliance even if the postponement is granted.” The airshed in which Natref’s plant for which the postponement is sought is in an airshed that is not compliant with NAAQS. The final postponement application has not addressed this issue, and incorrectly states the law.⁵ Moreover as set out below the postponement application does not comply with Section 5.4.3.3. of the Framework, in that it cannot demonstrate that the facility’s current and proposed air emissions are and will not cause any adverse impacts on the surrounding environmental, which includes health of adjacent communities. This will be discussed in paragraph 74 of this submission.
4. The further requirement for the postponement was that it should have been submitted to the appropriate Air Quality Officer at least a year before the specific compliance date. In response hereto Natref states that it confirmed its intention to submit a postponement application by the 1 year deadline.⁶ An intention is not an action and Natref is therefore still not compliant with this requirement.
5. Instead of complying with the mandatory requirements of the AQA and its framework, Natref submits its own theory of the considerations that are relevant

² The Framework is published in terms of section 7 of the AQA for achieving the objects of the AQA. The AQA’s definition of “this Act” includes the Framework (s1). The Framework binds all organs of state in all spheres of government (s7(3)); and an organ of state must give effect to the Framework when exercising a power or performing a duty in terms of AQA or any other legislation regulating air quality management (s 7(4)). Compliance with the Framework is therefore required in order for the relevant decision-maker to evaluate Natref/Sasol’s applications.

³ GNR 747 of 11 October 2013

⁴ GNR 533 11 July 2014

⁵ see 460365 Final Comments and Response Form: Natref Operation,

⁶ id

to an application of this nature. In terms of the Promotion of Administrative Justice Act 2000 an application decided on the basis of irrelevant considerations will be unlawful.⁷ The considerations submitted by Natref should accordingly be ignored. They will be discussed in more detail in paragraphs that follow. Natref seeks to substitute its own scheme for the legislation on the issue of postponements. It makes the following statement regarding compliance with the AQA which is without a legal foundation or authority and should be ignored as an irrelevant consideration:

“where the pollutants are in exceedance of the NAAQS, the important question for the NAQO to consider is whether an emitter conducting a listed activity by complying with point source standards is able to meaningfully improve ambient air quality. Where this is determined not to be the case, it indicates that other mechanisms to improve air quality are more likely to have a significant impact on improving outcomes.”

6. Natref provides no authority for this proposition. The management of air quality in South Africa is influenced by policy and legislation developed at international and national levels⁸ and best practice and in no jurisdiction where air pollution has been effectively managed has the approach of Natref been adopted.

DETAILED ANALYSIS:

SECTION 1: Specific issues relating to the postponement application

NATREF Final Motivation Initial Postponement

7. Subcategory 2.1 special arrangement “No continuous flaring of hydrogen sulphide-rich gases shall be allowed.” Natref is applying for postponement of this special arrangement condition. In the Technical Appendix to its Initial Postponement application, Natref offers a motivation for its application as follows.

8. 4.2 Description of the plant

H₂S containing off-gas from the refinery process units are routed to the refinery’s Amine treating unit. In this unit the H₂S is removed from the fuel gas by amine absorption, whereafter the H₂S is routed to the sulphur recovery unit where it is converted to sulphur. The clean H₂S free gas is routed to the refinery fuel gas system.

9. The Amine Flash Drums in the amine unit provides for the separation of liquid hydrocarbons from amine. There are two such drums at Natref. It is recommended that the flash drum be operated at a pressure of 1 kg/cm² (g) or less in order to remove all hydrocarbons from the amine mixture. *Given the requirement to operate these drums at low pressure, the drums are currently vented to the refinery flare system. The gas vented to the flare system contains low H₂S concentrations.*

⁷ Section 6(2) (e) (iii) PAJA

⁸ Framework parag 2

The SO₂ emissions from the drums are very small compared with the total refinery SO₂ emissions. [Emphasis added.]

10. **4.3 Technology options for compliance with special arrangement**

Flash gas, at less than fuel gas header pressure, can be disposed of to the vapour recovery system, flare, incinerator or heater firebox. Since flaring of H₂S is no longer permitted, Natref will investigate alternate routings for these two streams.”

11. Although Natref motivates its request for postponement of the special arrangement prohibiting the continuous flaring of hydrogen sulphide-rich gas by reference to the “low SO₂ concentrations” and “very small” (italised text above) flows from the Amine Flash Drums, granting of the postponement of this condition would apply to any hydrogen sulphide-rich gas stream, including the extremely high flow rates normally routed to the sulphur recovery plants but which could be discharged directly to the atmosphere during mal-operation of a sulphur recovery plant. Our clients note that the special arrangement prohibiting the continuous flaring of hydrogen sulphide-rich gas was contained in GN893 of 31 April 2010, 11 (1) (a)(ii) and that more than 3 years have elapsed since Natref became aware that it would have to comply with this condition yet it appears to have only just started investigation of alternatives as per the statement: “Natref will investigate alternate routings of these two streams.”

12. Our clients submit that this postponement request should be refused.

13. **Subcategory 2.3 Special arrangement sulphur recovery units should achieve 95% recovery efficiency and availability of 99%.**

In the Technical Appendix to its Initial Postponement application, Natref offers a motivation for its application as follows.

“This postponement application pertains to the requirements that sulphur units should have an availability of 99%. The requirement of 95% recovery efficiency is already achieved.” (7.1)

“7.3 Identified technology for compliance with new plant standards

The installation of a second SRU in parallel to the existing SRU will ensure that the requirement for 99% availability is achieved.

Postponement request Natref applies for a five year postponement of compliance timeframes for the Special Arrangements under Category 2.3 of the MES – Availability of sulphur recovery units. Natref commits that it will be able to comply with this requirements by no later than 1 April 2025. A second postponement of the compliance timeframe will therefore be required to facilitate full compliance. In the interim, Natref request that downtimes on the SRU be treated as per the current environmental management plan until April 2023.”

14. Natref thus proposes a project timetable that will see the installation of the second sulphur recovery unit (SRU), and achievement of the 99% availability special condition only by 2025, in effect requesting a 10 year postponement. Natref does

not clarify the implications with respect to total SO₂ emissions of its request that “downtimes on the SRU be treated as per the current environmental management plan.” However, allowing the refinery to continue production while the sulphur recovery unit is down allows the extremely high emission rates of SO₂ and H₂S, equivalent to up to 142t/day of sulphur, or 284t/day of SO₂. (If the hydrogen sulphide-rich gas normally processed by the SRU is routed to the flare system, most though not all of the hydrogen sulphide will be converted to SO₂. Both the SO₂ and the unburnt H₂S will be discharge to atmosphere.) This is completely unacceptable, particularly in a Priority Area. Our clients submit that Natref’s request for this postponement should be refused.

15. In its Technical Appendix: Motivation for Postponement of the Compliance Timeframes, Section 2.4 Natref applies for postponement from measuring and reporting emissions as per the definition of “point of compliance” until 1 April 2018. Importantly, it simultaneously applies for postponement of the SO₂ emission limits, requesting that it be allowed to continue to emit SO₂ at current emission rates: **“2.4 Postponement and Alternative Emissions Limit Request”**
16. Natref applies for postponement from measuring and reporting emissions as per the definition of “point of compliance” until 1 April 2018. In the interim, Natref requests that the following alternative emission limits, measured at the main stack, be included in Natref’s licence. This would effectively mean that the “point of compliance” would be defined as the stack for a short period, until the installation of the necessary monitoring equipment is completed to align with compliance monitoring at the prescribed “points of compliance.”
17. It should be noted that the above request is aligned with current production levels and emissions performance. During the requested postponement period, Natref does not intend to increase its emissions, but to operate at the same baseline emission performance level reflected in the Atmospheric Impact Report (AIR). The current limits shown in the table above were transformed to reflect new reference conditions of 10% SO₂ and reporting in concentration. This postponement, as explained, relates only to limitations in measurement of emission concentrations at the newly defined “points of compliance”, until such time as sampling points have been installed. It has no bearing on emissions, only on how they are reported.”
18. In the Final Motivation for Postponement of the Compliance Timeframes Natref argues (Ad page 16) that the 2013 amended regulation (GN893) changed the definition of the point of compliance measurement and the ‘bubble cap’ limit, but that the compliance timeframes remained unaltered (01 April 2015 for ‘existing plant’ standards, 01 April 2020 for ‘new plant’ standards) but that it requires at least 5 years to implement the necessary changes.
19. Our clients wish to point out that the Petroleum Industry initiated the relevant change from regulation on the basis of the ‘bubble cap’ total of all sources of the pollutant in 2010 regulation, to the current combination of a ‘bubble cap’ limit and limits to emissions from individual process units, and that the latter approach necessitated the change in the definition of the point of compliance. Furthermore, the 2013 amended regulation (GN893) is considerably more lenient with respect to

allowable emissions of SO₂, allowing a ‘bubble cap’ of emissions of SO₂ of 1.2kg SO₂/ton (of crude throughput), 50% more than the 0.8kg SO₂/ton (of crude throughput) allowed in the 2010 regulation.

20. Our clients submit that Natref’s request for postponement of SO₂ emission limits should be denied. The 2013 amendment to the emission limit which constitutes a considerable weakening of the limit compared with the 2010 limit cannot be the basis for acceding to the request for postponement, particularly in a Priority Area. Compliance with the “points of compliance” monitoring requirement requires the installation of in-stack measuring equipment, not major process unit changes. Our clients therefore suggest that this request for postponement also be denied.

SECTION 2: The applicable legislation: summary and compliance issues

21. Natref cannot comply with the requirements for postponements of compliance time frames set out in the Framework and no postponement should be granted:

- The applications are made in air sheds where there is non-compliance with one or more ambient air standards.
- None of the applicants can demonstrate that the industry concerned's air emissions are not and will not cause any adverse impacts on the surrounding environment and health of communities.
- The applications have not been submitted to the appropriate Air Quality Officer at least 1 year before the specified compliance date.
- The applicants are required to compile an air pollution impact assessment in accordance with the regulations prescribing the format of an Atmospheric Impact Report, and they fail to comply with this requirement.

22. More particularly:

- Since PM does not comply with National Ambient Air Quality Standards⁹ (NAAQSs) in Sasolberg and since SO₂ and NO₂ convert to PM, every request for postponement for a limit on a criteria pollutant (ie PM, SO₂, NO_x) should be rejected. Hazardous air pollutants which are also particulates should not be allowed postponements for compliance with MES in light of the non compliance with PM NAAQSs in Sasolberg
- There is no H₂S data in the atmospheric impact report (AIR) for Natref’s crude oil refinery and this is unacceptable and fatal to an application for postponement of compliance time frames for this facility as there is a lack of essential data to determine whether Natref is eligible under the Framework for postponements of H₂S limits. It is not possible without this information to determine that the postponement will not have an adverse effect on health of adjacent communities.
- No postponements should be granted for any other pollutant emission regulated in terms of the MES, given the fact that NAAQS for PM and SO₂ are

⁹ National Ambient Air Standards published under AQA GN 1210 in GG 32816 of 24 December 2009

not compliant in Sasolberg and compliance with NAAQSS is a fundamental requirement for the granting of postponements, in terms of the Framework.

These submissions will be discussed in greater detail hereunder.

Introduction

23. Minimum emission standards for industries scheduled under section 21 of AQA were promulgated in 2010 after a number of years of multi stakeholder dialogue which Natref participated in. Thereafter these standards were amended in November 2013 (GNR893)¹⁰ without being made more stringent for Natref. Indeed, in several respects, they are significantly less stringent. The 2012 National Framework for Air Quality Management¹¹ (Framework), and section 11 of the list of activities published under section 21 of AQA set out requirements for postponement of compliance time frames for the MES.¹² The Natref applications for postponement are noncompliant with these requirements and should not be granted.

Outline of Legislation: Postponement of compliance time frames for minimum emission standards promulgated under section 21 of (AQA).

24. Natref claims that it meets the requirements for postponement of compliance time frames for MES contained in paragraph 11 of GN893. Paragraph 11 states that as contemplated in the Framework, an application may be made to the National Air Quality Officer (NAQO) for the postponement of the compliance time frames referred to in paragraphs (9) and (10), for an existing plant.

25. Paragraph 12 states that the application contemplated in paragraph 11 must include-

(a) An air pollution impact assessment (AIR) compiled in accordance with the regulations prescribing the format of an Atmospheric Impact Report (as contemplated in Section 30 of the AQA¹³), by a person registered as a professional engineer or as a professional natural scientist in the appropriate category;

(b) a detailed justification and reasons for the application; and

¹⁰GN893 22 November 2013 No. 37054 LISTED ACTIVITIES AND ASSOCIATED MINIMUM EMISSION STANDARDS IDENTIFIED IN TERMS OF SECTION 21 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 2004 (ACT NO. 39 OF 2004) published in terms of section 21 of AQA repeals the prior publication of minimum emission standards contained in GNR 248, 31 March 2010.

¹¹established in terms of Section 7 of AQA

¹²See 2013 National Framework for Air Quality Management at 5.4.3.3.

¹³S 30 states: "An air quality officer may require any person to submit to the air quality officer an atmospheric impact report in a prescribed form if- (a) the air quality officer reasonably suspects that the person has on one or more occasions contravened or failed to comply with this Act or any conditions of a licence and that such contravention or failure has had, or may have, a detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage, or has contributed to the degradation of ambient air quality; or emission licence is undertaken in terms of section 45; a review of a provisional atmospheric emission licence or an atmospheric."

(c) a concluded public participation process undertaken as specified in the NEMA Environmental Impact Assessment Regulations.

26. Paragraph 13 provides that the NAQO, with the concurrence of the Licensing Authority as contemplated in section 36 of the AQA, may grant a postponement of the compliance time frames for an existing plant for a period not exceeding 5 years.
27. The Framework is binding legislation as the AQA definition of “this Act” includes the Framework published in terms of section 7 of the AQA.¹⁴ The Framework binds all organs of state in all spheres of government who must give effect to it when exercising a power or performing a duty in terms of AQA.¹⁵
28. The Framework provides conditions for postponements of compliance with the time frames for MES. It states in paragraph 5.4.3.3 (emphasis added):

“Given the potential economic implications of emission standards, and mindful that emission standard setting in South Africa was not based on comprehensive sector-based [Cost Benefit Analysis] (at least not for the initial group of Listed Activities as the intention was to ensure that there is no regulatory vacuum when the APPA was repealed), provision has been made for specific industries to apply for possible extensions to compliance time frames, provided ambient air quality standards in the area are in compliance and will remain in compliance even if the postponement of the compliance date according to Section 21 of the Act, and for such application to be positively considered, the following conditions must be met:

 - *An air pollution impact assessment being completed (in accordance with the regulations prescribing the format for Atmospheric Impact Reports, as contemplated in Section 30 of the AQA and specified by the National Air Quality Officer) by a person registered as a professional engineer or a professional natural scientist in the appropriate category;*
 - *Demonstration that the industry's air emissions are and will not cause any adverse impacts on the surrounding environment;*
 - *The application must be submitted to the Air Quality Officer at least 1 year before the specified compliance date”*
29. As will be set out below PM and SO₂ levels in Natrefberg are not in compliance and hence the applications for postponement for should be rejected. The Framework does not limit the requirement only to the ambient air standard for which the postponement is sought and hence non-compliance with any ambient air standard requires the application to be rejected.
30. Other considerations from the Framework indicate that when considering an application for postponement of compliance time frames for an industry it is important for the decision maker to bear in mind the factors that the competent

¹⁴S1

¹⁵S7(4)

authority is required to take into consideration in listing an activity in the first place. These are set out in parag 5.4.3.3 of the Framework where it states:

“the identification and prioritisation of activities to be added or removed from the listed activities shall be based on but not limited to the factors outlined in 5.3.3 of the 2013 Framework. These include proximity to sensitive receptors eg residential areas and schools, and emitters of concern based on volumes of emission and the nature of the pollutant.”¹⁶

31. Pollutants of concern are then identified in table 16¹⁷ which includes the pollutants for which Natref seeks postponement. The listing of activities and the setting of minimum emission standards under section 21 of AQA is therefore very much aimed at regulating large scale emitters of toxic and diverse pollutants located near residential areas such as the Natref facilities which have sought postponement. In itself this makes the application for postponement inappropriate.
32. The procedure for setting the MES under section 21 took place over a period spanning four years, from the period before the 2010 standards to the final promulgation of the 2013 standards. The 2007 Framework required the initial phase of the process to include the listing of industry types “which are known to be potentially significant in terms of their atmospheric emissions.” The Framework required emissions standards to be set “the targeting of industries where the benefits of regulation are expected to outweigh the costs, based on experience from developed and developing countries substantially reduces the risks of economic impacts arising due to the emission standard set.”¹⁸ The plant in question is located close to large numbers of vulnerable and disadvantaged communities whose health has been adversely impacted by decades of health damaging emission from Natref and Natref and as such these communities are sensitive receptors that the MES were designed to protect.
33. Compliance of the AIRs with the Regulations prescribing the format of the Atmospheric Impact Report (11 October 2013)

Section 5.1 (Analysis of Emissions' Impact on Human Health), which states:

“In order to assess the atmospheric impact of the facility on human health a dispersion modelling exercise must be undertaken. Any dispersion modelling study undertaken as part of an Atmospheric Impact Report must be done in accordance with the National Air Quality Modelling Guidelines specified for regulatory purposes - developed in terms of section 53 of AQA. The impact assessment should take the emissions of the facility under consideration as well as prevailing ambient air concentrations into account during this assessment. A compliance assessment must be undertaken using the national ambient air quality standards, specifically in residential areas and other areas where human exposure could occur.”

¹⁶Page 64

¹⁷Paragraph 5.3.2 Table 16

¹⁸2007 Framework paragraph 5.4.3.3

34. Section 5.2 “Analysis of Emissions' Impact on the Environment” of the regulations state:

“In order to assess the atmospheric impact of the facility on the environment a dispersion modelling exercise may be undertaken at the discretion of an Air Quality Officer. Any dispersion modelling study undertaken as part of an Atmospheric Impact Report must be done in accordance with the national air quality modelling guidelines specified for regulatory purposes. The impact assessment should take the emissions of the facility under consideration into account as well as prevailing ambient air concentrations during this assessment.”

35. The July 2014 Guidelines are available here:

http://www.saflii.org/za/legis/hist_reg/nemaqa39o2004rangnr533897/nemaqa39o2004rangnr533a11j2014998.pdf

36. “6.2: NAAQS Analyses for New or Modified Sources

“Compliance with NAAQS should be defined such that all significant local and regional contributions to the background concentrations are accounted for. For each averaging time, the sum of the (model) predicted concentration (Cp) and the background concentration (CB) applicable must be compared to the NAAQS. The background concentrations CB, should be the sum of contributions from non-modelled local sources and regional background. If the sum of background and predicted concentrations are (CB +Cp) is more than the NAAQS, the applicant must review the design of the facility (including pollution control equipment) to ensure compliance with NAAQS. Compliance assessments should provide room for future permits to new emissions sources, while maintaining overall compliance with NAAQS. For the different facility locations and averaging times, the comparisons with NAAQS should be based on recommendations in Table 3.”

Facility location	Annual NAAQS	Short-term NAAQS (24 hours or less)
		concentrations shall be considered.
Facilities influenced by background sources e.g., in urban areas and priority areas.	Sum of the highest CP and background CB must be less than the NAAQS, no exceedances allowed.	Sum of the 99th percentile concentrations and background CB must be less than the NAAQS. Wherever one year is modelled, the highest concentrations shall be considered.
*For an isolated facility influenced by regional background pollution CB must be considered.		

37. Natref will be required to undertake modifications to its facilities to enable it to comply with emission standards or alternative emission standards that it is proposing, hence this section is also applicable to the postponement applications that that AIR reports assess.

38. However, Natref has ignored this requirement in its AIR. Instead, it incorrectly uses the so-called “delta-approach” as described below on 77 of v2.0 of the Natref AIR. The Delta approach is defined in the AIR as follows:

“c) Delta approach to assessing implications of postponements for ambient air quality: “In assessing the impacts of Natref’s postponement applications on ambient air quality, a fit-for-purpose approach, as requested for by the Dispersion Modelling Regulations, was taken to assess the results from the dispersion modelling, which we have referred to as the “delta approach”. The delta approach is premised on recognising that the difference between the current or “before additional compliance is implemented” emission scenario (i.e. the baseline scenario) and “after additional compliance is implemented” scenario (i.e. the 2020 MES compliance scenario) relates to the change in emissions from the point sources in question. Therefore, the delta approach focuses on demonstrating the change in predicted ambient impacts of the various compliance scenarios, to guide decision makers toward better understanding the implications of the approval of postponements on air quality, and how compliance with the existing and new plant standards would impact on prevailing ambient air quality.”

39. The problem for Natref is that the so-called “delta approach” (which makes the impacts of pollution from any stationary source seem small in comparison to an NAAQS [See Figure 2.1 on Page 21 of v2.0 of the AIR]) is that it is not requested at all by the Regulations. The term fit-for-purpose is used ONLY in the following context in the July 2014 National Air Quality Modeling Guidelines, as follows:

40. “7.1 Model Accuracy and Uncertainty

“Air quality models attempt to predict concentrations at a specific point and time based on “known” or measured values of various parameters input into the model, such as wind speed, temperature profiles, solar radiation.

In addition, there are “reducible” uncertainties due to inaccuracies in the model, errors in input values and errors in the measured concentrations.”

“The performances of the models recommended in this Code of Practice have been evaluated using a range of modelling test kits and the detailed reports can be found at the U.S. EPA SCRAM website <http://www.epa.gov/scram001>. As such, for as long as the most appropriate model has been selected as “fit for purpose”, the modeller is not mandated to perform any further modelling evaluations. To

minimize the “reducible” uncertainties, modellers must exercise quality control and quality assurance (QA/QC) procedures to substantiate the accuracy of the input source, receptor, and meteorological data.”

41. Therefore the term ‘fit for purpose’ refers only to the choice of which air pollutant dispersion model to use (any recommended model is OK so long as it is ‘fit to purpose’). The term ‘fit for purpose’ has nothing to do with how to present the significance of the modelling out (predicted ambient air quality) and whether air quality would comply with AAQS or otherwise be healthy. Natref’s implication that it’s use of the delta approach is requested by the term ‘fit for purpose’ in the July 2014 National Air Quality Modeling Guidelines is incorrect and untenable

Requirement 1: Compliance with ambient air quality standards

42. Natref must demonstrate that ambient air quality standards in the area in which applicant industry is situated are in compliance with National Ambient Air Quality Standards (NAAQSs).¹⁹ The standard applies to ambient air impacts from all sources seen collectively, not solely to the emissions of the applicants, seen in isolation from other emitters in the airshed. The latter interpretation would undermine the regulatory purpose of AQA, which contains a duty on the state to enhance air quality so as to secure an environment that is not harmful to health.²⁰
43. Ambient air standards are set in terms of section 9(1)(b) of AQA. Section 9(1)(a) requires substances to be identified by the Minister which present a threat to health, well being or the environment. Clearly then, the substances for NAAQSs have been set in South Africa present a threat to health, and concentrations thereof should at the very least not exceed the NAAQS. The air quality in the air shed is already compromised if it is not compliant with any of the NAAQSs and therefore poses a threat to health.
44. Hence in circumstances where the air quality in an airshed exceeds the NAAQS for any of the ambient air standards, there is a duty to take action to rectify the situation. Allowing polluters who contribute to these exceedences to continue doing so is contrary to this regulatory duty. Allowing the postponement of compliance with any measure aimed to reduce pollution impacts in an airshed would likewise go against the regulatory intention of AQA.
45. There is non compliance with ambient air standards in Natrefberg, and hence the postponement applications should not be granted in respect of any of the pollutant emissions for which postponements are sought. The following is a table setting out the pollutants for which postponements or exemptions are applied, and the pollutants for which there is not compliance with NAAQSs.

¹⁹ National Ambient Air Standards published under AQA GN 1210 in GG 32816 of 24 December 2009

²⁰S2(b) AQA

Table of postponement requests that cannot be granted because of degraded air quality

Town	Do PM levels comply with AAQS?	Do SO ₂ levels comply with AAQS?	Do H ₂ S levels comply with AAQS or health-based standards?
<u>Secunda</u>	<u>No</u> Request to exempt/postpone compliance with a PM limit that therefore <u>cannot be granted</u> Sasol's Steam plant Sasol's Superflex Catalytic Cracker Sasol's HOW incinerators Sasol's Biosludge Incinerators Sasol's Sewage solids incinerator	Yes Request to exempt/postpone compliance with an SO ₂ limit that therefore <u>cannot be granted</u>	<u>No</u> Request to exempt/postpone compliance with an H ₂ S limit that therefore <u>cannot be granted</u> Sasol's Rectisol & Sulphur Recovery Plants
Town	Do PM levels comply with AAQS?	Do SO ₂ levels comply with AAQS?	Do H ₂ S levels comply with AAQS or health-based standards?
<u>Sasolburg</u>	<u>No</u> Request to exempt/postpone compliance with a PM limit that therefore <u>cannot be granted</u> Sasol's Steam Station 1 Sasol's Steam Station 2 Sasol's B6930 Incinerator Sasol's B6990 Incinerator Sasol's B6993 Incinerator Natref's Fuel oil fired boilers Natref's Furnaces Natref's FCC	<u>No</u> Request to exempt/postpone compliance with an SO ₂ limit that therefore <u>cannot be granted</u> Sasol's Steam Station 1 Sasol's Steam Station 2 Sasol's B6930 Incinerator Natref's Fuel oil fired boilers Natref's Furnaces Natref's Furnaces + FCC (bubble cap)	No data is presented Request to exempt/postpone compliance with an H ₂ S limit that therefore <u>cannot be granted</u> Natref's Amine treating unit Flash Drums Natref's SRU

Table of exemption or postponement requests that cannot be granted because of SO₂ and NO₂ conversion to PM

Town	SO2 limit request that cannot be granted	NO2 limit request that cannot be granted
<u>Secunda</u>	Sasol's Steam plant Sasol's Rectisol & Sulphur Recovery Plants Sasol's Wet Sulphuric Acid Plant Sasol's Biosludge Incinerators Sasol's Sewage solids incinerator	Sasol's Steam plant Sasol's HOW incinerators Sasol's Biosludge Incinerators Sasol's Sewage solids incinerator
<u>Sasolburg</u>		Sasol's Steam Station 1 Sasol's Steam Station 2 Sasol's B6930 Incinerator Sasol's B6990 Incinerator Sasol's B6993 Incinerator Natref's Fuel oil fired boilers Natref's Fuel gas fired boilers

Discussion.

46. Natref's refinery lies in the Vaal Triangle Priority Area.
47. In Sasolberg, PM levels are not in compliance with the NAAQs for PM10 (daily AAQS of 75 ug/mg). Ambient levels of PM2.5 are not being measured. So, if postponements may be granted only if "ambient air quality standards in the area are in compliance," then there cannot be any grant of postponement from emission standards for PM10 that are being requested by Natref for its facility in Sasolberg.
48. In Sasolberg, SO2 levels are not in compliance with the AAQS for SO2 (daily AAQS of 125 ug/m³ at the AJ Jacobs monitoring station, 2011-2012). So, if postponements may be granted only if "ambient air quality standards in the area are in compliance," then there cannot be any grant of postponement from emission standards for SO2 that are being requested for the Natref facility in Sasolberg. The conversion of SO2 emissions from a refinery into particulate matter is not a trivial matter. SO2 emissions from a refinery are much greater than PM emissions.
49. In Sasolberg, NO2 levels are in compliance with NAAQs. However, we must apply the same principle with NO2 emissions as with SO2 emissions since conversion of NO2 emissions to nitric acid aerosols (particulates) is also well established. In areas such as Sasolberg where PM levels are not in compliance with AAQS, no postponements on limits on NO2 emissions should be granted.

Conclusion

50. As regards H₂S there are no South African ambient air standards for this very dangerous chemical. However in the light of the exceedences of other ambient air standards no postponement should be granted. Natref is the principle contributor in Sasolberg.
51. The same argument applies to all other chemicals for which postponements are sought including VOC's.

Requirement 2: Air pollution impact assessment requirements; cumulative impacts²¹

52. The applicants are required to compile an air pollution impact assessment in accordance with the regulations prescribing the format of an Atmospheric Impact Report (as contemplated in Section 30 of the AQA), by a person registered as a professional engineer or as a professional natural scientist in the appropriate category.²²
53. The atmospheric impact report (AIR) submits insufficient information for a postponement to be considered and is not compliant with the regulatory scheme:
 - a. It fails to assess the cumulative impacts of emissions from the NATREF plants and the prevailing ambient air quality as required in the Regulations Prescribing the Format of the Atmospheric Impact Report²³
 - b. It fails to assess the cumulative impact of granting the postponement applications.
 - c. It fails to comply with the requirements of the Regulations for Air Dispersion Modelling.²⁴
 - d. It fails to provide a baseline health assessment of communities which will be affected by the granting of the postponement. Without knowing of the health status of vulnerable populations the report is of little use to the decision maker, who, as a result, cannot carry out the regulatory duties set out under AQA. These include:
54. Introduction:

The objects of AQA are to give effect to section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to health and well-being.²⁵ The Preamble to AQA recognises the impacts of air pollution on the health of vulnerable and disadvantaged communities and the fact that the burden of the health impacts associated with air pollution fall most heavily on the poor who carry the high

²¹Framework paragraph 5.4.3.3; Regulations prescribing format of Atmospheric Impact Reports GN 747 11 October 2013.

²²PARAGRAPH 11 of the List of Activities published under section 21

²³ GNR 747 of 11 October 2013

²⁴ GNR 533 of 11 July 2014

²⁵section 2

social, economic and environmental cost that is seldom borne by the polluter.²⁶ The communities of Sasolberg and Secunda which are located in close proximity to the applicants include such communities. The Preamble to AQA states that “the minimisation of pollution (emphasis added) through vigorous control, cleaner technologies and cleaner production practices is key to ensuring that air quality is improved.” There is a general duty on state officials in applying this Act to apply these principles and the NEMA principles.²⁷ Principle 2(4)(c) requires environmental justice to be pursued so that adverse environmental impacts are not distributed in such a manner as to unfairly discriminate against any person particularly vulnerable and disadvantaged communities.

55. It is not possible to prevent the impact on health of several toxic and health damaging air pollutants unless their cumulative effect is known. When this cannot be assessed a precautionary approach is mandated by the NEMA principles and pollution should be minimised.²⁸ As is clear from the AIR report it is not possible to predict the cumulative effect of so many pollutants on an ecosystem. The same would apply to cumulative and synergistic effect of pollutant cocktails on human health. See AIR page 72: (emphasis added)

“Establishing clear cause-effect relationships in complex ecosystem studies can be difficult, especially where the extent of visible damage is large and local emissions are low (Matzner and Murach 1995). Reasons include: time lags between stressor (high concentration of atmospheric pollutants) and visible symptomatic response of biota; interaction of natural factors (e.g. climate, soil and pests) and human activities (such as management, site history and air pollution); local ecosystem uniqueness and difficulty of extrapolating to larger scales; or, symptomatic responses that are not unique to the cause (e.g. defoliation) (Matzner and Murach 1995). The synergistic effect of pollutant cocktails can also add complexity to identifying causative pollutants (Emberson 2003). Atmospheric Impact Report: Natref Report No.: 13STL01N Report Version: 2.0 73

²⁶ WHEREAS the quality of ambient air in many areas of the Republic is not conducive to a healthy environment for the people living in those areas let alone promoting their social and economic advancement; And whereas the burden of health impacts associated with polluted ambient air falls most heavily on the poor; And whereas air pollution carries a high social, economic and environmental cost that is seldom borne by the polluter; And whereas atmospheric emissions of ozone-depleting substances, greenhouse gases and other substances have deleterious effects on the environment both locally and globally; And whereas everyone has the constitutional right to an environment that is not harmful to their health or well-being; And whereas everyone has the constitutional right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that- (a) prevent pollution and ecological degradation; (b) promote conservation; and (c) secure ecologically sustainable development and use of natural resources And whereas minimisation of pollution through vigorous control, cleaner technologies and cleaner production practices is key to ensuring that air quality is improved; And whereas additional legislation is necessary to strengthen the Government's strategies for the protection of the environment and, more specifically, the enhancement of the quality of ambient air, in order to secure an environment that is not harmful to the health or well-being of people,

²⁷ Section 5(2)

²⁸ NEMA Principle s2(4)(a)(vii)

56. It is clear from this quote that the cumulative impact of the pollutant emissions from Natref and their impact on the ecosystem was not studied and is not possible to assess. The same would therefore be true of the plants' impacts on health. In the airsheds of Sasolberg and Secunda it is not possible to establish the impacts of the plant in the context of the cumulative impacts of other pollutants present and the emissions of Natref itself as required in the following regulations.

57. Compliance of the AIRs with the Regulations prescribing the format of the Atmospheric Impact Report (11 October 2013):

Section 5.1 (Analysis of Emissions' Impact on Human Health), states:

"In order to assess the atmospheric impact of the facility on human health a dispersion modelling exercise must be undertaken. Any dispersion modelling study undertaken as part of an Atmospheric Impact Report must be done in accordance with the National Air Quality Modelling Guidelines specified for regulatory purposes - developed in terms of section 53 of AQA. The impact assessment should take the emissions of the facility under consideration as well as prevailing ambient air concentrations into account during this assessment. A compliance assessment must be undertaken using the national ambient air quality standards, specifically in residential areas and other areas where human exposure could occur."

58. Section 5.2 "Analysis of Emissions' Impact on the Environment" of the regulations states:

"In order to assess the atmospheric impact of the facility on the environment a dispersion modelling exercise may be undertaken at the discretion of an Air Quality Officer. Any dispersion modelling study undertaken as part of an Atmospheric Impact Report must be done in accordance with the national air quality modelling guidelines specified for regulatory purposes. The impact assessment should take the emissions of the facility under consideration into account as well as prevailing ambient air concentrations during this assessment."

59. Compliance with the requirements of the Regulations for Air Dispersion Modelling²⁹

The correct way to analyze the impact of emissions on human health is to sum the background concentrations of air pollutants and the predicted concentrations of air pollutants attributable to emissions from the stationary source (e.g. the Natref refinery) and assess the health impact of the **combined** pollutant concentrations (that is whether the combined pollutant concentrations result in air pollutant levels that exceed AAQS or is otherwise unhealthy).

60. This is the procedure specifically required by the July 2014 National Air Quality Modeling Guidelines:

"2.3.11 Step 11: Determine Background Air Quality

²⁹ GNR 533 of 11 July 2014

“All levels of assessments must consider the background concentrations of air contaminants. The intent is to compare the ambient air quality to the cumulative impact of new emissions and existing baseline conditions. A process to quantify the background concentrations is provided in Chapter 6.1.

....

“6.1 Ambient Background Concentrations

“The background concentration is the portion of the ambient concentration due to sources, both natural and 'anthropogenic, other than the source(s) being evaluated.

“6.1.2 Estimating Background Concentrations in Multi-Source Areas

“The National Framework calls for air quality assessment not only in terms of the individual facility contribution, but in terms of its additive contribution to baseline ambient air quality i.e. cumulative effects must be considered (DEAT 2007). As such, all sources expected to cause a significant concentration gradient in the vicinity of the source or sources under consideration should be explicitly modelled.”

“6.2: NAAQS Analyses for New or Modified Sources

“Compliance with NAAQS should be defined such that all significant local and regional contributions to the background concentrations are accounted for. For each averaging time, the sum of the (model) predicted concentration (Cp) and the background concentration (CB) applicable must be compared to the NAAQS. The background concentrations CB, should be the sum of contributions from non-modelled local sources and regional background. If the sum of background and predicted concentrations are (CB +Cp) is more than the NAAQS, the applicant must review the design of the facility (including pollution control equipment) to ensure compliance with NAAQS. Compliance assessments should provide room for future permits to new emissions sources, while maintaining overall compliance with NAAQS. For the different facility locations and averaging times, the comparisons with NAAQS should be based on recommendations in Table 3.”

Facility location	Annual NAAQS	Short-term NAAQS (24 hours or less)
		concentrations shall be considered.
Facilities influenced by background sources e.g., in urban areas and priority areas.	Sum of the highest CP and background CB must be less than the NAAQS, no exceedances allowed.	Sum of the 99th percentile concentrations and background CB must be less than the NAAQS. Wherever one year is modelled, the highest concentrations shall be considered.
*For an isolated facility influenced by regional background pollution CB must be considered.		

61. Natref will be required to undertake modifications to its facilities to enable it to comply with emission standards or alternative emission standards that it is proposing, hence this section is also applicable to the postponement applications that that AIR reports assesses.
62. However, Natref has completely ignored this requirement in its AIR. Instead, it incorrectly uses the so-called “delta-approach” as described below on page 21 of v.2.0 of the NATREF AIR.

The Delta approach is defined in the AIR as follows

“c) Delta approach to assessing implications of postponements for ambient air quality “In assessing the impacts of Natref’s postponement applications on ambient air quality, a fit-for-purpose approach, as requested for by the Dispersion modelling Regulations, was taken to assess the results from the dispersion modelling, which we have referred to as the “delta approach”. The delta approach is premised on recognising that the difference between the current or “before additional compliance is implemented” emission scenario (i.e. the baseline scenario) and “after additional compliance is implemented” scenario (i.e. the 2020 MES compliance scenario) relates to the change in emissions from the point sources in question. Therefore, the delta approach focuses on demonstrating the change in predicted ambient impacts of the various compliance scenarios, to guide decision makers toward better understanding the implications of the approval of postponements on air quality, and how compliance with the existing and new plant standards would impact on prevailing ambient air quality.”

63. The problem for NATREF is that the so-called “Delta approach” (which makes the impacts of pollution from any stationary source seem small in comparison to an AAQS [See Figure 2.1 on Page 21 of v2.0 of the AIR) is nowhere requested by the Regulations. The term fit-for-purpose is used ONLY in the following context in the July 2014 National Air Quality Modeling Guidelines, as follows:

“7.1 Model Accuracy and Uncertainty

“Air quality models attempt to predict concentrations at a specific point and time based on “known” or measured values of various parameters input into the model, such as wind speed, temperature profiles, solar radiation.

In addition, there are “reducible” uncertainties due to inaccuracies in the model, errors in input values and errors in the measured concentrations.”

“The performances of the models recommended in this Code of Practice have been evaluated using a range of modelling test kits and the detailed reports can be found at the U.S. EPA SCRAM website <http://www.epa.gov/scram001>. As such, for as long as the most appropriate model has been selected as “fit for purpose”, the modeller is not mandated to perform any further modelling evaluations. To minimize the “reducible” uncertainties, modellers must

exercise quality control and quality assurance (QA/QC) procedures to substantiate the accuracy of the input source, receptor, and meteorological data.”

64. Therefore the term ‘fit for purpose’ refers only to the choice of which air pollutant dispersion model to use (any recommended model is acceptable as long as it is ‘fit to purpose’). The term ‘fit for purpose’ has nothing to do with how to present the significance of the modelling out (predicted ambient air quality) and whether air quality would comply with NAAQS or otherwise be healthy. Natref’s implication that it’s use of the delta approach is requested by the term ‘fit for purpose’ in the July 2014 National Air Quality Modeling Guidelines is incorrect and untenable.

Failure to assess the cumulative impact of Natref and Sasol facilities together

65. As stated above the AIR submits insufficient information for a postponement to be considered it fails to assess the cumulative impacts of emissions from the refinery and the prevailing ambient air quality, as required in terms of parag 5.1 of the AIR regulations. With respect to both the Natref and Sasol these facilities, the defect with the AIRs is compounded: the AIRs do not assess the cumulative impact of granting postponements to both Natref and SASOL Infrachem despite the fact that they are both located within the very same airshed. See below Figure 5-23 from the AIR for the Natref facility, which looks at how various scenarios impact hourly SO₂ locations.

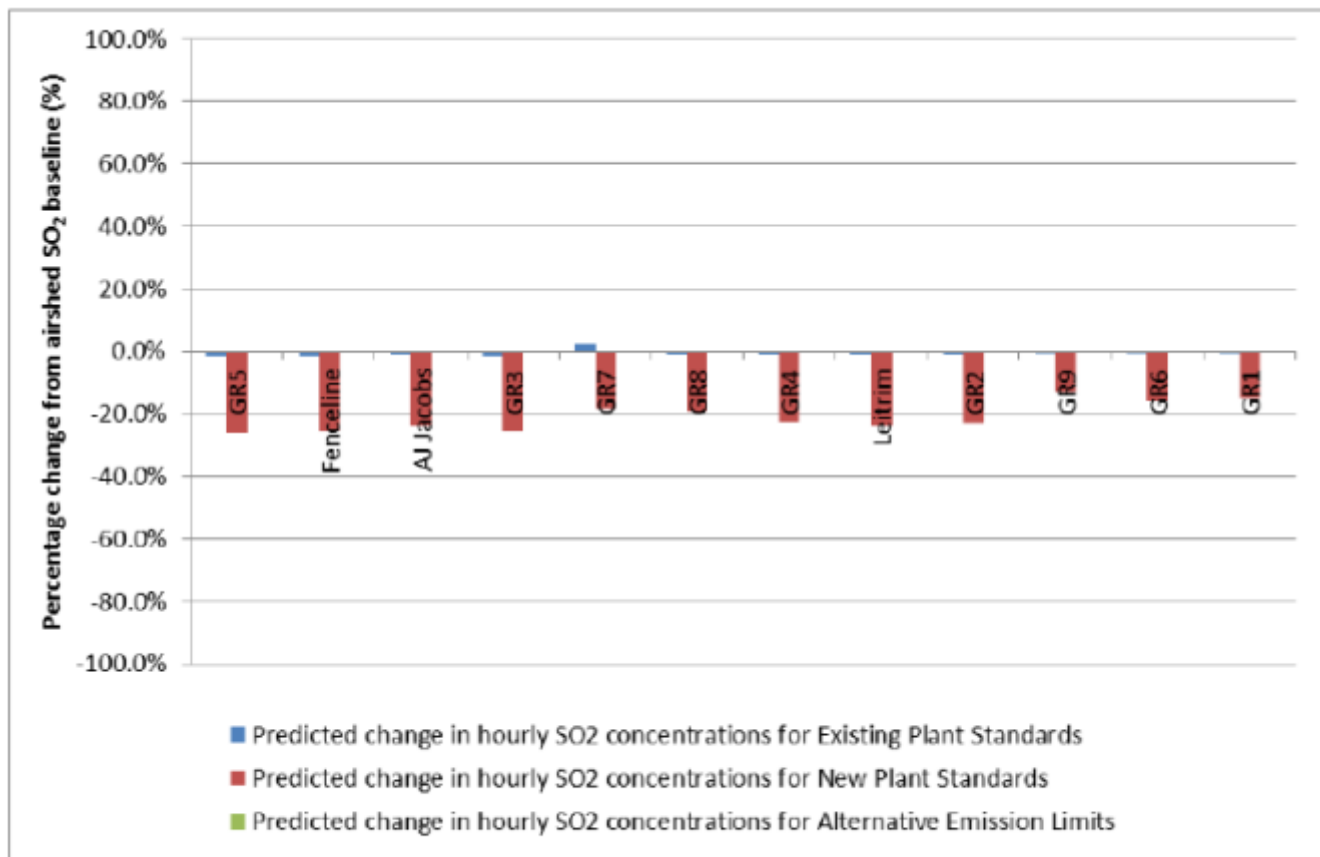
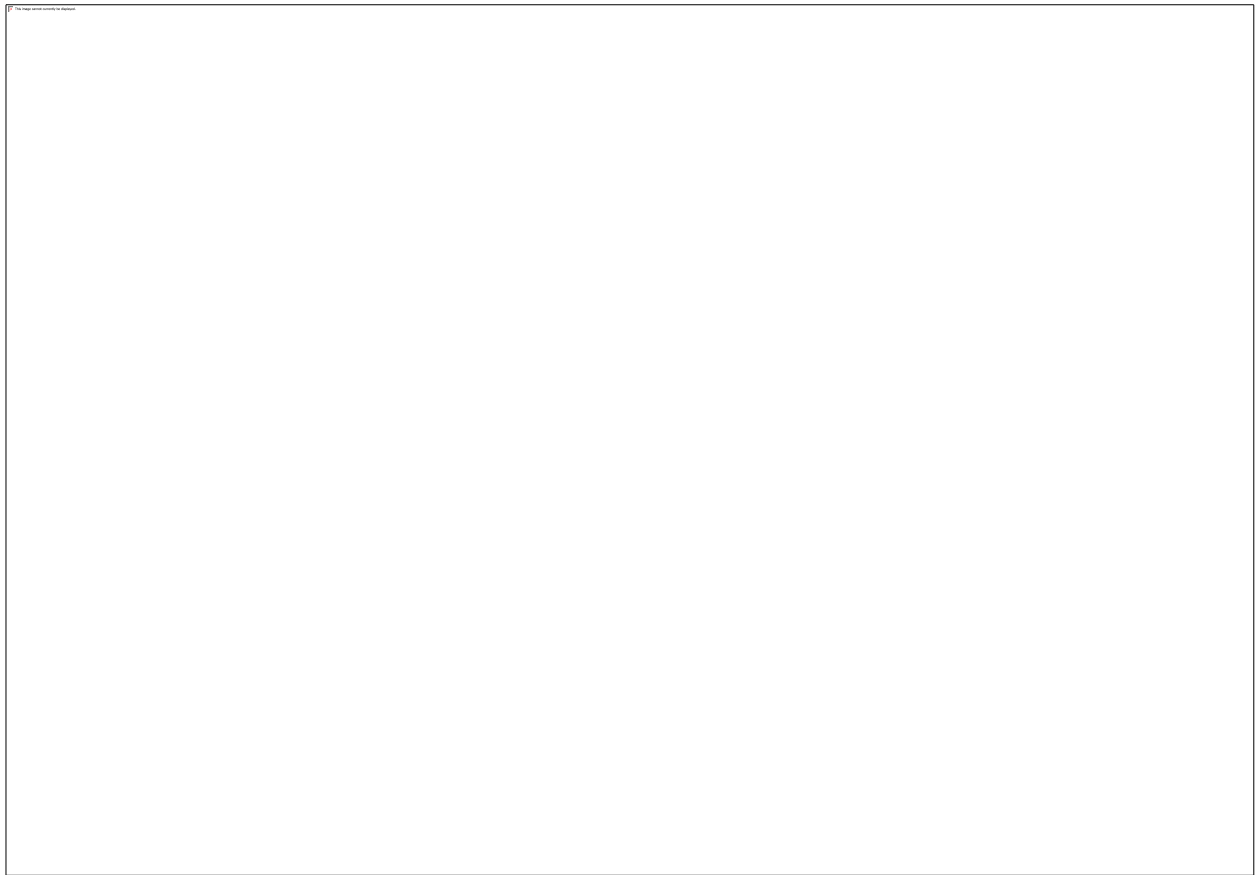


Figure 5-32: Theoretical change in SO₂ concentrations between scenarios and the airshed baseline at the identified receptors for the Natref Main Stack (calculated using Equation 1)

See below Figure 5-23 from the AIR for the SASOL facility, which looks at how various scenarios impact hourly SO₂ at various locations in Sasolburg.



66. Importantly the monitoring represented in these figures takes place at the same locations: GR5, AJ Jacobs, Fenceline, GR8 etc. Hence, if postponements are granted to BOTH Natref and SASOL Infrachem, then ambient air quality at these locations (GR5, AJ Jacobs, Fenceline, GR8, etc.) will be doubly effected! Unless there is a cumulative assessment of how granting postponements to both Natref and SASOL Infrachem would impact air quality at these locations, then granting postponements to both BOTH Natref and SASOL Infrachem would be irrational.

The need for a baseline health study

67. Baseline health study: The AQA in section 30 states that:

“An air quality officer may require any person to submit to the air quality officer an atmospheric impact report in a prescribed form if- (a) the air quality officer reasonably suspects that the person has on one or more occasions contravened or failed to comply with this Act or any conditions of a licence and that such contravention or failure has had, or may have, a detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage, or has contributed to the degradation of ambient air quality; or emission licence is undertaken in terms of section 45; a review of a provisional atmospheric emission licence or an atmospheric.”

68. Section 5.4.6.10³⁰ of the Framework which given guidance on the assessment of impacts of air pollution on health states that as a key requirement of the AQA:

“One of the objectives of the AQA is to give effect to our constitutional right to an environment which is not harmful to health and well being of people. The emphasis on human health requires that the specialist Air Quality Impact Assessment for a proposed listed activity includes an assessment of potential health impacts. The level of detail required is dependent on the nature and extent of atmospheric emissions and could range from a simple comparative assessment of the predicted ambient air quality levels with ambient air quality standards through to a full health risk assessment”³¹

69. A baseline health assessment is reasonably implied by these two statutory provisions, read together. Although Section 30 does not specifically require a baseline health assessment it is clear that without it the atmospheric impact of an activity and the granting of the postponement cannot be gauged. Section 30 recognises the need to consider impacts on the immediate “receiving” environment, including the health, social conditions, economic conditions, ecological conditions or cultural heritage of adjacent communities.

Other requirements for the AIR

70. It is disputed that Natref has complied with all the other requirements set out in regulations prescribing the format of atmospheric impact reports, which were published on 11 October 2013. AIRs for the Sasol Synfuels facility in Secunda and the AIR for the Natref facility failed for example to set out the point source maximum emission rates under start up, shut down, upset and maintenance condition with reference to the emissions profile expected for s21 pollutants, and providing an estimated raw gas emission rate for all of these operating conditions. Nor did the applicants summarise the frequency of such conditions over the preceding two years. Abnormal emissions can result in very significant emissions of H₂S and other toxic compounds from several of the applicant’s operations, which have an additional impact on the health of the receiving community. Without this information the competent authority cannot properly assess how to proceed with an application for postponement of compliance time frames.

71. The AIR for the Synfuels facility in Secunda specifically admits they have not done so. (There is nearly identical language to this in section 5.1.6.2 of the AIR for the Natref facility in Sasolberg):

72. “5.1.6.2 Model validation

³⁰ Human health Impact assessments

³¹ Framework at 5.5.3.1; see also Air Quality Act at Section 30, which states that an Atmospheric Impact Report must include

“Ambient concentrations of NO₂, SO₂, H₂S and PM₁₀ measured by Sasol in Sasolberg help provide an understanding of existing ambient air concentrations as well as providing a means of verifying the dispersion modelling. Since the aim of the investigation is to illustrate the change in ground level concentrations from the current levels (i.e. baseline emission scenario) to those levels theoretically resulting from implementation of technical solutions to lower emissions to the promulgated emission limits (i.e. existing and new plant standards), the intention was not to comprehensively include all air emissions from the Sasol Secunda Sasolberg or those associated with activities other than Sasol.....“Discrepancies between predicted and observed concentrations may also be as a result of process emission variations, and may include upset emissions and shutdown emissions. These conditions could result in significant under-estimating or over-estimating the ambient concentrations.”

73. Version 2 of Natref’s AIR does not model the impacts of emissions during start-up and shut-downs. Page 13 of the AIR states:

“Natref only conducts periodic measurements which make it exceptionally difficult to establish maximum emissions during start-up, shut-down, maintenance or upset conditions, since periodic measurements cannot pinpoint exactly when the maximum will occur. The main reason maximum values cannot be predicted with periodic sampling, in Natref’s case, is that the sampling methods prescribe fixed time periods during which a sample must be taken. In addition, timing of specific conditions leading to an absolute maximum emission rate is not predictable, meaning that the sampling period and the conditions resulting in the upsets are unlikely to occur concurrently; hence, it cannot be guaranteed that a maximum emission rate will be reached at a specific condition.”

The July 2014 Guidelines state:

“3.3 Emission Rates

“Emission rates must be selected based on the purpose of the modelling exercise under consideration. For assessing air quality impacts of new or modified existing sources, the maximum allowed amount, volume, emission rates and concentration of pollutants that may be discharged to the atmosphere under (i) normal working conditions; and (ii) normal start-up, maintenance and shut-down conditions should be considered to demonstrate compliance with NAAQS (DEAT 2007). The emissions must include any other operating requirements relating to atmospheric discharges, including non-point source or fugitive emissions. The maximum emission rates must be based on emissions standards as stipulated in Section 21 of the AQA (DEA 2010).”

That is, the July 2014 Guidelines do not provide an exception for cases (as Natref claims) when obtaining data about emissions during start-up, shut-down, maintenance are “exceptionally difficult.”

***Requirement 3: Failure to prove that the applicants air emissions are and will not cause any adverse impacts on the surrounding environment.*³²**

74. Natref must prove that the postponements will not cause any adverse impacts on the surrounding environment which includes communities. This requirement cannot be fulfilled for the following reasons in addition to those mentioned above.
75. Air quality in Natrefberg is already severely degraded by the presence of multiple toxic and health damaging air pollutants, for which Natref seeks further postponements. These pollutants have a cumulative and synergistic effect which is not measurable.
76. In addition the presence of exceedences of NAAQSs for SO₂ and PM in Sasolberg proves there is a direct threat to health from air pollution in these areas emanating from the applicants.
77. Natref is a significant contributors to these exceedences but they seek postponements for the very compounds which exceed ambient air standards, and health protective standards, including but not limited to PM and SO₂. Natref is the principle source of certain pollutants in Sasolberg.
78. In areas where SO₂ and NO_x are in compliance, the conversion of these pollutants to secondary PM pollutants means that they contribute to elevating of PM levels. Allowing a postponement of the reduction in current emission levels for SO₂, and NO_x will impact adversely on the health of communities by continuing to contribute to PM levels which are in exceedence in both towns.
79. The cumulative impact of the air pollution as a result of Natref cannot be ascertained. The precautionary principle must be applied in the absence of scientific certainty where there is a threat of harm (see NEMA principle 2(4)(viii)). This requires the implementation rather than postponement of standards which will protect health.
80. Natref bears the onus of proving that its continued emission will not pose an adverse health risk. If it cannot prove this requirement no postponement of the MES should be considered. The approach taken in the air impact assessments by the applicants for the postponement artificially diminishes the apparent impact of the current emission levels. Modelled concentrations of each pollutant individually are assessed against NAAQSs (Table 5-2),³³ where they are prescribed by South African legislation. Where no NAAQS exists for a relevant non-criteria pollutant, health screening effect levels based on international guidelines are used. This approach looks at polluters and their air emissions individually and not cumulatively with other emitters and emissions and so doing underestimates the

³²Framework at paragraph 5.4.3.3, page 67

³³AIR report for

true impact of the industrial emissions concerned. An impression is given that is inaccurate and more benign than the reality, which contains the cumulative impact of a wide range of chemicals in a non compliant air shed. For this reason it is inappropriate that the applications recommend postponements or exemptions of coming into compliance with MES. In circumstances where the applicant is unable to evaluate the cumulative impact of so many pollutants in an already degraded air shed it cannot discharge the duty to prove that any postponement will not harm health.

81. Priority area: The Vaal Triangle is an Area of Concern.

Natref highlights its participation in the development of the Vaal Triangle Airshed Priority Area (VTAPA) Air Quality Management Plan.³⁴ While its stated commitment to the VTAPA Air Quality Management Plan is laudable, this does not excuse Natref from complying with the governing regulatory requirements.

82. The declaration of the Vaal Triangle as a Priority Area and the ensuing efforts around the Vaal Triangle Airshed Priority Area ("VTAPA") demonstrate that the government recognizes and accepts that pollution is a serious threat in that area. In fact, the Vaal Triangle was declared the first priority area on 21 April 2006. The Air Quality Management Plan ("AQMP") was developed to address elevated pollutant concentrations in the area, specifically particulates (a category for which Natref is seeking an postponement). The communities of Sasolberg, Zamdela and Coalbrook were identified as sensitive receptors within the zone.³⁵

The substances for which postponements of MES are sought are harmful to health

83. A large number of compounds are included in the list for which exemptions and postponements are sought. A short note on PM, NOx and SO2 is provided as well as a more detailed discussion of H2S emissions in Annexure A to this submission. Information should have been provided for each of the pollutants in which postponement is sought, relating potential health effects on the adjacent communities. Highly toxic substances are emitted by Natref and yet there is no discussion of the vast majority of the health impacts of these compounds.

84. Particulate matter refers to "fine particles found in the atmosphere, including soil dust, dirt, soot, smoke, pollen, ash, aerosols and liquid droplets. The most distinguishing characteristic of PM is the particle size and the chemical composition. Particle size has the greatest influence on the behaviour of PM in the atmosphere with smaller particles tending to have longer residence times than larger ones." Particulate matter is very harmful to respiratory health and as discussed above, can exacerbate the effects co-pollutants. In a recent report, the government stated that "[p]articulate matter is the greatest national cause for concern in terms of air quality."³⁶ As discussed herein, particulate matter is a

³⁴ See Sasol Infrachem Exemption Application at 12.

³⁵ Vaal Triangle Airshed Priority Area Air Quality Management Plan at P 13

³⁶ 2013 State of the Air in South Africa Summary Report.

significant and specific source of concern in the VTAPA, where Natref's facilities are located.

85. Hydrogen sulphide, or H₂S, has been established to be a highly toxic compound. It is a colourless gas and has a characteristic odour of rotten eggs. Human exposure to exogenous H₂S is principally through inhalation, and the gas is rapidly absorbed through the lungs.³⁷ Exposure to H₂S can cause loss of consciousness, eye irritation, respiratory failure, chest pain, bradycardia, arrhythmias, reproductive effects, nausea, headache, and mental symptoms including depression. In certain cases, exposure to H₂S can result in death.³⁸ Further information on the health impacts of H₂S are provided in Annexure A below.
86. Sulfur dioxide: Sulphur dioxide (SO₂) is a colourless gas with known health effects at even lower concentrations than previously believed.³⁹ The WHO has noted the following health effects associated with SO₂: It can affect the respiratory system and the functions of the lungs, and causes irritation of the eyes. Inflammation of the respiratory tract causes coughing, mucus secretion, aggravation of asthma and chronic bronchitis and makes people more prone to infections of the respiratory tract. Hospital admissions for cardiac disease and mortality increase on days with higher SO₂ levels. When SO₂ combines with water, it forms sulphuric acid; this is the main component of acid rain which is a cause of deforestation.⁴⁰
87. NO_x is a toxic gas that causes significant inflammation of the airways.⁴¹ The WHO has noted that symptoms of bronchitis in asthmatic children increase with long-term NO₂ exposure and that reduced lung function is linked to NO₂ at concentrations currently measured (or observed) in cities of Europe and North America.⁴²
88. Natref cannot, and does not provide data from which it can be concluded that granting the postponement application would not result in (or prolong) adverse health impacts to surrounding community members. As stated above the standards are clear in that they are to be health-focused. The continued postponement of the application of the MES will result in non compliance with the duty to improve air quality, which is one of the objects of AQA.⁴³ The compounds that Natref seeks exemptions for have been shown to cause adverse health effects. Granting Natref's applications would mean recklessly endangering the lives of the community members surrounding its facilities. Of the compounds at issue, particulate matter, VOC's and hydrogen sulfide are particularly dangerous and toxic.

³⁷ Bhimsan, R. (2005): Implications of the new air quality bill on the management of H₂S emissions from Sasol's operations in Secunda, South Africa (Doctoral dissertation, University of Pretoria) at 22.

³⁸ Bhimsan, R. (2005): Implications of the new air quality bill on the management of H₂S emissions from Sasol's operations in Secunda, South Africa (Doctoral dissertation, University of Pretoria) at 23-26.

³⁹ <http://www.who.int/mediacentre/factsheets/fs313/en/>

⁴⁰ <http://www.who.int/mediacentre/factsheets/fs313/en/>

⁴¹ <http://www.who.int/mediacentre/factsheets/fs313/en/>

⁴² <http://www.who.int/mediacentre/factsheets/fs313/en/>

⁴³ AQA s2(a)(i)

89. With insufficient information to determine what the actual health impacts at issue are, the NAQO must adhere to the precautionary principle and deny all the applications for postponement of compliance time frames.

Submission of irrelevant considerations in the postponement application should be ignored

90. Instead of complying with the mandatory requirements of the AQA and its framework Natref submits its own theory of the considerations that are relevant to an application of this nature. In terms of the Promotion of Administrative Justice Act 2000 an application decided on the basis of irrelevant considerations will be reviewable.⁴⁴ These include the following considerations:

91. Ad paragraph 4.2.1: Natref's environmental improvements over the past 15 years: This information is irrelevant for the following reasons.

- The criteria for considering a postponement application are contained in the Framework and regulations for air quality management. They do not include a consideration of past environmental improvements.
- Natref's expenditure on environmental improvements is relative information. It cannot be evaluated without looking at their initial pollution profile, and the levels of emissions of other refineries, apart from other considerations - all that it can demonstrate is how serious the levels of air pollution emissions in the past were from Natref.
- Natref's SO₂ reduction took place in 1998 largely as a result of pressure from civil society organisations, represented by the Legal Resources Centre at a time when the refinery was planning to expand and increase its SO₂ emissions to around 100 tons per day. Subsequent to agreeing to reduce its emissions to 32 tons per day, it is disputed that there have been any further material improvements in SO₂ emissions control. This is a figure at least double what the other refineries are emitting currently, for the same number of barrels per day throughput.

92. Ad parag 4.2.2 Commitments to the VTAPA air quality management plan:

This information is not relevant to the postponement application save to demonstrate that the airshed in which Natref is located is in a priority area where there is noncompliance with NAAQS and therefore no postponement of compliance with the MES should be granted. The commitments made in terms of this plan are not as comprehensive as MES published under section 21 of the AQA and priority areas are regulated under a different section of the AQA which is not intended to replace the MES. The MES may legitimately be more stringent than the requirements for a priority area as they are based, in terms of the Framework, on completely different considerations including considerations of available technology

⁴⁴ Section 6(3) (b) (iii) PAJA

93. Ad parag 4.2.3 The clean fuels project: Although it will reduce sulphur emissions from vehicles this project will not address the impacts of refinery SO₂ emissions on immediate receiving environment ie communities near Natref which the MES is designed to protect. This is therefore an irrelevant consideration. Not only is this an irrelevant consideration, but if Natref is allowed to increase SO₂ emissions as a result of the Clean Fuels program, this increase in SO₂ emissions defeats the primary purpose of the Clean Fuels program, which is to reduce SO₂ emissions by reducing sulfur levels in fuels. As stated in its motivation report:

“The Natref refinery is currently conducting engineering studies for solutions to comply with the Department of Energy’s Clean Fuels II programme. This programme will require extensive upgrades to the refinery to enable the production of fuels that conform to so-called “Euro V” diesel and petrol specifications. The Euro V specification in Europe was developed to improve urban air quality, by reducing emissions from motor vehicle tailpipes, notably a reduction of the sulphur content of petrol from 500 to 10 parts per million, benzene content to less than 1% and diesel sulphur content from 500 to 10 parts per million. This reduction in fuel pollutants will have a direct positive impact on ground level emissions from all motorised vehicles. Reduction in vehicle SO₂ emissions arising from fuel consumption from the Natref refinery’s output, as a result of Clean Fuels II upgrades, is estimated at 26 tons/day SO₂. At face value, this may not sound significant, but when compared with emissions from the refinery itself, at 32 tons/day, this reduction in vehicle emissions occurring at near ground-level is a very significant sulphur mass balance change in Natref’s value chain. Any removal of sulphur from vehicle tailpipes requires that the sulphur be processed elsewhere – in this case, this large volume of sulphur removed from the fuel will be processed at Natref, and recovered as additional sulphur product.”

94. If the purpose of the purpose of the Clean Fuels program is to improve air quality by reducing SO₂ emissions from vehicles (many of which are driven throughout South Africa and not in Sasolberg), then allowing the SO₂ emissions to increase from the refinery defeats the purpose of the Clean Fuels program. There are many examples of jurisdictions (e.g. the United States and the European Union) that require refineries to produce clean (low-sulfur) fuels AND strictly control SO₂ emissions.

95. Ad paragraph 4.2.4 best available technology.

Since the MES have not been set universally according to BAT, but in many instances at far more pollutant permissive levels, Natref’s arguments concerning BAT cannot be considered in the absence of an indication of to which standards BAT is applicable. For many sub-categories, the South African emission standards for ‘new’ facilities are weaker than the EU standards for ‘existing’ facilities.

96. As regards CONCAWE, not only is CONCAWE an industry-based research group, but it’s recommendations as to what BAT is in relation to refineries are now 15 years old (see page 15 of the Motivation Report: “Best available techniques to reduce

emissions from refineries, Prepared for the CONCAWE Air and Water Quality Management Groups by its Special Task Forces AQ/STF-55 and WQ/STF-28, CONCAWE, Brussels, May 1999”). Setting emission standards based on these BAT determinations would be equivalent of turning back the clock 15 years on improvements in air pollution control technology.

97. The principles of BAT were generally applicable in terms of the provisions of the Framework when the MES standards were developed. Natref is not being required to implement BAT in regard to all the MES applicable to it. The comments and principles discussed by Natref in paragraph 4.2.4 are in any event so vague that they cannot form the basis of rational decision making. Natref’s opinion that the MES should target “emissions that result in not compliance with the NAAQS, where the costs of the abatement are justified and achieve material improvement in prevailing ambient air quality” is incorrect. The purpose and methodology for developing MES was set out in the AQA and Framework and did not include this rationale, which is both impractical and has not been adopted anywhere in the world where air quality is being successfully managed. In fact Sasol stated its review application to the High Court that a consideration of ambient air quality and standards is not a requirement for the setting of MES elsewhere in the world.⁴⁵
98. Ad paragraph 4.4: Financial implications.
Natref makes vague statements that the costs of implementing the MES are prohibitive without attaching any financial information on which a rational decision can be based. It has also stated repeatedly that it is not the costs *per se* that motivate it to challenge the standards, but the alleged minimum benefit. Hence its arguments that the cost is prohibitive are neither consistent or viable. At the end of the most recent quarter, Total S.A., 50% owner of Natref, earned a net profit of \$12.68 billion on revenues of \$232.53 billion, and had cash reserves of \$23.17 billion. <https://finance.yahoo.com/q/ks?s=TOT+Key+Statistics>. This is not a company that can make a credible argument about ‘economic constraints’ to investments in pollution control technologies at one of its facilities in South Africa.
99. Ad paragraph 5: Postponement application and proposed alternative emissions limits as a substitute for licensing: The intended purpose of the alternative emission limits proposed by Natref is to define the proposed licence conditions that Natref must comply with during the postponement period. This proposal if adopted is *ultra vires* the AQA which charges metropolitan and district municipalities with the function of implementing atmospheric emissions licencing. The approach also renders superfluous the provisions for licencing provided in terms of sections 37 to 47 of the AQA without there being a lawful basis to do so,

⁴⁵ See SASOL SYNFUELS (PTY) LTD AND OTHERS V THE MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS AND ANOTHER, CASE NO 36444/14 HIGH COURT, GAUTENG DIVISION, PRETORIA annexure FA 15: Submission by the Chemical and Allied Industries Association in December 2007 stated: “While it may be the case that minimum emission standards are set independently of ambient air quality standards in other jurisdictions, there is no basis for doing so in South Africa.”

and removes some of the requirements under these sections. This proposal if adopted stands to be reviewed and set aside as unlawful.

100. Ad paragraph 7: Natref's "sustainable compliance solutions" which relate to compliance with other air quality management tools are irrelevant to compliance with the MES, which must consider airshed compliance with NAAQS and health impacts of continued emissions.
101. Ad paragraph 7.1 Natref submits that it complies with a risk based approach to managing its environmental impacts. This consideration is irrelevant because the MES have been promulgated and the basis for these limits is no longer up for discussion. Also the "risk based approach" is not defined in the AQA or the NF and cannot be applied to standards after they have been promulgated; The management of air quality in South Africa is influenced by policy and legislation developed at international and national levels⁴⁶ and best practice and in no jurisdiction where air pollution has been effectively managed has the approach suggested by Sasol been adopted.

Other issues raised in the application

102. Ad Chapter 3: Compliance time frames for the MES.
Natref concludes that the "net effect of GN 893 was to alter compliance requirements with less than two years in which to comply." This is a consequence that Natref has brought upon itself and cannot be relied upon to form the basis of an argument for a postponement. Natref states that "legal compliance is of paramount importance to it." In that case it should have started planning for compliance with the 2010 standards as soon as they were promulgated. Its arguments are also incorrect. The compliance requirements of MES 2010 have been relaxed in respect of oil refineries. More is not being required of refineries than was required in the 2010 MES.
103. The fact that Natref chose not to endeavour to comply with these standards and to seek postponements immediately after they were promulgated should not be used as a justification for further postponements. This is self created urgency. The Natref refinery is situated in a priority area where there is non compliance with NAAQS for PM and SO₂. This has direct health impacts for surrounding communities. It is a major emitter of SO₂ and NO_x which in turn form particulates. Natref seeks postponement of compliance with emission limits relating to these and other pollutants.
104. The existing plant standards are not all BAT standards. The decision maker has a duty to promote compliance with the constitutional right to an environment which is not detrimental to health and well being and cannot indulge polluters who have created their own urgency by waiting and hoping that the law will be relaxed in their favour.
105. Ad Chapter 4:

⁴⁶ Framework paragraph 2

Natref states that certain MES are not reasonable and achievable with presently available technology. This statement is misleading. Natref is not being required to implement BAT in all cases. Much of what it required in the MES for existing plants is no more stringent than standards presently achievable on a voluntary basis by other refineries presently. The statement that the standards are not reasonable and achievable is disputed.

106. Natref states that “Various modelling studies imply ambient concentrations that are significantly below NAAQS.” Although some pollutants may be below NAAQS, others exceed NAAQS eg PM. Compliance with individual NAAQS does not protect health in the context where there are a large number of toxic and health damaging air pollutants present, some of which are exceeding the NAAQS. The NAAQS are applicable to individual pollutants. They do not purport to address cumulative impacts. In reality pollutants do not occur in the atmosphere in isolation and any number may exist. Pollutants have a synergistic and cumulative impact. If compliance with individual NAAQS was all that was required for air quality management to protect health, then no jurisdiction in the world would have needed to develop minimum emission standards based on technology. The AQA has recognised that in order to achieve the protection of vulnerable groups who are most often on the receiving end of air pollution, “minimisation of pollution through vigorous control, cleaner technologies and cleaner production practices is key to ensuring that air quality is improved.”⁴⁷
107. The approach advocated for by Natref was clearly not envisaged in the regulatory scheme for atmospheric impact assessment reports and air pollution modelling as set out in the above submission. The following statement by Natref is therefore incorrect:
- “The compliance in respect of the NAAQS suggests that current emissions from Sasol and other emitters in the airshed are broadly acceptable in regulatory terms”
- Had this been the case there would have been no need for the statute to have MES and a philosophy of emissions minimisation. Compliance with NAAQS alone, especially if there is a broad range of air pollution emissions present, can never be acceptable in regulatory terms. As stated above both PM and SO₂ exceed NAAQS

1. ⁴⁷ The objects of AQA are also to be gleaned from the Preamble to this statute.

The relevant parts of the Preamble state:

“Whereas the quality of ambient air in many areas of the Republic is not conducive to a healthy environment for the people living in those areas let alone promoting their social and economic advancement”.

“And whereas the burden of healthy impacts associated with polluted ambient air falls most heavily on the poor”.

“And whereas air pollution carries a higher social, economic and environmental cost that is seldom borne by the polluter”.

“And whereas minimisation of pollution through vigorous control, cleaner technologies and cleaner production practices is key to ensuring that air quality is improved”.

“And whereas additional legislation is necessary to strengthen the Governments strategies for the protection of the environment and ,more specifically, the

in Sasolberg and PM exceeds NAAQS in Secunda. H₂S which is an extremely dangerous chemical is found in concentrations exceeding health based guidelines in Secunda. Many of the emissions from Natref and Sasol are toxic pollutants, and their impact on health is not mentioned, or measurable. Most toxic air pollutants, usually because of their localised effect do not have ambient air standards.

Thus it is incorrect for Natref to state that because there is compliance with NAAQS for a few criteria pollutants that “current emissions from both Natref and other emitters in the airshed are broadly acceptable in regulatory terms.” Had this been the case there would have been no need for the statute to have MES and a philosophy of emissions minimisation. Also this approach is out of sync with regulatory approaches developed globally which have effectively regulated air quality in order to protect health. Thus the statement in paragraph 6.4.1 that “at the level of principle reducing emissions of these pollutants will serve to further reduce ambient concentrations that already comply with NAAQS” is thus an irrelevant and misleading consideration.

108. Natref states: “there is no discretion for local authorities to apply discretion to emission standards for licence holders.” This is an incorrect representation of the statutory scheme. The intention of the MES is to establish the first level of regulatory control. Thereafter if there is still poor air quality municipalities can further reduce air emissions to improve air quality in line with the objectives of the AQA. A more detailed analysis of particular airsheds is contemplated at the licencing level.
109. Natref states that South Africa’s MES as ceiling limits is not normal practice in air quality management. If South Africa’s MES are to be compared with any other jurisdiction then every aspect thereof must be compared. Our MES are for example far less stringent than those of the EU, in many respects, and hence by comparing only one aspect no sensible conclusions can be drawn.
110. Ad parag 6.2.6.: Natref states that “in South Africa NAAQS have been set for criteria pollutants at limits deemed to uphold a permissible level of health risk and the assessment has accordingly been based on a comparison between predicted concentrations and the NAAQS.” NAAQS are not considered internationally to be limits which are protective of health and especially not where there are multiple pollutants present. The purpose of the Framework is to manage air quality in the context of international best practice and hence statements by officials that a particular NAAQ is protective of health may not be a fair representation of our regulatory system and does not supercede the requirements of the Framework. As stated above the Framework is legislation.
111. Ad parag 6.3.2: Natref contributes 50/350 of ambient SO₂ making it a very significant contributor.
112. Ad parag 6.4.3: re health effects. The application correctly states that “it cannot be argued that compliance with NAAQS means no health risk. Indeed the World Health Organisation indicates that there is no safe limit in respect of exposure to PM. The NAAQS prescribe however a permissible for tolerable level of health risk.” The latter comment can only apply in cases where there is only one pollutant present. In the case where there are multiple toxic and health damaging

air pollutants present, compliance with individual NAAQS is meaningless in terms of the protection of health and especially in the presence of PM levels that are observed to greatly exceed NAAQS. Any further pollution from any other source on top of this cannot be acceptable

113. Ad parag 7: Natref's road map. This road map can never achieve sustainable air quality as it is based on an approach which is followed nowhere else in the world where air quality is effectively managed and is based on an incorrect representation of what air quality management entails. Natref is in fact committed to retaining the status quo and spending as little as possible on air quality improvements.

ANNEXURE A: Hydrogen Sulphide -H₂S

1. Natref seeks postponement of emissions standards for H₂S in its refinery at Natrefberg. (category 2.1 and 2.3⁴⁸). The postponement should not be granted from MES for H₂S given the toxicity of the compound, the proximity to adjacent communities, the lack of compliance with ambient air standards both areas, the volumes of H₂S emitted, and the fact that Natref is the main emitters of this compound in the town of Sasolberg.
2. Further information on the health impacts of H₂S are provided below. South Africa does not have NAAQSS for H₂S. However the table 3.18 of the 2005 Department of Environmental Affairs State of the Air Report is copied below, showing that hourly levels of H₂S above 42 ug/m³ should be considered high in South Africa.⁴⁹

Table 3.18: Pollutant thresholds

Pollutant*	PM ₁₀	SO ₂	NO ₂	CO	O ₃	H ₂ S
Units	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	µg/m ³
Low	<50	<245	<140	<21	<140	<30
Moderate	50–75	245–350	140–200	21–30	140–200	30–42
High	>75	>350	>200	>30	>200	>42

* Each entry corresponds to an hourly averaging period

3. This State of the Air Report sets thresholds for several air pollutants. Table 3.16 on page 28 of this report sets out "inhalation-based health thresholds for selected non-criteria pollutants (µg/m³)" and refers to the California OEHHA (first adopted as

⁴⁸"Natref applies for a five-year postponement (until 1 April 2020) from the special arrangement applicable under Category 2.1 of the MES stipulating that *No continuous flaring of hydrogen sulphide rich gas shall be allowed.*" Also "MES Categories 2.3 contains a special arrangement applicable to sulphur recovery units. The following special arrangement shall apply: Sulphur recovery units should achieve 95% recovery efficiency and availability of 99%. This postponement application pertains to the requirements that sulphur units should have an availability of 99%. The requirement of 95% recovery efficiency is already achieved."

⁴⁹https://www.environment.gov.za/sites/default/files/docs/stateofair_executive_iaquality_standardsonjectives.pdf

of August 2003).⁵⁰ The report defines “high pollution days” with reference to these standards as well as to a comprehensive overview of international best practice and local developments in the use of air pollution indices for the purpose of communicating air quality information. For H₂S hourly average values were given as follows: the “low is given as < 30 ug/m³, medium is 30-42 ug/m³ and high is given as 42 ug/m³.⁵¹ These hourly values also correspond with the State of California 1 hour OEHHA standard.⁵²

4. International best practice would require H₂S emissions to be no more than 5% of the sulfur input (that is, recovery efficiency of at least 95%). Under this international best practice standard, H₂S emissions would be far closer to the limits of Subcategory 3.6 below:

	includes gasification, separation and clean up of a raw gas stream through a process that involves sulphur removal and Rectisol as well as the stripping of a liquid tar stream derived from the gasification process.		
Application:	All installations		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3 kPa.
Common name	Chemical symbol		
Hydrogen Sulphide	H ₂ S	New	3 500
		Existing	4 200

5. There is no legal basis for the polluter to set an alternative set of limits. If this were the case then instead of uniform national emission limits there would be a

⁵⁰The report on page 29 states that a comprehensive overview of international best practice and local developments in the use of air pollution indices for the purpose of communicating air quality information is given in the Technical Compilation Document to Inform the State of Air Report (DEAT, 2006a), reproduced in the Appendix. Pending the national adoption in South Africa of an air quality indexing system for the routine reporting of air pollution levels in the country, the following approach was employed in this report to define “low”, “moderate”, and “high” pollution days. Air pollution data for PM₁₀, SO₂, NO₂, CO, O₃, and hydrogen sulphide (H₂S) were selected for use in calculating high pollution days. Hourly- and daily averaged air pollution data were analyzed, with hours and days initially classified into pollutant-specific categories based on health-related thresholds. All days with one or more exceedances of the hourly-average threshold given for “high” gaseous pollution concentrations, or of the daily-average, were classified as “high pollution days”, and the pollutants resulting in this classification noted.

⁵¹The report on page 29 states that A comprehensive overview of international best practice and local developments in the use of air pollution indices for the purpose of communicating air quality information is given in the Technical Compilation Document to Inform the State of Air Report (DEAT, 2006a), reproduced in the Appendix. Pending the national adoption in South Africa of an air quality indexing system for the routine reporting of air pollution levels in the country, the following approach was employed in this report to define “low”, “moderate”, and “high” pollution days. Air pollution data for PM₁₀, SO₂, NO₂, CO, O₃, and hydrogen sulphide (H₂S) were selected for use in calculating high pollution days. Hourly- and daily averaged air pollution data were analyzed, with hours and days initially classified into pollutant-specific categories based on health-related thresholds. All days with one or more exceedances of the hourly-average threshold given for “high” gaseous pollution concentrations, or of the daily-average threshold given for “high” PM₁₀ concentrations, were classified as “high pollution days”, and the pollutants resulting in this classification noted

⁵²http://www.oehha.ca.gov/air/hot_spots/2008/AppendixD2_final.pdf#page=144

hodgepodge of individual emission limits that would differ from facility to facility based in the most part on criteria which are not uniform and could even be based on factors such as political power. This would bring the system of setting emission standards into disrepute.

Health studies regarding H₂S

6. Health studies have established that even low levels of H₂S exposure can result in adverse health effects. For example, one study established that children exposed to annual average hydrogen sulfide levels of only 6 ppb (8.4 µg/m³), but to daily maximum hydrogen sulfide levels of up to 70 ppb (100 µg/m³), suffered excessively from irritation of the nose, cough, and headache compared to children in a non-polluted community.⁵³ Another one concluded that a community exposed to an annual average hydrogen sulfide level of only 1.5 to 2 ppb (2.1 to 2.8 µg/m³), but to daily maximum hydrogen sulfide levels of up to 17 ppb (24 µg/m³), suffered excessively from cough, respiratory infections, and headache. The health experts in the latter study concluded that: "These results indicate that adverse health effects of malodorous sulfur compounds occur at lower concentrations than previously reported."⁵⁴ Another study established that a community exposed to annual average hydrogen sulfide levels of only 4 to 8 ppb (5.6 to 11.2 µg/m³), but to daily maximum hydrogen sulfide levels of up to 80 ppb (112 µg/m³), suffered excessively from respiratory infections compared to a non-polluted community. These health experts concluded that: "Our results suggest that exposure to malodorous compounds increases the risk of acute respiratory infections."⁵⁵
7. In 1992, health experts published a scholarly study showing that a community exposed over a two-day period to hydrogen sulfide levels of approximately 30 ppb (42 µg/m³) suffered excessively from irritation of the eye and nose, cough, breathlessness, nausea, headache, and mental symptoms, including depression.⁵⁶ The hydrogen sulfide emissions originated from an industrial facility - a pulp mill. These health experts concluded that: "The strong malodorous emission from a pulp mill caused an alarming amount of adverse effects in the exposed population."
8. Also in 1994, health experts published a scholarly study showing that children exposed to annual average hydrogen sulfide levels of only 6 ppb (8.4 µg/m³), but to daily maximum hydrogen sulfide levels of up to 70 ppb (100 µg/m³), suffered excessively from irritation of the nose, cough, and headache compared to children

⁵³ Marttila, O., et al. (August 1994) "The South Karelia Air Pollution Study: the effects of malodorous sulfur compounds from pulp mills on respiratory and other symptoms in children." *Environ Res.*, 66(2):152-9.

⁵⁴ Partti-Pellinen, K., et al. (July/August 1996) "The South Karelia Air Pollution Study: effects of low-level exposure to malodorous sulfur compounds on symptoms." *Arch Environ Health*, 51(4):315-20

⁵⁵ Jaakkola, J., et al. (July/August 1999) "The South Karelia Air Pollution Study: changes in respiratory health in relation to emission reduction of malodorous sulfur compounds from pulp mills." *Arch Environ Health*, 54(4):254-63.

⁵⁶ Haahtela T, et al. (April 1992) "The South Karelia Air Pollution Study: acute health effects of malodorous sulfur air pollutants released by a pulp mill." *Am J Public Health*. 82(4):603-5.

in a non-polluted community.⁵⁷ These health experts concluded that: "The results suggest that exposure to malodorous sulfur compounds may affect the health of children."

9. In 1996, health experts published a scholarly study showing that a community exposed to an annual average hydrogen sulfide level of only 1.5 to 2 ppb (2.1 to 2.8 $\mu\text{g}/\text{m}^3$), but to daily maximum hydrogen sulfide levels of up to 17 ppb (24 $\mu\text{g}/\text{m}^3$), suffered excessively from cough, respiratory infections, and headache.⁵⁸ These health experts concluded that: "These results indicate that adverse health effects of malodorous sulfur compounds occur at lower concentrations than previously reported."
10. In 1999, health experts published a scholarly study showing that a community exposed to annual average hydrogen sulfide levels of only 4 to 8 ppb (5.6 to 11.2 $\mu\text{g}/\text{m}^3$), but to daily maximum hydrogen sulfide levels of up to 80 ppb (112 $\mu\text{g}/\text{m}^3$), suffered excessively from respiratory infections compared to a non-polluted community.⁵⁹ These health experts concluded that: "Our results suggest that exposure to malodorous compounds increases the risk of acute respiratory infections."
11. The 2005 Department of Environmental Affairs State of the Air Report sets thresholds based on a comprehensive overview of international best practice and local developments in the use of air pollution indices for the purpose of communicating air quality information. For H₂S hourly average values were given as follows: the "low is given as < 30 $\mu\text{g}/\text{m}^3$, medium is 30-42 $\mu\text{g}/\text{m}^3$ and high is given as 42 $\mu\text{g}/\text{m}^3$.⁶⁰ These hourly values also correspond with the State of California hourly concentrations for health.

NATREF application for postponement of compliance timeframes for H₂S

⁵⁷ Marttila, O., et al. (August 1994) "The South Karelia Air Pollution Study: the effects of malodorous sulfur compounds from pulp mills on respiratory and other symptoms in children." *Environ Res.*, 66(2):152-9

⁵⁸ Partti-Pellinen, K., et al. (July/August 1996) "The South Karelia Air Pollution Study: effects of low-level exposure to malodorous sulfur compounds on symptoms." *Arch Environ Health*, 51(4):315-20.

⁵⁹ Jaakkola, J., et al. (July/August 1999) "The South Karelia Air Pollution Study: changes in respiratory health in relation to emission reduction of malodorous sulfur compounds from pulp mills." *Arch Environ Health*, 54(4):254-63.

⁶⁰ The report on page 29 states that A comprehensive overview of international best practice and local developments in the use of air pollution indices for the purpose of communicating air quality information is given in the Technical Compilation Document to Inform the State of Air Report (DEAT, 2006a), reproduced in the Appendix. Pending the national adoption in South Africa of an air quality indexing system for the routine reporting of air pollution levels in the country, the following approach was employed in this report to define "low", "moderate", and "high" pollution days. Air pollution data for PM₁₀, SO₂, NO₂, CO, O₃, and hydrogen sulphide (H₂S) were selected for use in calculating high pollution days. Hourly- and daily-averaged air pollution data were analyzed, with hours and days initially classified into pollutant-specific categories based on health-related thresholds. All days with one or more exceedances of the hourly-average threshold given for "high" gaseous pollution concentrations, or of the daily-average threshold given for "high" PM₁₀ concentrations, were classified as "high pollution days", and the pollutants resulting in this classification noted

12. NATREF is a significant source of H₂S in Natrefberg. There has been no baseline assessment to gauge the health and vulnerability to air pollutant impacts of residential populations in Natrefberg, which are defined as sensitive receptors in terms of the Vaal Triangle Air Quality Management Plan.⁶¹ A postponement of compliance time frames would only be justifiable for a substance of the toxicity of H₂S in a remote area where human health is not at risk. In order for the application for a postponement to be granted, all relevant considerations must be placed before the decision maker under the requirements of the Promotion of Administrative Justice Act.⁶² The protection of vulnerable and disadvantaged communities from toxic air pollution is a key imperative of the AQA and therefore the health status of the affected population and its levels of exposure to H₂S from the plant as well as the predicted health effects thereof should have been placed before the competent authority.
13. There is no H₂S data in the AIR for Natref's crude oil refinery and this is unacceptable and fatal to an application for postponement of compliance time frames for this facility as there is a lack of essential data to determine whether Natref is eligible under the Framework for postponements of H₂S limits. It is not possible without this information to determine that the postponement will not have an adverse effect on health of adjacent communities.
14. The application for a postponement of compliance time frames for H₂S emissions from Natref therefore should not be granted.

LEGAL RESOURCES CENTRE

Per:

ANGELA ANDREWS

⁶¹see paragraph of this submission

⁶²s 6(2)(e)(iii)

Annexure 4: Further Air Quality Modelling Information in support of various comments received

Further information on the combined impact of the Natref Refinery and Sasol Infrachem to supplement Appendix L of the Natref and Sasol Infrachem AIRs

Isopleth plots were prepared for two scenarios for the combined emissions of Sasol Infrachem and Natref:

- Baseline scenario – This scenario is indicative of the current modelled impact of Sasol Infrachem and Natref's emissions on ambient air quality, based on average emissions
- Compliance scenario – This scenario is indicative of full compliance with the new plant standards specified in the MES

The assessment was conducted for all averaging periods for which NAAQS have been set for SO₂ and NO_x. Due to the relatively limited impact of the baseline PM concentrations, only the baseline scenario was assessed.

For the baseline scenario, indicative of the current impact of the Sasol Infrachem and Natref emissions on ambient air quality, the key findings of this assessment include:

- predicted 99th percentile hourly SO₂ concentrations were within the hourly NAAQ limit concentration, where the combined operations of Sasol Infrachem and Natref were predicted to result in concentrations of 175 µg/m³, or less, over the majority of the modelling domain, compared with a NAAQS of 350 µg/m³;
- predicted 99th percentile daily SO₂ concentrations of 40 µg/m³, or less, across the majority of the domain compared with a NAAQS of 125 µg/m³;
- predicted annual SO₂ concentrations of 10 µg/m³, or less, across the majority of the domain, and compliance with annual NAAQS across the entire modelling domain compared with a NAAQS of 50 µg/m³;
- predicted 99th percentile hourly NO₂ concentrations within the NAAQ limit concentration, where the combined operations Sasol Infrachem and Natref were predicted to result in concentrations of 60 µg/m³, or less, across the majority of the modelling domain compared with a NAAQS of 200 µg/m³;
- predicted annual NO₂ concentrations compliant with annual NAAQS across the entire modelling domain (concentrations less than 16 µg/m³ outside of the Sasol Infrachem and Natref sites) compared with a NAAQS of 40 µg/m³;
- predicted off-site 99th percentile daily PM concentrations of 3 µg/m³, or less, across the modelling domain compared with a NAAQS of 75 µg/m³;
- predicted annual PM concentrations compliant with annual NAAQS across the modelling domain with a concentrations less than 2 µg/m³, compared with a NAAQS of 40 µg/m³.

The comparison between the baseline scenario and compliance scenario is presented in the sections below.

Section 1: Combined scenario - NO_x results

The combined scenarios depicted on the isopleth plots hereunder show the baseline NO_x impacts, as well as the reduction in the ambient footprint in the compliance scenario (both facilities meeting new plant standards) for the hourly (Figure 1) and annual (Figure 2) modelled NO_x.

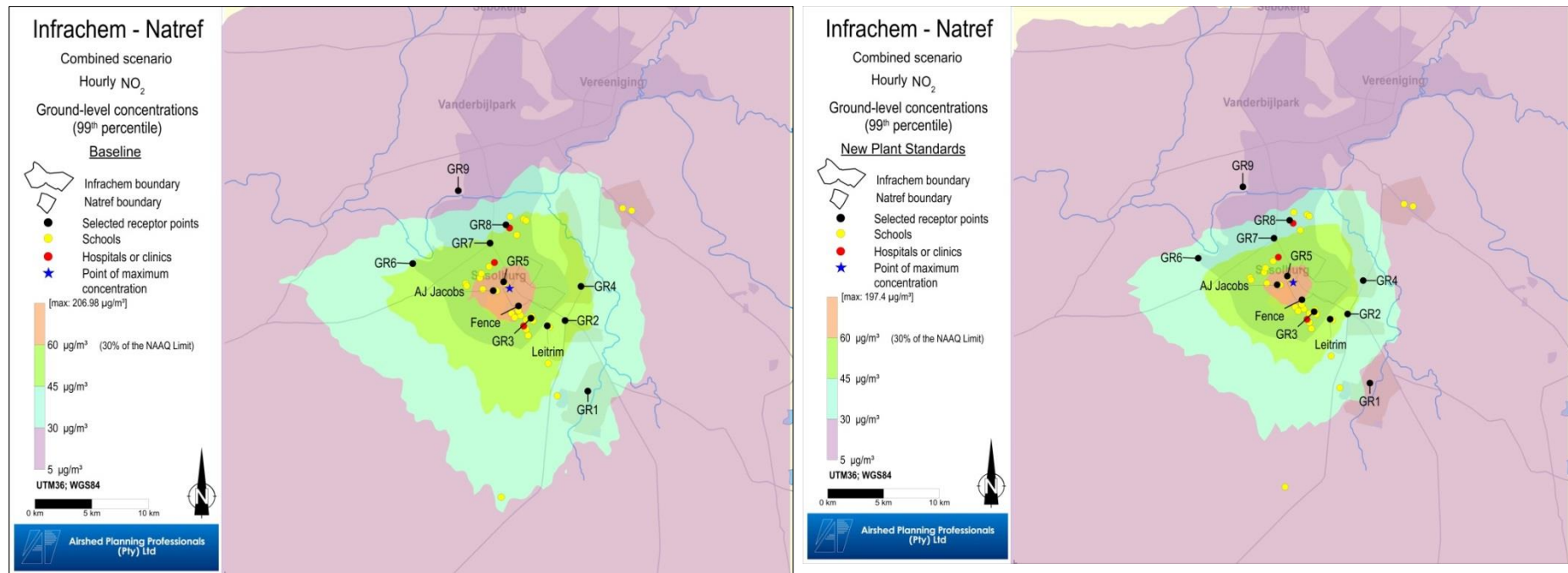


Figure 1: Predicted hourly NO_x concentrations as a result of the combined impact of Sasol Infrachem and Natref baseline (left) and compliance scenario emissions (right)

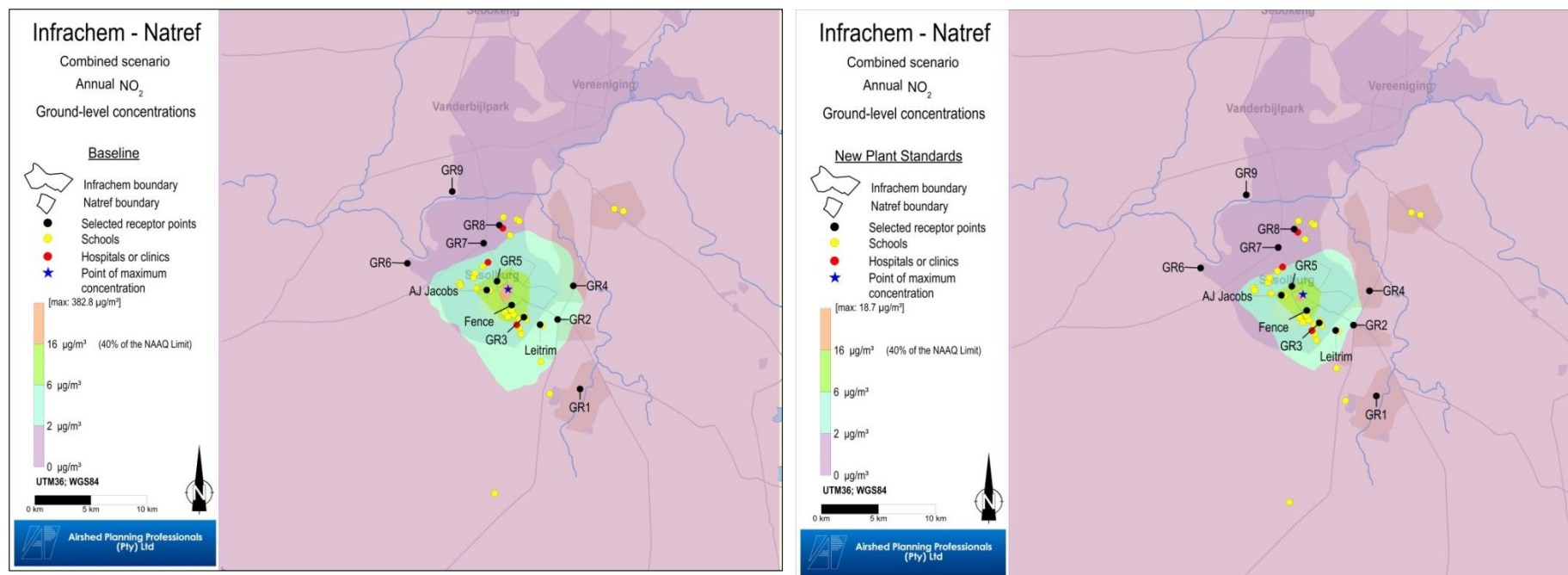


Figure 2: Predicted annual NO_x concentrations as a result of the combined impact of Sasol Infrachem and Natref baseline (left) and compliance emissions (right)

Section 2: Combined scenario – SO₂ results

The combined scenarios depicted on the isopleth plots hereunder show the baseline SO₂ impacts, as well as the reduction in the ambient footprint in the compliance scenario (both facilities meeting new plant standards) for the hourly (Figure 3), daily (Figure 4) and annual (Figure 5) modelled SO₂.

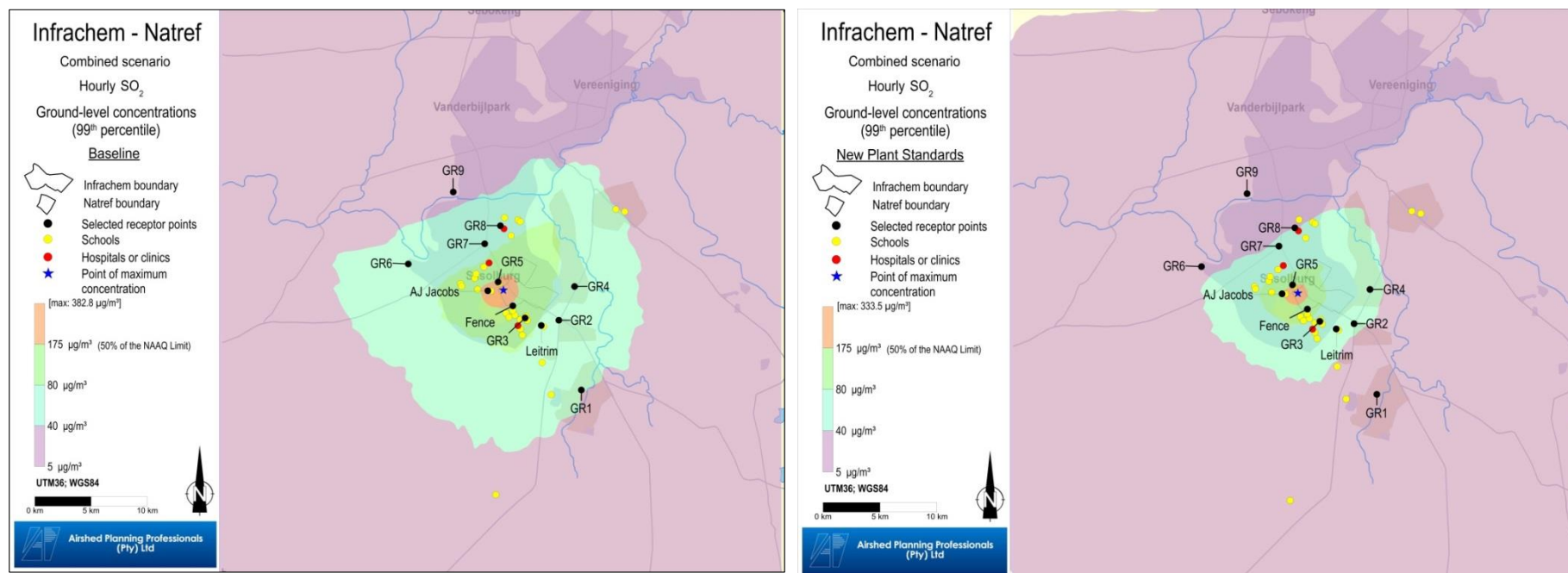


Figure 3: Predicted hourly SO₂ concentrations as a result of the combined impact of Sasol Infracchem and Natref baseline (left) and compliance emissions (right)

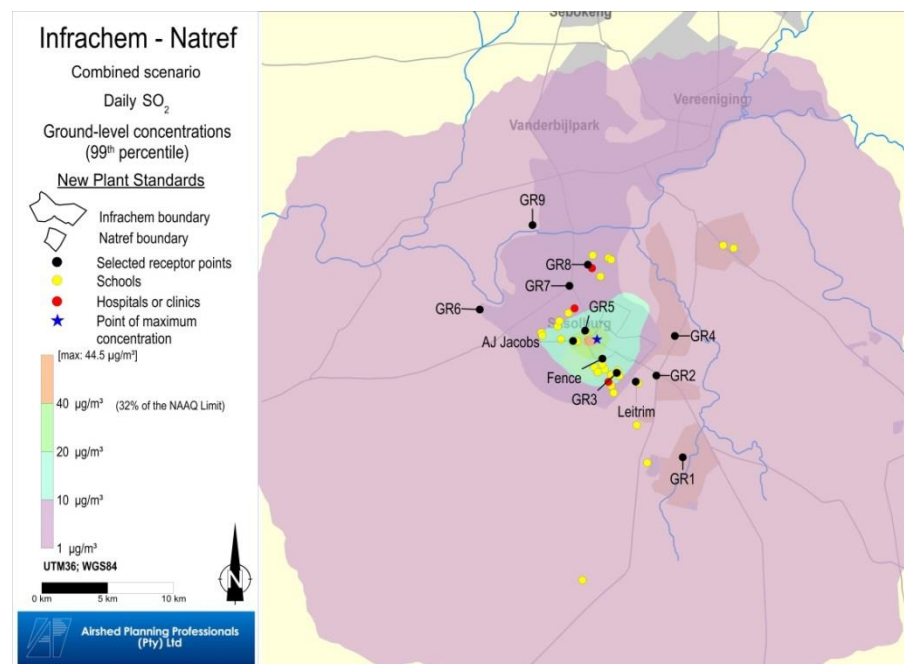
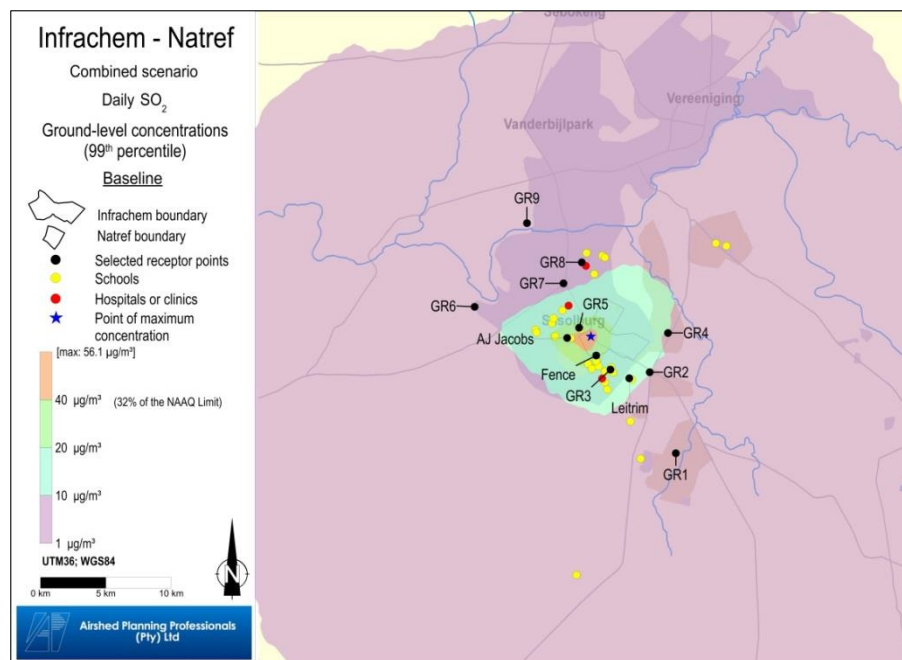


Figure 4: Predicted daily SO₂ concentrations as a result of the combined impact of Sasol Infrachem and Natref baseline (left) and compliance emissions (right)

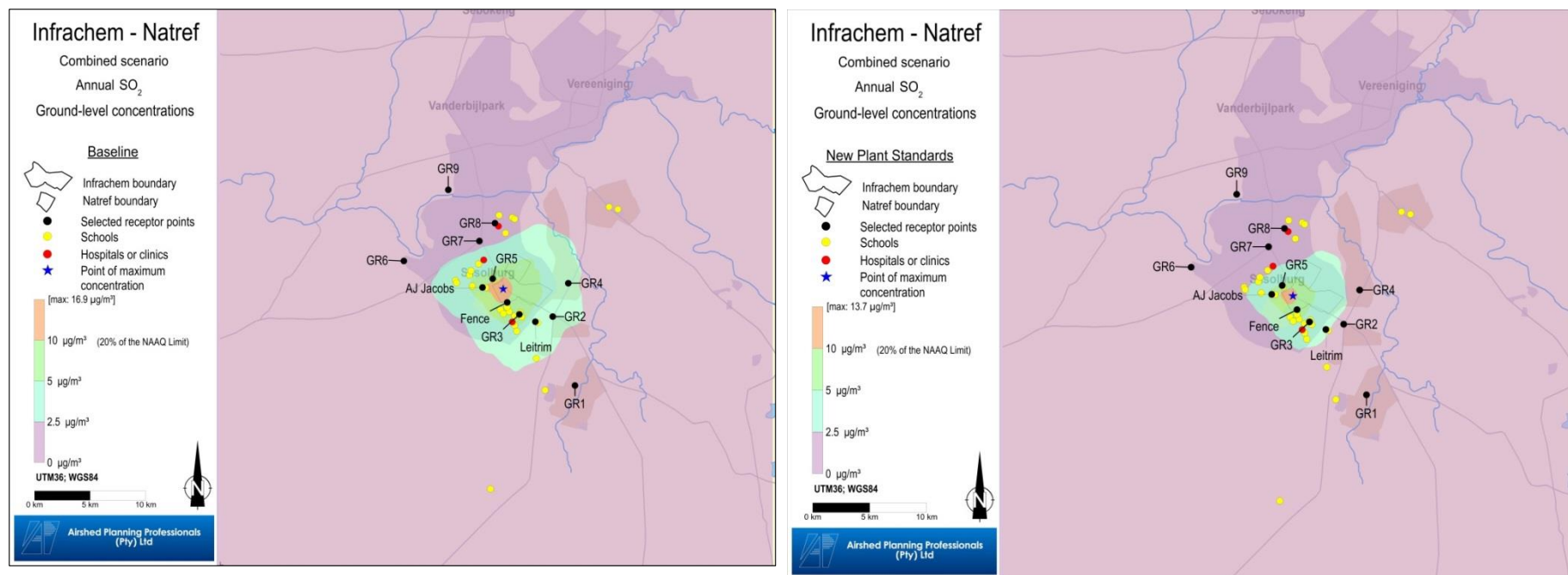


Figure 5: Predicted annual SO₂ concentrations as a result of the combined impact of Sasol Infrachem and Natref baseline (left) and compliance emissions (right)

Section 2: PM results

The combined scenarios depicted on the isopleth plots hereunder show the baseline emission PM impacts for the daily (Figure 6) and annual (Figure 7) modelled PM. As explained above, only the baseline scenario was assessed in the case of PM, which shows a relatively limited combined impact, at no more than 1% of the NAAQ limit.

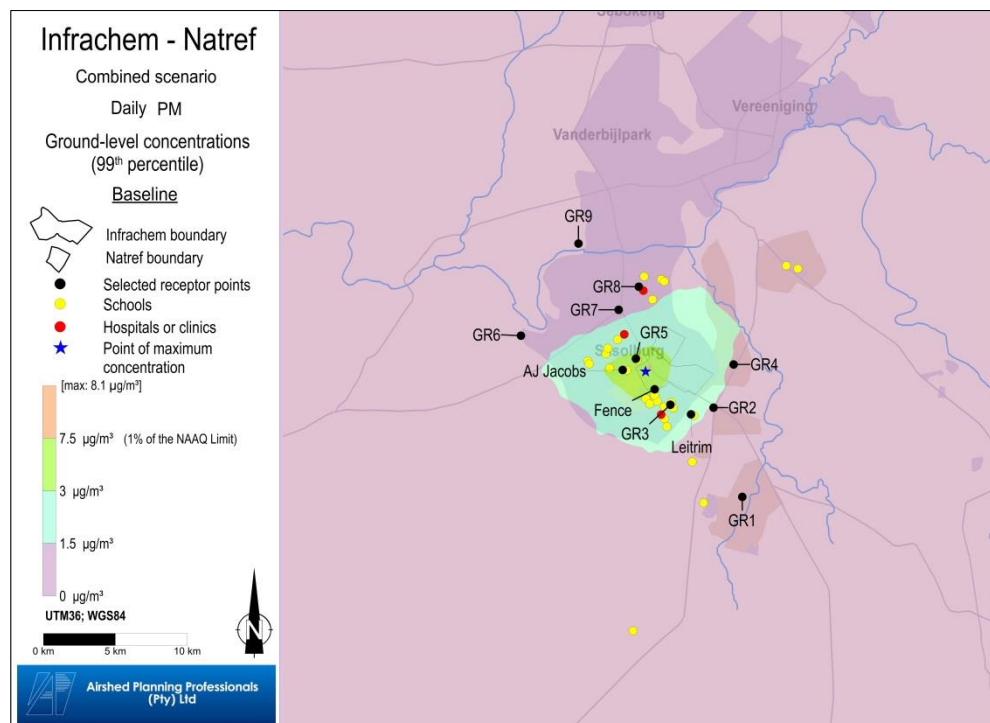


Figure 6: Predicted daily PM concentrations as a result of the combined impact of Sasol Infrachem and Natref baseline emissions

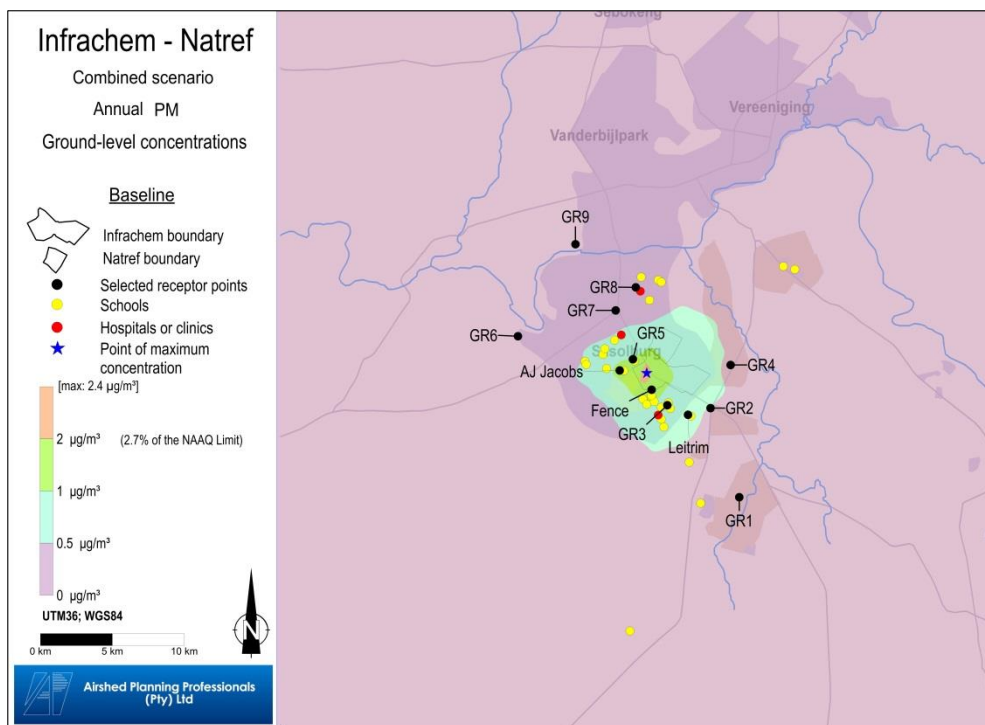


Figure 7: Predicted annual PM concentrations as a result of the combined impact of Sasol Infrachem and Natref baseline emissions

Annexure 5: Information pertaining to upset conditions

Natref Shutdown Additional Information

Natref schedules Units Turnaround and Inspection (T&I) shutdowns are scheduled for every 3 - 4 years. The T&I shutdowns on specific units during 2014 were as follows:

- Distillate Hydrocracker /RDC Block T&I in May/June 2014
- Alkylation Unit / Fluid Catalyst Cracking (FCC) T&I – Oct/Nov 2014

The Crude Distillation unit (CDU) T&I is currently planned for 2017.

For further information on the unit processes is provided in Section 2.2 of the AIR.

During October and November 2012, the Natref Refinery had a total shutdown that typically is scheduled every 9 years. All the refinery units are involved in a total shutdown. Since all units are on shutdown, there is no adverse impact on SO₂ emissions. The next total refinery shutdown is scheduled to be done in 2021.

The shutdowns for 2013 are shown in the table below:

Refinery Shutdowns for 2013		
Date	Reason for Shutdown	Ambient Impacts
March 2013	Fluid Catalyst Cracking (FCC) shutdown to replace cat-cooler	Ambient impact due to increased flaring, flare noise, reduced SO ₂ emissions
Oct 2013	Fluid Catalyst Cracking (FCC) shutdown to replace cyclones	Ambient impact due to increased flaring, flare noise, reduced SO ₂ emissions
March 2013	Reduced Crude Desulfurisation (RCD) Catalyst change which occurs every 6 months	Reduced SO ₂ emissions
Sept 2013	Reduced Crude Desulfurisation (RCD) Catalyst change which occurs every 6 months	Reduced SO ₂ emissions
March 2013	Unplanned Sulfur Recovery Unit (SRU) shutdown due to blockage	Elevated SO ₂ emissions to atmosphere due to SRU shutdown