

# **Final Motivation for Postponement of Compliance Timeframes in terms of selected NEM:AQA Section 21 Minimum Emissions Standards for their operation in Secunda, Mpumalanga Province**

## **FINAL COMMENT AND RESPONSE REPORT**

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

Please note that during the time of the public meetings (May 2014), Sasol 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 Sasol 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, Sasol will submit these as additional postponement applications.

The comments have been categorized as follows, and include responses from the Sasol 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)**
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- Annexure 5: SRK Response Letter – Mr Breetzke**
- Annexure 6: Written Submission- Legal Resources Centre (June 2014)**
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- Annexure 8: Information pertaining to upset conditions**

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<b>1 APPLICATION PROCESS</b>					
What are the legal requirements for postponement and exemption <sup>1</sup> ?	Mr P Breetzke	Landowner	25 Sept 2013	Written Comment (Email) (See Annexure 5)	As per written comment.
Why is Sasol applying for postponement and exemptions <i>(please refer to footnote 1 on page 1)</i> ?	Mr P Breetzke	Landowner	25 Sept 2013	Written comment (Email) (See Annexure 5)	As per written comment.
When did Sasol's application process start and what are the results?	Mr Sithabeleng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	The application process for postponement of compliance timeframes for some emission sources, and exemption from the default application of the MES for other sources, commenced in September and October 2013. It is expected that the public participation process will conclude by mid-2014. The results of the first round of public participation and commenting period as well as the results of the AIR prepared consequent upon studies conducted by independent specialists are included in the draft Motivation Report.
Please provide details of which plants and processes require postponements and exemptions, as well as the implication of draft legislation. <i>(please refer to footnote 1 on page 1)</i>	Mr Sithabeleng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	Details of which plants and processes requirement postponements and exemption have been provided in the draft motivation reports. The implications of the amendments to the MES have been to delay Sasol's application process, since the applications were initially drafted in terms of the 2010 MES (because at the time, amendments to the MES were only in draft form), and the draft applications have now been aligned with the amended 2013 MES. Draft legislation has accordingly fallen away in the interim. The delay in Sasol's application process was communicated to stakeholders in January 2014.
What is Sasol's timeframes for implementation of off-set programmes?	Mr Sithabeleng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	Sasol is supportive of appropriate alternative compliance mechanisms to achieve the objectives of the Constitution (including section 24), the NAQF and the NEMAQA, and continues to engage with the Department of Environmental Affairs on this matter, to advance a regulatory mechanism for offsets. It is clear from the AIR prepared for

<sup>1</sup> Sasol's previous exemption applications will now be submitted as additional postponement applications.

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					<p>Sasol's application, as well as other air quality assessments, that one of the most significant air quality challenges on the Highveld is ground-level emissions of PM from domestic fuel use and the exposure of communities to the same.</p> <p>There is a significant way to go in the development of a regulatory offset regime, and much work needs to be done to inform a sustainable mechanism. In the absence of a regulatory framework, there are no fixed timeframes for offsets.</p>
If there is postponement, when will the research be completed and what are Sasol's timeframes for compliance?	Mr Sithabeleng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	In terms of Regulation 13 of GN 893, a postponement of five years can be granted, per application. Hence, where Sasol has determined that compliance can sustainably be achieved, but not within the prescribed timeframes, postponements are requested. (i.e. up to 1 April 2020, which is five years from the compliance timeframe for existing plant standards). In some instances, Sasol may be required to seek more than one postponement. This means that Sasol has identified feasible technologies for compliance, or has reason to believe that feasible options for compliance exist. In these cases, Sasol commits to compliance with the MES along appropriate timeframes which allow for these complex projects to be implemented and integrated within the existing brownfields facility. Sasol's experience is that projects of this complexity take in the region of ten years to implement.
Sasol fails to explain which exemptions <sup>2</sup> 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 Annexure 1)	<p>Page 9 of the BID indicates that the draft motivation reports, to be shared with I&amp;APs in the second round of stakeholder engagement, will include details on each of the specific applications for postponement or exemption, including the facilities and substances in consideration.</p> <p>Details of Sasol's applications for postponement and exemption, including for which facilities and substances these applications are made, have been provided in the draft motivation reports.</p>
There is no legislative provision that permits Sasol to "off-set" its non-	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as	There is no legislative provision currently which permits offsetting of compliance obligations for the MES, as GroundWork indicates. The

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compliance with MES by reducing other emission sources contributing to ambient air quality.				Annexure 1)	<p>legislation does however provide for postponements and exemptions from the MES.</p> <p>Nevertheless, as a responsible corporate citizen, Sasol supports the development of a regulatory framework for air quality offsets as a sustainable, practicable and reasonable alternative compliance mechanism in instances where compliance to the MES is not feasible.</p> <p>Sasol believes that properly structured environmental offsets, executed within a clear regulatory framework, supporting a well-defined business case for investment, can result in improvements that go beyond benefiting the environment: these projects have the potential to create sustainable social and economic benefits as well. Sasol furthermore believes that offsets may provide a more significant improvement in air quality, with direct health benefits, than compliance with the MES.</p>
<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 timeframes, the list of activities makes no provision for exemption<sup>3</sup> compliance.</p>	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter - full text included as Annexure1)	<p>Section 59 of NEMAQA makes provision for exemption from application of any provision to NEMAQA, except for sections 9, 22 or 25.</p> <p>The provision for exemption is described on page 4 of the BID, as well as in the applicable Sasol draft motivation reports.</p>
The BID mentions that the requirements for postponement of MES	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	Sasol supports the view that the Framework is a binding instrument on organs of State under the NEMAQA.

<sup>3</sup> Sasol's previous exemption applications will now be submitted as additional postponement applications

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<p>compliance timeframes, as set out in the Framework for Air Quality Management, provide a <b>guideline</b> 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 Sasol's application, and it is not a mere guideline.</p>					
<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>Sasol has made commitments under the Highveld and Vaal Triangle priority areas, and is on track to meet these obligations. Sasol's applications for exemption do not affect any of these prior commitments.</p> <p>In accordance with Regulation 12 of the MES, Sasol 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>

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Why is Sasol not complying to the MES?	Mr Derick Erasmus	Templemore Trading	23 April 2014	Written comment (email)	<p>The motivation reports include reasons for the applications. Sasol remains committed to delivering reasonable and sustainable improvements in air quality management across its operations. The applications for postponement or exemption must accordingly be seen in context. Many of Sasol's activities will comply with the compliance time frames contained in the MES, and in other instances activities will comply with the standards over time, and here Sasol applies for postponements. It is only for certain point sources where Sasol will not be able to feasible comply with the standards through presently available technologies. In these instances Sasol proposes compliance to alternative emission limits and alternative special arrangements which could be included in its Atmospheric Emissions Licences, as licence conditions with which it must comply.</p> <p>Sasol does not, by making these applications, seek to increase emission levels relative to its current emissions baseline.</p> <p>Refer to the motivation report for Sasol's roadmap to sustainable air quality improvement.</p>
Is Sasol applying to exceed the new MES?	Mr Derrick Erasmus	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>Through Sasol's proactive environmental improvement philosophy, some point sources will comply with the new MES within the prescribed timeframes.</p> <p>In the case of postponement applications, Sasol is able to comply with the new MES, but needs extension of compliance timeframes in order to successfully complete the necessary retrofitting of emissions abatement equipment.</p> <p>Sasol is applying for exemption in cases where it will not comply with the new MES, and proposes compliance to reasonable alternative emission limits and alternative special arrangements which could be included in its Atmospheric Emissions Licences, as licence conditions with which it must comply, as indicated in the motivation reports. It should be noted that Sasol does not, by making these applications, seek to increase emission levels relative to its current emissions baseline.</p>
What was the reason for Government to do away with the old MES, promulgating the new	Mr Derrick Erasmus	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>NEM:AQA was promulgated as a specific environmental Act under NEMA, in 2004. This change in legal framework necessitated development of applicable environmental regulations, including the MES, among others. The MES were initially promulgated in 2010. An</p>

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MES, and expecting industry to comply to it.					amendment process commenced shortly thereafter, which concluded with amended standards being promulgated in November 2013. The MES require existing plants to meet existing plant standards by April 2015, and to meet more stringent new plant standards by April 2020.
Why does Sasol need to lodge an application to exceed the statutory limits? Is Sasol unable to control its emissions and are they exceeding the limits because they cannot comply?	Mr Ian Ross	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	The reasons for which Sasol applies for certain exemptions from default application of the MES, are detailed in the applicable motivation reports and associated technical appendices.  Sasol monitors and manages its emissions emanating from its petrochemical conversion processes, and in terms of the exemption application, seeks to commit to compliance with alternative emissions limits proposed by it.
Why does it take 13 years for Sasol to plan retrofitting of their operations?	Mr Ian Ross	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	Project schedules are a function of numerous factors such as the identified solution's complexity, including its number of interfaces with surrounding processes, and upstream and downstream process impacts. Such complexities are typically higher in a brownfields environment (existing plants) than for greenfields projects (new plants). In Sasol's experience, timeframes for implementation of capital projects on its brownfield sites very often exceed five years, and frequently also exceed ten years.  The specifics of each postponement requested is detailed in the technical appendix accompanying the postponement motivation report.
Has Sasol not wilfully complied with environmental legislation in the past?	Mr Ian Ross	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	Sasol has never wilfully not complied with any environmental legislation. It is precisely for this reason that it proactively lodges postponement and exemption applications, to facilitate compliance with the new MES, in cases where compliance with prescribed emission limits, or within the prescribed timeframes, cannot be achieved.
The new MES was promulgated in 2010 for industry to adhere to by 2015. Why has Sasol not started investigating solutions for compliance by 2015? Industry has had ample time to budget and plan for retrofitting that	Mr Thomas Mnguni	Greater Middelburg Residents' Association	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	Sasol has been conducting technical investigations to examine emission abatement options, but without firm scope being set through finalised standards, technology design basis decisions could not be taken, and hence projects could not (in most instances) be advanced further. Although the MES were published in 2010, these soon thereafter entered a process of amendment, which was finalized in November 2013.  In some cases, particularly where internal targets for emission reduction had already been set, projects continued regardless of not

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could have been implemented during scheduled maintenance.					<p>having finalised standards, aligned with Sasol's risk-based approach to emissions improvement, and reductions informed by Best Practicable Environmental Option for each point source.</p> <p>Where compliance with the 2013 MES has been identified to be feasible, projects are proceeding, and in some instances will require postponements to allow for implementation.</p> <p>As detailed in the postponement motivation report and its technical appendix, in Sasol's experience, timeframes for implementation of capital projects on its brownfield sites very often exceed five years, and frequently also exceed ten years.</p>
What is the legal basis of Sasol's applications for postponements and exemptions <sup>4</sup> , since the Highveld Priority Area is not in compliance with ambient air quality standards? Emissions in the airshed are at a level far above allowable limits. Emissions must be minimized, especially toxic pollutants.	Mr Thomas Mnguni	Greater Middelburg Residents' Association	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>This interpretation of the National Framework is incorrect. 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 have been made available to stakeholders. These will enable the National Air Quality Officer (NAQO) to make a determination on whether postponements are justifiable.</p> <p>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.</p> <p>Regarding compliance with NAAQS, as reported in the AIR, measured ambient air quality from the three Sasol monitoring stations is seen to comply with the NAAQS and other health risk screening limits in the cases where NAAQS do not exist - the exception being for PM<sub>10</sub>. Given the high background loading of PM<sub>10</sub>, Sasol maintains control of PM emissions from the Secunda complex. Modelling of PM emissions from the Secunda complex reveals low resultant concentrations of ambient PM<sub>10</sub>, even when the chemical transformation of SO<sub>2</sub> and NO<sub>x</sub> into particulates is considered. This implies that reducing PM<sub>10</sub> emissions from Sasol Synfuels activities will not reduce ambient concentrations of</p>

<sup>4</sup> Sasol's previous exemption applications will now be submitted as additional postponement applications



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					<p>PM<sub>10</sub> significantly, and will not result in compliance with the NAAQS given other dominant sources of PM.</p> <p>The AIR as well as other air quality assessments, conclude that one of the most significant air quality challenges on the Highveld is ground-level emissions of PM<sub>10</sub> from domestic fuel use. Sasol therefore believes that “air quality offsets” could provide significant air quality improvements with associated community health benefits, particularly in our priority areas. Offsets, if clearly defined in scope and properly supported by regulations providing long-term incentives for investment, may provide a more significant improvement in air quality, with direct health benefits, than even full compliance with the MES.</p>
Exemptions should not be granted for compliance with the MES for Sasol and 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 6)	<p>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.</p>
The applications made by Sasol and Natref cannot comply with the requirements for postponement of compliance time frames 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	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	<p>This interpretation of the National Framework is incorrect. 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 have been made available to stakeholders. These will enable the National Air Quality Officer (NAQO) to make a determination on whether postponements are justifiable.</p> <p>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.</p>

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<p>air standards.</p> <p>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 Secunda and Sasolburg and since SO<sub>2</sub> and NO<sub>2</sub> convert to PM, every request for postponement for a limit on a criteria pollutant (i.e. PM, SO<sub>2</sub>, NOX) 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 NAAQSs in both Sasolburg and Secunda</p>					
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 6)	Sasol 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.
SO <sub>2</sub> and NO <sub>x</sub> converts to PM, since PM is not in	Angela Andrews	Legal Resource	16 June 2014	Written submission (Full text included as Annexure 6)	Please refer to Section 5 of the AIRs for Secunda, Sasolburg and Natref, where results for ambient particulate matter impacts from the

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compliance, postponements and exemptions should not be granted for SO <sub>2</sub> and NO <sub>x</sub> . It is noted that the conversion of SO <sub>2</sub> emissions from a refinery is not a trivial matter. SO <sub>2</sub> emissions are much more than PM emissions from a refinery, as shown in AIRs. So, even if a relatively small fraction of SO <sub>2</sub> emissions from the refinery converts to ultrafine particulate matter, then the refinery's SO <sub>2</sub> emissions can indirectly contribute as much to ambient levels of PM than PM emissions do directly.		Centre			facilities expressly include an estimation of the conversion of SO <sub>2</sub> and NO <sub>x</sub> to particulates.
Sasol and 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:	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	<p>Sasol and 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.</p> <p>Sasol and 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.</p> <p>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, Sasol and Natref are suggesting speed limits which are grounded in sound principle in respect of their operations.</p>

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<p>1) Where emissions cause non-compliance with the NAAQs;</p> <p>2) When the costs of the abatement are “justified” and</p> <p>3) When the abatement results in material improvements to ambient air quality.</p> <p>Each of these three requirements, 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.</p>					
<p>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</p>	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	<p>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.</p>

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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.					
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:	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	It is noted that these are considerations to be taken into account by DEA.

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<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>					
<p>Sasol's approach violates NEMA principles as follows:</p> <ul style="list-style-type: none"> <li>a risk adverse and cautious approach, which takes into account the limits of current knowledge about consequences and decisions and actions, be applied</li> <li>negative impacts on the environment must be minimized and prevented where possible</li> <li>The polluter pays principle must be applied, which states that the polluter must pay for the cost of remedying pollution, environmental</li> </ul>	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	<p>Sasol's approach is consistent with the NEMA principles. The NEMA principles, amongst other things, are considerations to be balanced and taken into account by decision makers on Sasol's applications.</p> <p>The National Framework and AIR Regulations require that applications for postponements take cognisance of the NAAQS.</p>

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degradation and health effects The goal of NEMA is to minimize pollution – the NAAQS cannot be viewed as ceiling limits.					
Only when the NEM: AQA is read in conjunction with the framework, does it become clear that provisions have been made for postponements or exemptions, provided the ambient air quality of the area is in compliance with the standards set. What informed Sasol's applications and what forms its legal basis, since all areas in which it Sasol operates do not comply with ambient air quality standards. In addition, no air quality improvements have occurred within the Vaal Triangle Priority Area or the Highveld Priority Area?	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	<p>This interpretation of the National Framework is incorrect. 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 have been made available to stakeholders. These will enable the National Air Quality Officer (NAQO) to make a determination on whether postponements are justifiable.</p> <p>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.</p>
Are the ceilings limits of Sasol's emissions above the ceiling limits set by the MES?	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	Sasol has made application for postponement or exemption for those point sources where Sasol's emissions exceed the prescribed emission limits (stipulated as ceiling emission limits), as described in detail in the motivation reports. Sasol has not made application where its emissions are in compliance with the standards, or where compliance can be achieved within the prescribed timeframes.
Sasol is not operating within the MES and is applying to emit a larger	Mr Thomas Mnguni	Greater Middelburg Residents'	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	<p>Sasol will not, through its applications, increase its average baseline emissions.</p> <p>Please refer to the motivation reports for a summary of the roadmap to</p>

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amount of pollutants, with no legal basis.		Association			sustainable air quality improvement for all sites making applications.
The time afforded to Sasol for retrofitting its plants was sufficient. If this time was spent productively, there would not have been any need for postponement applications.	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	The reasons for applying for postponements are set out in the motivation reports.
Which of Sasol's operations are applying for exemptions and postponements, or is Sasol applying for blanket exemptions and postponements?	Ms Ndivile Mokoena	Justice and Peace Commission of the Catholic Church	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	Situated in Ekandustria, the Sasol Nitro Plant is applying for a single postponement for a single point source, and will become fully compliant by 1 April 2020 at the latest. In Sasolburg, there is one application for a postponement, and one for exemptions, for certain point sources. In Secunda, there is an application for postponement and exemption. Please refer to the motivation reports, which provide detailed reasons for these applications, and which outline a roadmap to sustainable air quality improvement per site.
Is it possible for Sasol to comply with air quality standards, without applying for postponement and exemptions?	Ms Ndivile Mokoena	Justice and Peace Commission of the Catholic Church	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	Sasol has made application for postponement or exemption for those point sources where Sasol's emissions exceed the prescribed emission limits for (stipulated as ceiling emission limits), as described in detail in the motivation reports.  Sasol has not made application where its emissions are in compliance with the standards, or where compliance can be achieved within the prescribed timeframes.  The motivation reports provide reasons for these applications, and Sasol's roadmaps for sustainable air quality improvement.
What are the differences between legislation promulgated in 2010 and the latest legislation promulgated in 2013 for the Secunda application?	Ms Nomcebo Makubela	Mpumalanga Youth Against Climate Change	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	A number of changes were introduced in different categories within the MES.  For the Secunda postponement application, the changes which affected the applications were introduced in Categories 3.6 (synthetic gas production and clean up) and 8.1 (thermal treatment of general and hazardous waste) of the 2013 MES. Details are included in the postponement motivation report.



Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<b>2 STAKEHOLDER ENGAGEMENT</b>					
Is the Background Information Document (BID) for the application process and other documentation forwarded to Interested and Affected Parties confidential?	Mr P Breetzke	Landowner	25 Sept 2013	Written comment (Email) (See Annexure 5)	As per written comment.
Will Sasol provide answers to questions from stakeholders prior to the public meetings?	Mr P Breetzke	Landowner	25 Sept 2013	Written comment (Email) (See Annexure 5)	As per written comment.
Will comments and questions from stakeholders be submitted to the DEA and can stakeholders submit questions and comments directly to the Minister?	Mr P Breetzke	Landowner	25 Sept 2013	Written comment (Email) (See Annexure 5 )	As per written comment.
Why will the public meeting in Secunda only be held in eMbalenhle?	Mr P Breetzke	Landowner	25 Sept 2013	Written comment (Email) (See Annexure 5)	As per written comment.
It is not agreed that SRK is independent, based on relationships with their clients, which is driven by profit.	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	SRK is independent of Sasol. Neither company owns shares in the other, and no employees of SRK are employees of Sasol. SRK's only interest in Sasol's application are the professional fees they will be paid if they fulfil their brief. The issue of independence is defined very clearly in the Environmental Impact Assessment Regulations, and there is no conflict on that basis.
Sasol must inform communities of public meetings at least a week in advance to ensure satisfactory attendance.	Mr Billy Majola	Sasol Community Working Group (SCWG)	15 Oct 2013	Written comment (Email)	Stakeholders were informed of public meetings via newspaper advertisements, and invitation letters during the second week of September 2013. In addition, BIDs and letters informing stakeholders of public meetings were also delivered to the Secunda public library and the Govan Mbeki Local Municipality during the second week of September. This information was also available on the SRK website. A similar process will be conducted for purposes of future meetings.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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)	<p>Pages 8-11 of the BID indicate that the draft motivation reports, to be shared with stakeholders during the second round of stakeholder engagement, will include details on each of the specific applications for postponement or exemption.</p> <p>The first round of stakeholder engagement and the information contained in the BID is to inform the public of Sasol'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.</p>
The Terms of Reference (ToR) for the motivation reports and AIRs of each operation must be made available for public comment.	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	<p>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.</p> <p>A plan of study for the AIRs is included in Sasol'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 Sasol, and reviewed by SRK Consulting. As such, no terms of reference were prepared.</p>
It seems as if Sasol will not be inviting public participation 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.					<p>The study has abided with the Draft Dispersion Modelling Guidelines, as referenced by the Atmospheric Impact Report Regulations which were promulgated in October 2013.</p> <p>A plan of study for the AIRs is included in Sasol'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.</p>
The public comment period of 30 days on the AIR and CRR is hopelessly inadequate and would deprive stakeholders of the right to	Mr Bobby Peek	GroundWork	15 Oct 2013	Written comment (Letter – full text included as Annexure 1)	<p>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.</p> <p>Accordingly, 40 working days will be provided for public commenting during the second round of stakeholder engagement, from 15 April</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
have a reasonable opportunity to comment. A comment period of at least 90 days is requested.					2014 to 13 June 2014.
All Atmospheric Emission Licences, monitoring and government inspection reports for all the various processes seeking postponement and exemptions <sup>5</sup> 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 today.	Mr Bobby Peek	GroundWork	20 December 2013	Telephone call to project team	Sasol provided feedback to the request by GroundWork on 20 December 2013. This letter is attached in Annexure 1.
It is unacceptable that Sasol has failed to date to recognise Templemore Trading as its direct neighbour, adjacent to the Charlie 3 gate. We have been operating from this property for 25 years. Templemore received correspondence from SRK Consulting regarding the Sasol applications by accident. Templemore is a registered company with registered title deeds.	Mr Ian Ross	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	When the stakeholder engagement process commenced, adverts notifying stakeholders of Sasol's application process were placed in various national and local newspapers to invite stakeholders to participate in the process. Information letters were sent to identified stakeholders. Notifications requested stakeholders to register as Interested and Affected Parties (I&APs) in order to receive further information on Sasol's applications. After conclusion of the first round of stakeholder engagement additional stakeholders were identified and the mailing list was updated. The process of identifying stakeholders is an iterative process. Deed searches were undertaken to identify landowners adjacent to Sasol properties, but in some cases the information on the deeds are incorrect, or no information was available regarding ownership of properties. Templemore Trading was identified in the Deed search, but no contact details were available in the deed

<sup>5</sup> Sasol's previous exemption applications will now be submitted as additional postponement applications

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
Perhaps various other neighbours of Sasol have also not been identified or notified of the application process.					information. Nevertheless, Templemore Trading has been identified and notified of Sasol's applications, and SRK and Sasol welcome Templemore Trading's participation in the public consultation process.
My colleague, Mr Derrick Erasmus, was informed about Sasol's applications, after which my contact details were provided to SRK to be registered as an I&AP. Correspondence was still sent to Mr Erasmus, instead of myself. I have not received information on the Sasol applications, with the exception of an SMS informing me of the public meeting.	Mr Ian Ross	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	Your contact details have been added to the stakeholder database when you registered in February 2014 and project information was forwarded to the email address provided. The stakeholder engagement office has a record of communication regarding Sasol's application process to you on 25 February 2014, 1 April 2014, 6 May 2014, 15 May 2014 and 21 May 2014. Various telephonic communications between yourself and the stakeholder engagement office have been recorded. It must be noted that the stakeholder engagement process is an ongoing process and stakeholders are welcome to register throughout the application process to receive information on Sasol's application process and to participate in this process.
Grondeienaars aangrensend aan Sasol se bedrywighede is oorwegend Afrikaanssprekend. Die kommentaar is al in die verlede gelug. Dit will voorkom of dit nie in aanmerking geneem word nie, aangesien die voertaal van die vergadering in Engels is.  <i>(Landowners surrounding Sasol's operations are predominantly Afrikaans-speaking. This comment has been raised in the</i>	Mr Attie Jankowitz	Farmer	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	You are welcome to submit comments in Afrikaans. Various documents such as the Background Information document, comment sheet, invitation letters and adverts regarding Sasol's application process have been translated into a number of official languages for those stakeholders who request it.  <i>U is welkom om kommentaar in Afrikaans te lewer. Verskeie dokumente soos die Agtergrond Inligtingsdokument, kommentaarvorme, uitnodigingsbriewe en advertensies rakende Sasol se aansoekproses is in verskeie tale vertaal, op versoek van belanghebbende partye.</i>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<i>past. It seems as if this has not been taken into consideration, as the language used at public meetings is English.</i>					
The presentation contains too much technical information. Applicable legal and process terms should be explained in lay man's terms before technical information is presented. Stakeholders should be made aware that the constitution gives citizens the right to a healthy environment, but a balance between economic gains and environmental protection must be maintained. Currently the way the information is shown it seems as if Sasol wishes to increase its emissions, even if that is not the case.	Mr Daniel Hlanyane	Gert Sibande District Municipality	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>This comment has been addressed within Sasol's motivation reports. Regarding the manner in which Sasol's atmospheric dispersion modelling results are presented, the duty of the independent consultant appointed for this purpose is to illustrate a reasonably conservative assessment of potential ambient impacts, for the safe-guarding of community health, particularly vulnerable populations. On this basis, and aligned with the Dispersion Modelling regulations, all results are portrayed as 99<sup>th</sup> percentile values, discarding the highest 1% values for statistical purposes. In the case of Sasol's proposed alternative emissions limits, Sasol has provided information regarding the maximum emission concentration under any normal operating conditions, and the dispersion model results for these worst-case scenarios have also been presented at 99<sup>th</sup> percentile values. This conservative approach gives comfort that even under the worst meteorological conditions, combined with highest expected emissions over any given short-term period, the ambient impacts have been considered.</p> <p>In practice, for the vast majority of the time, the ambient impacts are expected to be lower than what is portrayed by the alternative emissions scenarios.</p>
Please note the statement in the Infotox Toxicological review. "It is a criminal offence to public this document or any part of the document under a different cover, or to reproduce and/or use, without written consent, any technical procedure and/or technique	Ms Angela Andrews,	Legal Resource Centre, Cape Town	9 June 2014	Written comment Written submission (Full text included as Annexure 6)	Dr Willie van Niekerk has provided his permission for stakeholders to quote from his report, provided that their written comments are submitted via SRK to Sasol, as SRK has been appointed to facilitate the stakeholder engagement process for the application process. Stakeholder comments will be recorded in the Comment and Response Report of the Motivation Reports for the different operations, and responses will be provided by the project team.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
contained in this document. If this document is confidential, on what basis can we comment on it, especially as it threatens criminal proceedings if the report is used? We have to quote from it to comment on it in the Sasol applications. Please obtain Dr van Niekerk's permission to comment on his report in advance.					
In which newspapers did you advertise Sasol's application process?	Ms Ndivile Mokoena	Justice and Peace	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	The application process was advertised in the Sunday Times, Beeld, Vaal Weekblad, Puisano (Sasolburg area), Ekasi News, Ridge Times (Secunda area) and Streeknuus (Bronkhorstspuit area).
What other methods were employed to inform stakeholders of Sasol's application process?	Ms Ndivile Mokoena	Justice and Peace	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	Sasol is following an application process aimed at meeting the requirements in the NEM:AQA and NEMA. All stakeholder comments and concerns raised during the stakeholder engagement process will be recorded in a Comment and Response Report (CRR) that will accompany Sasol's applications to authorities. Stakeholders were afforded a range of opportunities to participate in the process, such as notification in the media, and invitation letters were sent to stakeholders via, email, or post or fax to invite them to attend public meetings during October 2013 and May 2014. Stakeholders were reminded of these meetings via telephone calls and SMS notification. In addition, stakeholder engagement documentation such as a Background Information Document (BID), draft motivation reports and AIRs were made available for public comment in public places near each of Sasol's operation. These documents were also made available on the SRK website and copies of reports could be requested from the stakeholder engagement office. Stakeholders were invited to request focus group meetings for more in-depth discussions be required with Sasol about their applications and they were also invited to submit written and telephonic comments to the stakeholder engagement office. The stakeholder engagement process followed was an iterative and

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
					inclusive process.
How successful were the public meetings with regard to attendance of community members at grass root level?	Ms Ndivile Mokoena	Justice and Peace	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	During the first round of engagement public meetings were held in communities, such as Zamdela (Sasolburg), Embalenhle (Secunda), but were not well attended. Mobilisation efforts were increased and venues were changed for the second round of engagement, which resulted in greater stakeholder attendance. Public and focus group meetings are only two ways in which comments are solicited, whilst provision was allowed for written submission and telephonic consultation. All comments, including written submissions, are recorded in the CRR. Many organisations expressed the preference to submit written submissions instead of attending meetings. Written submissions were also received from individual stakeholders and comments were also received via the comments sheets.
Attendees of the public meetings are not representative of the demographics in the affected areas.	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	A wide range of stakeholders representing various sectors of society (such as government, non-government organisations and environmental groups, business, community based organisations etc) were invited to participate in Sasol's application process and many did participate to date. Stakeholder engagement is voluntary process in which stakeholders can choose their preferred manner of participation, including the choice not to participate in this process. Organisations representing communities were received and addresses in the CRR.
Stakeholders are not able to participate meaningfully in this process, as the information presented to them is too technical. It is proposed that Sasol undertake capacity building and education initiatives regarding emissions and technical terminology in the affected communities surrounding their operations to enable communities to participate more effectively. In	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	Sasol acknowledges that the content of the applications are of a technical nature, and these follow the requirements of the AIR Regulations.  The purpose of the public participation process is to provide information on the applications, which includes the impact of Sasol's emissions. Information regarding Sasol's application process and the impacts of its emissions were made available to the public in the Stakeholder Report and AIR respectively, both of which are summarised in the motivation reports.  Sasol takes note of your concern regarding capacity building and will consider capacity building initiatives going forward.



Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
addition, Sasol must disclose its application process, the resulting emissions and its impacts on affected parties.					
Who made the decision that the commenting period on reports should only be 40 days?	Mr Dennis Martin	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	Comment periods are stipulated by the National Environmental Management Act (NEMA). Under normal circumstances the comment period is 40 calendar days, but Sasol made an exception by giving 40 working days, taking into account the Easter holiday and other public holidays.
The comment period does not provide sufficient time for stakeholders to consult with experts to verify information, such as air dispersion modelling results, to ultimately make informed comments.	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	After the 40-day commenting period had lapsed, comments can still be submitted to the decision-making authority. A peer review of the dispersion modelling methodology was undertaken to ensure that the results are reliable.
Were the reports translated into other languages, to assist people who are not English-speaking to understand project material?	Ms Ndivile Mokoena	Justice and Peace Commission of the Catholic Church	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	During the stakeholder engagement phases of Sasol's application process, newspaper advertisements and project information such as BIDs, invitation letters and comment sheets were translated into Afrikaans, Sotho and isiZulu. In addition, Afrikaans, Sotho and isiZulu translators were available at the first round of public meetings, but translation of information into these languages was not required during these meetings. English has been the language of communication during the second round of public meetings, but stakeholders were also encouraged to comment in languages other than English. .
<b>3 ENVIRONMENTAL ISSUES</b>					
<b>3.1 AIR QUALITY</b>					
What are the current emissions at the Secunda Plant?	Mr P Breetzke	Landowner	25 Sept 2013	Written comment (Email)	Sasol reports on atmospheric emissions annually through the Sasol Sustainable Development Report, which is a publicly available document, and at public meetings in the communities in which it operates.  The most recent Sustainable Development Report is available at the following link:



Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
					<a href="http://www.sasol.com/sustainability/reports">http://www.sasol.com/sustainability/reports</a> Note that as a part of the application process, Sasol has appointed independent air quality specialists to prepare an Atmospheric Impact Report (AIR), which will provide further information about the emissions from Sasol's processes. This will be made available to the public during the second commenting period.
How will the exemption from MES, and postponement of timelines to comply with MES impact on bee farming in the area? Impacting the bee population negatively will result in negative impacts on humans as well.	Mrs Yvonne Scholly	Farmer, Secunda	10 Oct 2013	Public Meeting, Secunda	The decline of the bee population is an international environmental problem. It is also experienced in Europe and the United States. There is no certainty as to the cause of the population decline. Sasol recognises the importance of bees in ensuring a functioning biodiversity, however, any link between air quality and impact on bee farming has yet to be conclusively established. Sasol continues to provide support for further work in understanding the ecological impacts of pollution.
Indicate what and how much of the emissions in the area are from Sasol. The meeting presentation places too much emphasis on non-Sasol sources of emissions.	Mr Sithabeleng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	Pages 4-5 of the BID indicate that Sasol's applications for postponement and exemption will be informed by the results of an independently compiled AIR, which incorporates a model to quantify the impact of Sasol on ambient air quality.
There are concerns that Sasol is not meeting the required air emission standards, and the applications do not state how the standards will be met going forward.					The reasons for Sasol's applications will be described in the motivation reports. Sasol remains committed to delivering reasonable and sustainable improvements in air quality management across its operations. The applications for postponement or exemption must accordingly be seen in context. Many of Sasol's activities will comply with the compliance time frames contained in the MES, and in other instances activities will comply with the standards over time, and here Sasol applies for postponements. It is only for certain point sources where Sasol will not be able to feasibly comply with the standards through presently available technologies. In these instances Sasol proposes compliance to alternative emission limits and alternative special arrangements which could be included in its Atmospheric Emissions Licences, as licence conditions with which it must comply.
It seems as though Sasol	Mr Augustus	The National	10 Oct 2013	Public Meeting, Secunda	

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
wants to comply with the MES legislation and its requirements, but it does not seem as if Sasol is prepared to accelerate the process of compliance. Sasol must have set targets aligned with older legislation in the past, but there is no disclosure of Sasol's targets currently set, aligned with the current legislation to be implemented in 2015 or 2020.	Dludlu	African Federated Chamber of Commerce and Industry (NAFCOC)			Refer to the motivation report that will be shared with stakeholders for public comment, regarding Sasol's roadmap to sustainable air quality improvement.
What are the challenges that Sasol faces in meeting the emission standards?	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	<p>The overarching reasons for Sasol's applications are outlined on pages 6-7 of the BID, and are detailed in the draft motivation reports available to the public during the second public commenting period.</p> <p>Sasol supports new plant standards being prescribed for new plants. Complying with new plant standards at existing plants, however, faces significant challenges, and is not, in many instances, reasonable or achievable with presently available technology, and hence is not well aligned with the intent of the NEMAQA and the National Framework for Air Quality Management in South Africa ("NAQF"). In these instances, Sasol seeks exemption from strict compliance with the stringent point source standards that have been set for existing plants, and specifically proposes compliance to alternative emission limits and arrangements</p>
What is Sasol's actual contribution to air pollution in the area?	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	<p>Sasol reports on atmospheric emissions annually through the Sasol Sustainable Development Report, which is a publicly available document, and at public meetings in the communities in which we operate.</p> <p>The most recent Sustainable Development Report is available at the following link:  <a href="http://www.sasol.com/sustainability/reports">http://www.sasol.com/sustainability/reports</a></p> <p>Note that as a part of the application process, Sasol has appointed independent air quality specialists to prepare an Atmospheric Impact Report (AIR), which will provide further information about the emissions</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
					from Sasol's processes. This will be made available to the public during the second commenting period.
Who is responsible for the evaluation and assessment of air quality at Sasol plants? Stakeholders require a monthly report to update them on air quality at Sasol plants.	Mr Billy Majola	Sasol Community Working Group (SCWG)	15 Oct 2013	Written comment (Email)	<p>Sasol has been operating ambient air quality stations at its facilities for more than 20 years. Sasol was the first industry in South Africa to embark on an ambient air pollution monitoring program and report results to communities in newsletters and other media.</p> <p>Sasol monitors emissions of regulated pollutants from its processes. The stack monitoring and the air quality monitoring stations are quality accredited and the data is used to estimate Sasol's contribution to surrounding air pollution.</p> <p>Sasol reports on atmospheric emissions annually through the Sasol Sustainable Development Report, which is a publicly available document (available for download from <a href="http://www.sasol.com/sustainability/reports">http://www.sasol.com/sustainability/reports</a>).</p>
It is agreed that there are cost implications in order to meet legislative requirements, however it is important for Sasol to consider its responsibility to humanity.	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	<p>Sasol remains committed to delivering reasonable and sustainable improvements in air quality management across its operations.</p> <p>As a responsible corporate citizen, Sasol wants to ensure that money in air quality improvements is spent wisely, and hence supports a regulatory regime that is reasonable and practicable, and which also achieves tangible and sustainable improvements in ambient air quality in investments.</p> <p>The possibility of offsets where more meaningful sustainable development benefits in terms of improved air quality and corresponding reductions in health risk can be achieved is an area of interest that Sasol would like to fully explore.</p>
Corrosion of farm fences in the area occurs due to acid rain. How will the exemption from MES and postponement of timelines to comply with MES impact on the occurrence of acid rain and how will this be mitigated?	Mrs Yvonne Scholly	Farmer, Secunda	10 Oct 2013	Public Meeting, Secunda	<p>It is recognised that acid rain arises as a result of industrial process emissions, but predicting the occurrence of acid rain remains difficult. Research done to date in South Africa on environment and ecology, has focused on soil impacts, which itself is recognised as being a very complex topic.</p> <p>Sasol continues to provide support for further work in understanding the ecological impacts of pollution.</p>
I have attached some	Mrs Yvonne	Farmer,	15 May 2014	Written comment (email –	PM <sub>10</sub> emissions are sometimes visible as a dark coloured stream as

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
photos as proof of what we are experiencing in Secunda and suffering on a daily basis as a result of Sasol's emissions. This is neither steam nor mist. We are suffering from bronchitis, chronic asthma and this cannot continue	Scholly	Secunda		refer to photos attached as Annexure 3, still to be added)	<p>shown in the photos, and are indeed different than steam (water vapour).</p> <p>Sasol conducts ambient air quality monitoring in the vicinity of its plants to track ambient air quality, including during upset conditions at the plant, to ensure that air quality does not exceed the national ambient air quality standards due to Sasol's activities.</p> <p>As part of its applications, Sasol has appointed independent specialists to prepare air pollution 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 of PM<sub>10</sub>, amongst others. The full results are included in the AIR and are also summarised in the motivation report. The study demonstrates that PM emissions from Sasol are predicted to lie well below the NAAQS, and significantly below than the measured ambient concentrations at each of the monitoring stations.</p> <p>Yet, measured PM<sub>10</sub> concentrations in the ambient environment do not comply with the NAAQS, with frequent exceedances recorded. Because of this challenge, and in knowledge that a significant contributor lies in domestic fuel burning, Sasol supports the development of a regulatory mechanism for "air quality offsets" which could provide significant air quality improvements with associated community health benefits, particularly in our priority areas.</p>
Why is there a differentiation between ceiling limits and average emissions?	Mr Attie Jankowitz	Farmer	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>The emission limits set by the MES are not prescribed in terms of the average amount of emissions, but in terms of a maximum emission concentration or "ceiling limit", which must be complied with 100% of the time (except during shut down, start up and upset conditions). In practice, this means that there is a maximum concentration limit that may not be exceeded.</p> <p>Therefore, Sasol's applications for alternative emissions limits seek to accommodate the variability of day-to-day operations, by specifying ceiling values which are not expected to be exceeded at all during normal operating conditions.</p> <p>Note that under most operating conditions and hence most of the time, it is expected that actual emissions would be below the ceiling limits.</p>
By increasing the ceiling of emissions, the average will	Mr Ian Ross	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	A ceiling limit describes the 100 <sup>th</sup> percentile (i.e. maximum) value of a distribution of values, whereas the average describes the mean of a

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
also be increased, resulting in greater impacts on the surrounding environment.					<p>distribution of values. In all cases, the maximum concentration or ceiling value would be higher than the mean concentration, from a mathematical perspective.</p> <p>Sasol has committed that its mean baseline emissions will not increase as a result of this application. It simply requests alternative emission limits informed by the ceiling emission level that could be seen under normal operating conditions (which excludes shut down, start up and upset conditions). This is done to conform to the administrative basis of the MES.</p>
There is concern that PM <sub>10</sub> levels are consistently exceeding ceiling limits set by the MES. This is often as a result of domestic fuel burning. However, there are times when domestic coal burning does not take place, but the levels of PM <sub>10</sub> still remain high. Which sources are responsible for these PM <sub>10</sub> levels?	Ms Nomsa Thabethe	Gert Sibande District Municipality	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>The purpose of the AIR was not to examine the sources of high PM<sub>10</sub> levels, but rather to analyse the contribution of Sasol to ambient PM<sub>10</sub> concentrations.</p> <p>Nevertheless, the atmospheric impact assessment does not support this statement – the data in the AIR reveals that levels of PM<sub>10</sub> exceed the NAAQS primarily in winter, and at specific times of the day, matching a domestic coal burning signature. This information is presented in the daily and monthly variation profiles.</p> <p>Further useful analysis is presented in the AIR in the form of polar plots, a modelling tool that shows the direction from which highest concentrations of PM<sub>10</sub> originate, which provides insights as to the likely sources of high ambient PM<sub>10</sub> concentrations.</p>
Was Airshed able to identify certain points or places where the plume settling concentrations of emitted pollutants are higher than others, within the area surrounding Sasol's operations? Which point or place has the highest concentration	Mr Ian Ross	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>Yes, these points of highest Sasol ambient impact are clearly visible in the graphical output of the dispersion modelling scenarios for the various sensitive receptors. The highest plume settling concentration, evident from these graphs, can be found at Bosjesspruit.</p> <p>What is also clearly visible from these graphs is that the ambient concentrations of Sasol's emissions decrease as the distance from the plant increases.</p>
Die volume suurstof wat Sasol uit die lug neem vir hul gas vervaardigings proses, asook enige ander	Mr Attie Jankowitz	Farmer	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>Sasol reports on its atmospheric emissions via its annual Sustainable Development reports, available for download from <a href="http://www.sasol.com/sustainability/reports">http://www.sasol.com/sustainability/reports</a>. The atmospheric impact report (AIR) presents predictions of the ambient impacts of Sasol's</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<p>gasse en die gevolglike vrystelling van besoedeling moet bekend gemaak word. Dit wil voorkom asof die hoeveelheid suurstof wat Sasol uit die lug neem nie beheer word nie en dat dit ook nie vervang word nie.</p> <p><i>(Sasol does not disclose the volume of oxygen that is taken out of the air for its gas manufacturing process, as well as the resulting emission of pollutants. The volume of all gasses produced and emitted by the Sasol operation should be disclosed. There seems to be no control over the amount of oxygen that Sasol removes out of the air and it is also not replaced).</i></p>					<p>modelled emissions on ambient air quality in a 50 kilometre by 50 kilometre area centred around the Secunda plant.</p> <p>Regarding the production of gases not released to atmosphere, Sasol liquefies air to extract purified oxygen as an input to its gasification process. During this air distillation process, trace gases including argon, krypton and xenon are removed as impurities. These small volumes of trace gases are sold in bulk to customers for further purification and resale.</p>
<p>Grensdraie van plase in die Karoo het 'n leeftyd van 25 jaar. Dieselfde draie het net 'n leeftyd van 5 jaar in die Secunda omgewing, as gevolg van swak luggehalte.</p> <p><i>(Boundary fences last approximate 25 years in the Karoo. The same fences last only 5 years in the Secunda area due to</i></p>	Mr Attie Jankowitz	Farmer	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>It is recognised that industrial processes contribute to acid rain, but pinpointing the sources and occurrence of acid rain, and other contributors to rust formation (including weather) remains difficult.</p> <p>Sasol continues to provide support for further work in understanding the ecological impacts of pollution.</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<i>poor air quality).</i>					
Sasol should give priority to environmental health before profits. Retrofitting does not necessarily have to be phased. If retrofitting is required to comply with legislation, the plant should be shut down to achieve this. Sasol is an international role player and shareholders must pay attention to this matter.	Mr Attie Jankowitz	Farmer	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>Sasol follows a risk-based approach to environmental improvements, and has in this regard already implemented projects aligned with its air quality priorities.</p> <p>Sasol has therefore not made any applications for postponement or exemption where it is causing exceedances of the National Ambient Air Quality Standards.</p> <p>This is supported by the findings of the independent Atmospheric Impact Report (AIR).</p> <p>The reasons for postponement applications, which are permitted in terms of the MES, are documented in the relevant draft motivation report and associated technical Annexure. Having extraordinary shut downs outside of the carefully planned, highly coordinated and integrated shutdown schedule poses not only safety risks, but potential liquid fuel security risks as well. This is therefore not considered a feasible approach.</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 Annexure 6)	<p>The alternative emission limits and alternative special arrangements proposed by Sasol 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 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.</p> <p>If no alternative emission limits were proposed, it would be tantamount to Sasol seeking a blanket exemption from complying with any standards.</p>
Since H <sub>2</sub> S does not comply with health protective air quality standards in Secunda, any request for postponements for H <sub>2</sub> S limits should be rejected.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	<p>The impact of Sasol's emissions on ambient H<sub>2</sub>S levels has been assessed by an independent specialist and the results presented in the AIR. The screening level applied in the AIR was recommended by an independent toxicologist.</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
The combination of PM and H <sub>2</sub> S not being within compliance creates a particularly unhealthy environment. All other applications should therefore also not be granted.					
It is disputed that emission of H <sub>2</sub> S from large scale industrial processes is a unique phenomenon and that H <sub>2</sub> S 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 H <sub>2</sub> S problem.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	H <sub>2</sub> S is not unique in industrial processes. However, the manner in which H <sub>2</sub> S is produced in the Sasol process is unique. The Secunda coal-to-liquid facility is the only large-scale process in existence whereby coal is gasified and converted to liquid fuels. As a result of these unique complexities, a technology solution to addressing has proved exceptionally difficult to find and implement. Sasol has clearly indicated its approach to addressing H <sub>2</sub> S in its motivation reports and associated technical appendices, and the assertions made in this regard are unfounded.
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:	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	Given Sasol's unique processes, any technology to be implemented within the Sasol plant must be specifically adapted to accommodate the Sasol process. This is detailed more fully in the motivation report and associated technical Annexure.



Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
(Sulphur Recovery Units) of the 2013 regulation. Sasol Synfuels operates at levels significantly below this standard. Operating at 95% efficiency would render emissions far closer to the emission limits of Subcategory 3.6. Emissions of H <sub>2</sub> S at such concentrations cannot be justified in locations close to large communities of vulnerable and disadvantaged persons.					
Neither postponements or exemptions should be granted from MES for H <sub>2</sub> S given the toxicity of the compound, the proximity to adjacent communities, the lack of compliance with ambient air standards both areas, the volumes of H <sub>2</sub> S emitted, and the fact that Sasol is the main emitters of this compound in the town of Secunda.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	The impact of H <sub>2</sub> S emissions on ambient H <sub>2</sub> S levels has been assessed by an independent specialist and the results presented in the AIR. Since no ambient air quality standard exists in respect of H <sub>2</sub> S in South Africa, Sasol approached an independent toxicologist to recommend a health screening level for H <sub>2</sub> S.
Hourly levels of H <sub>2</sub> S above 42 ug/m <sup>3</sup> should be considered high in South Africa. The 99 <sup>th</sup> percentile values are higher than 42 ug/m <sup>3</sup> .	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	The context of the California Ambient Air Quality Standard should be noted, please refer to the report prepared by the independent toxicologist, Infotox (pp7-8). A standard of 135ug/m <sup>3</sup> over a 4 hour averaging period was recommended as a health screening level.
It is disputed that Sasol and Natref have complied with all the other	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	Sasol has taken this concern into account in updating Section 4 of the AIR and its associated appendices.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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 Annexure 6.					
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	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	The AIR Regulations were followed in completing the AIR. Other sources were considered as they contribute to the background against which the Sasol and 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.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
applications recommend postponements or exemptions of coming into compliance with MES.					
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 6)	The cumulative impact of Sasol Infrachem and Natref has been included as Annexure 3 in the respective AIRs.
Ambient air standards are not the only measures that Sasol and Natref must comply with. Guideline values cannot fully protect human health and a precautionary approach should be followed.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	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.
The levels at which the ambient air quality standards are set in South Africa, are much higher than those recommended by the WHO. This means that industry must minimise its emissions in order to protect human health.	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	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. The AIR provides an analysis of the impact of Sasol's emissions on human health in accordance with the AIR Regulations.
The latest air monitoring data on the SAAQIS website indicate that pollutants have a regional signature, as the same amount of pollutants is emitted on a daily basis. The regional signature suggests that industry is more responsible for poor air quality, than other	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	Sasol is not suggesting that its emissions do not contribute towards the air quality within the airshed. Specific pollutants have specific footprints and are associated with specific point sources, such as vehicles, industry, veld fires and fugitive dust from gravel roads. The detailed footprints of pollutants need to be considered and understood, in order to ensure that investments are effective in delivering material ambient air quality benefits. Please refer to Chapter 5 of the AIR, where the variation of pollutants on an hourly, daily and monthly basis was evaluated. The differing signatures of industrial emissions and other sources, such as domestic coal burning, are evident in the daily and monthly variation profiles.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
sources. Sasol's modelling however suggests that other sources are more responsible, such as household conditions.					Further useful analysis is presented in the AIR in the form of polar plots, a modelling tool that shows the direction from which highest concentrations of the various criteria pollutants originate, which provides insights as to the likely sources of high ambient PM <sub>10</sub> concentrations.
Industry is shifting the blame for non-compliance with ambient air quality standards to communities.	Ms Ndivile Mokoena	Justice and Peace	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	Sasol's contribution to ambient PM <sub>10</sub> was assessed by an independent specialist, in accordance with the AIR Regulations. These results are shown in the AIR which indicates that Sasol's contribution to ambient PM <sub>10</sub> is small, even when taking secondary particulate formation into account.  The possibility of offsets where more meaningful sustainable development benefits in terms of improved air quality and corresponding reductions in health risk can be achieved is an area of interest that Sasol is exploring through a pilot air quality offset study.
No explanation has been given by Sasol for respiratory problems experienced by residents in the Sasolburg and eMalahleni areas?	Mr Jacob Kganedi	Soweto Electricity Crisis Committee	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	The purpose of the NEM: AQA is to improve air quality, which will result in better health, but personal habits and lifestyle also affects health. The Department of Health run campaigns towards improvement of health, as it their focus. Sasol's postponements and exemptions focus on specific processes and stacks in specific locations. At a national level Government has to consider other sources and how communities are exposed to it. Improving health will necessitate collaborative efforts from different departments of Government, such as Department of Transport (NOx emissions reductions from vehicles), and DEA etc.
In winter there are more domestic fires burning in communities, but Sasol emits pollutants throughout the year. Sasol will therefore have a greater impact on health as its period of exposure to pollutants is longer.	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	Section 5 of the AIR includes daily and annual pollutant concentration profiles.  These profiles for PM <sub>10</sub> indicate that ambient air quality is in compliance in summer, but not during winter, with a domestic fuel burning signature in evidence. It is during periods of exceedance of the NAAQS where there is an increased risk of negative health effects. This is one of the reasons that Sasol supports the development of an appropriate offset mechanism which Sasol believes could play a significant role in reducing ambient PM <sub>10</sub> concentrations.
Industry is using off-sets as an escape from compliance with ambient air quality standards. This is not effective, as it is not	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	Sasol is conducting a detailed air quality offset pilot study, which includes considerations of the sustainability of the intervention. Sasol supports the development of an offset mechanism since it believes that this could play a meaningful role in bringing ambient air quality into compliance with national ambient air quality standards.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
sustainable.					
Statistics on the SAAQIS website indicate that there has been no improvement in ambient air quality within the priority areas from 2010 to 2013. At the last Highveld Priority Area meeting it was noted that there has been 4 instances in which sulphur emissions exceeded the allowable limits this year. Thus, the SO <sub>x</sub> levels in the area are not in compliance with ambient air quality standards.	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	<p>The ambient air quality standards stipulate that the set limits may be exceeded 1% of the time. This means that 88 hourly exceedances are allowed, and 4 daily exceedances are allowed, before an area can be considered non-compliant. Occasional unfavourable weather conditions that result in poor atmospheric dispersion conditions may cause short spikes in ambient concentrations.</p> <p>During the period mentioned, the DEA monitoring station in Secunda did not exceed these requirements. Please refer to the AIR for measurement results from Sasol's 3 accredited monitoring stations in the vicinity of its plant.</p>
Due to the negative impact from any form of pollution to the environment on optimum agriculture production we do not agree with this application for postponement. You must understand that our members are to a very great extent dependent on a healthy environment for production. For this reason we insist on Sasol to keep with the original regulations according to the specific act.	Mr Robert Davel	Mpumalanga Agriculture	26 September 2014	Written comment (email)	Thank you for your comment.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<b>3.2 WATER QUALITY</b>					
Determine the impact of measures to improve air quality on existing water use and effluent quality.	Mr Peter Pyke	Department of Water Affairs (Pretoria)	26 Sept 2013	Written comment (Email – 26 Sept 2013)	Reducing sulphur dioxide emissions from boilers to the levels prescribed by the MES, requires the implementation of flue gas desulphurisation (FGD) technology. Sasol's motivation reports for exemption from default application of the MES, and associated technical appendices, provide more details on the significant challenges identified in implementing FGD on an existing plant. Among these challenges are environmental cross-media impacts, including the generation of significant additional volumes of a waste material that must be landfilled, the reduction in boiler steam output leading to lower energy efficiencies and higher greenhouse gas intensities, significant additional raw material requirements in the form of lime or limestone, and additional water intake.
Consider the impact on water requirements of any enforcement of air quality standards. The impact of increased water demand may have a greater adverse impact on the environment than any improvement in air quality. If there is a trade-off, it must not be for the worse.	Mr Peter Pyke	Department of Water Affairs (Pretoria)	31 January 2014	Written comment (Email – 31 January 2014)	It is understood from available information that the key selection criteria for optimal FGD technology for a given power plant relate to economic aspects (capital, operating and maintenance costs), technical aspects (sulphur content of the coal, reliability, space footprint, size of individual boilers and total power plant), along with further commercial considerations (proven technology, supplier guarantees, etc). Water availability is not traditionally a technology selection criterion, and the difference in water consumption between so-called 'wet FGD' and other 'semi-dry FGD' technologies relates both to volume and quality of water. Wet FGD typically consumes 220-260 litres / Megawatt-hour and requires a higher quality of water for effective sulphur removal. Dry technologies use ~60% of the volume of water (140 - 160 L/MWh), but water quality is a lesser issue.
There is concern that water (acid mine drainage) from the mines will negatively affect the environment.	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	Acid mine drainage is a material issue in parts of South Africa, but has no bearing in relation to Sasol's applications for postponement or exemption from default application of the MES. Sasol continues to provide support for further work in understanding the ecological impacts of air pollution.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<b>3.3 CLIMATE CHANGE</b>					
Is Sasol avoiding the issue of carbon emissions and carbon tax and what are the implications?	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	<p>Greenhouse gas emissions (GHGs), which cause climate change, are not part of the MES. GHG emissions have a global impact and are vastly different to air quality pollutants such as NO<sub>x</sub>, SO<sub>2</sub> and VOCs, which have a local ambient air quality impact, for example on human health. This difference in impact warrants different approaches in their management, monitoring and reporting and in the case of GHGs they are governed under the Department of Environmental Affairs' National Climate Change Response White Paper. Hence, GHG emissions are not considered in Sasol's postponement and exemption applications.</p> <p>Regarding its climate change mitigation strategy, Sasol supports a transition to a lower-carbon economy that takes into account South Africa's structural unemployment challenges and the limited availability of lower-carbon primary resources. To this end, Sasol continues to engage with the Department of Environmental Affairs to advance the development of an appropriate regulatory framework for GHG management, including laws governing GHG emissions reduction as well as carbon taxes. Sasol reports on its GHG mitigation measures in its annual Sustainable Development Report, available for download at: <a href="http://www.sasol.com/sustainability/reports">http://www.sasol.com/sustainability/reports</a></p> <p>GHG emissions from coal mining are mainly fugitive methane emissions, which are an unavoidable consequence of mining coal and in South African coal mines, are too diluted to harvest. Emissions from coal mining are a small fraction of the total South African GHG emissions inventory. National plans to respond to the climate change challenge are mindful of considering these costs against the socio-economic benefits provided.</p>
The understanding is that air emissions are contributing to global warming, please clarify why this is not included in the Sasol application process.					
Is it true that the average coal mine emits approximately 200 000 tonnes of CO <sub>2</sub> into the air. How is this brought into perspective with global warming?	Mr Pieter Ackerman	Department of Water Affairs (Pretoria)	30 January 2014	Written comment (email – 31 January 2014)	
<b>4 HEALTH</b>					
Ek dink dit grens aan roekeloosheid om vrystelling te vra vir gesondheidsregulasies. Sasol behaal weereens enorme winste en poog om sy verantwoordelikheid te omseil en sodoende	Mr Attie Jankowitz	Farmer	21 Sept 2013	<p>Written comment (Email)</p> <p><i>(Note: specific request to include comments in Afrikaans. The rest of the comment was made in English)</i></p>	<p>Sasol remains committed to delivering reasonable and sustainable improvements in air quality management across its operations.</p> <p>The applications for postponement or exemption must accordingly be seen in context. Many of Sasol's activities will comply with the compliance time frames contained in the MES, and in other instances activities will comply with the standards over time, and here Sasol applies for postponements. It is only for certain point sources where Sasol will not be able to feasibly comply with the standards with</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<p>word die gesondheid van landsburgers in gevaar gestel.</p> <p><i>(I think it borders on recklessness to ask for exemptions<sup>6</sup> from health regulations. Sasol is once again reaping enormous profits, and is trying to bypass its responsibility and thereby endangering the health of the citizens of this country).</i></p> <p>I, as a former Sasol employee, and current farmer in the Secunda area will APPOSE this application with all my strength! I must start a petition against this action from SASOL.</p>					<p>presently available technologies. In these instances Sasol proposes compliance to alternative emission limits and alternative special arrangements which could be included in its Atmospheric Emissions Licences, as licence conditions with which it must comply.</p> <p>Sasol will continue with its risk-based approach to environmental improvements over time, and seeks selected postponements and exemptions from the default application of the MES to maintain compliance within a new regulatory regime.</p> <p>Sasol does not, by making these applications, seek to increase emission levels relative to its current emissions baseline.</p>
How will the exemption (refer to <b>footnote 6</b> on <b>page 39</b> ) from MES and postponement of timelines to comply with MES impact on the odours in the air, emitted from the Sasol plant, especially when process related	Mrs Yvonne Scholly	Farmer, Secunda	10 Oct 2013	Public Meeting, Secunda	<p>The NAAQS establish the ambient pollutant concentration levels for protection of human health with permissible impacts.</p> <p>As part of its applications, Sasol has appointed independent specialists to prepare air pollution 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. In the case of pollutants such as hydrogen sulphide, for which no NAAQS have been prescribed, international</p>

<sup>6</sup> Sasol's previous exemption applications will now be submitted as additional postponement applications.



Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
problems occur at the plant, and how will this be mitigated so as not to affect human health?					health guidelines have been used as benchmarks for comparison with dispersion modelling results.  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.
Emissions produced by Sasol causes headaches. Inhaling smelly and poor quality air is not good for the health of the residents in the area.	Mr Monbe Nqiwa	Resident of eMbalenhle	10 Oct 2013	Written comment (Comment Sheet)	Sasol records and carefully considers every complaint it received, including those about health impacts potentially caused by its facilities and provides feedback provided to complainants. Most commonly, multiple causes exist for health ailments which have not been demonstrated to be related to Sasol activities. In cases where complaints are related to short-term emissions caused by upset conditions at our plants, rectification of the issues causing the problems is prioritized.  As part of its applications, Sasol has appointed independent specialists to prepare air pollution 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. In the case of pollutants such as hydrogen sulphide, for which no NAAQS have been prescribed, international health guidelines have been used as benchmarks for comparison with dispersion modelling results. The AIRs are made available to stakeholders during the second public commenting period, and summaries of the AIR are included in the draft motivation reports.
Nothing is being done with regard to Sasol's emissions into the air. Sasol does not comment unless there are complaints published in the newspaper. Sasol published an article in the newspaper a few years ago, stating that they would place emission monitoring points in the neighbouring areas and	Mrs Schoonwinkel	Secunda Resident	14 Oct 2013	Written comment (Email) (See article as Annexure 2)	Sasol records and carefully considers complaints through a complaints management system and provides feedback to complainants.  The production facility operates on a continuous basis; emissions occur as a function of the process, and do not occur selectively at day or night.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<p>that they would give feedback to the residents, but they have not done so to date. As soon as emissions are emitted, Sasol publishes in the newspaper that they guarantee that this will not cause damage to the residents' health. Two days later the whole suburb is affected and sick.</p> <p>Sasol has started releasing emissions at night, which make such a noise that residents cannot sleep. It is as if they want to hide what they are doing. A letter regarding the air pollution problem in Secunda has been sent to the Minister of Water and Environmental Affairs, and nothing has been done about it. In the meantime our bodies are being poisoned. I strongly advise that no exemptions<sup>7</sup> for Sasol be granted.</p>					

<sup>7</sup> Sasol's previous exemption applications will now be submitted as additional postponement applications.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
A detailed health-risk assessment of Sasol'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, Sasol 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. In the case of pollutants such as hydrogen sulphide, for which no NAAQS have been prescribed, international health guidelines have been used as benchmarks for comparison with dispersion modelling results.  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.
Sasol 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)	
New mines have opened or will open in the area, some of which are Sasol mines (Impumelelo), resulting in heavy motor vehicles travelling on the farm roads, depositing coal particles or dust on fields for grazing. How will this affect the health of cattle, and how will this be mitigated?	Mrs Yvonne Scholly	Farmer, Secunda	10 Oct 2013	Public Meeting, Secunda	Mines do not form part of Sasol's applications under consideration, however Sasol manages its mining activities in accordance with applicable environmental management practices.
As an I&AP we will be commenting on Sasol's request, as we are in the process of developing an industrial park that borders Sasol's secondary security area. We need to understand the health and safety risks which will	Mr Ian Ross	Templemore Trading 69 (Pty) Ltd	26 Feb 2014	Written comment (Email) (Site plan attached as Annexure 3)	Sasol extends an invitation to you to engage directly with it on your concerns regarding your development.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<p>result from Sasol's non-compliance to the requirements, to the people employed at our development.</p> <p>We are in the process of obtaining legal advice on Sasol's non-compliance regarding the positioning of their slimes dam adjacent to our property, and their total disregard to the effects on the neighbouring properties. I attach a site plan of the area we have had rezoned and will be developing for your records.</p>					
Has Sasol considered the impacts of its applications on residents in the area?	Mr Derrick Erasmus	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	Sasol has indeed considered the impacts of its application on the health of residents in the area of its operation, as part of the requirements for a postponement application prescribed in the MES. The full results of the studies are available to stakeholders in the Atmospheric Impact Report (AIR) and are summarised in the draft motivation reports.
Residents in Secunda, especially children, suffer from respiratory problems, such as asthma. This is not the case in other areas. When ceiling limits are raised, it negatively affects resident's health. This is of particular concern when Sasol is applying for multiple extensions and does not seem to want to comply	Mr Derrick Erasmus	Templemore Trading	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	<p>The independently prepared AIR provides an assessment of the potential health risks caused by the emissions for which postponement or exemption is sought from the MES, as assessed against the NAAQS.</p> <p>Many of Sasol's activities will comply with the MES in the prescribed compliance time frames, or over time. It is only for certain point sources where Sasol will not be able to feasibly comply with the MES through presently available technologies, and in these cases it makes application for exemption from default application of the MES, and proposes alternative emissions limits with which it could comply.</p> <p>Refer to the motivation report for Sasol's roadmap to sustainable air quality improvement.</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
with the MES anytime soon.					
Please inform Templemore Trading how raising ceiling limits for Sasol's emissions will impact upon its employees. This could be a health risk and liability for the company who will be held responsible for the environment in which its employees operate.	Mr Ian Ross	Templemore Trading 69 (Pty) Ltd	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	Response from Airshed Planning Professionals: The Langverwacht monitoring station is situated ~300 metres from the site of the proposed industrial park. The simulated impacts at this monitoring station, as discussed in the Atmospheric Impact Report, would provide a good understanding of the health issues related to the postponement/exemption applications on the industrial park.
Cases of respiratory diseases, such as asthma, that can be linked to Sasol's Secunda operation have been well researched and documented. However, the health impacts of Sasol's pollutants has not documented in the toxicological report	Mr Daniel Hlanyane	Gert Sibande District Municipality	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	Sasol is not aware of any studies which link respiratory diseases to Sasol's operations. However, Sasol does emit pollutants which, beyond certain thresholds, are known to contribute to various respiratory diseases. This is why NAAQS have been set for these pollutants. The Atmospheric Impact Report (AIR) prepared for Sasol's applications demonstrates that Sasol's emissions do not cause exceedances of these pollutants as regulated by the NAAQS. The AIR has been prepared in accordance with the AIR Regulations, which guides how the analysis of emissions' impact on human health must be assessed. In the case of pollutants such as hydrogen sulphide, for which no NAAQS have been prescribed, international health guidelines have been used as benchmarks for comparison with dispersion modelling results.
Was residents' health taken into consideration when Sasol's made their applications? It must be noted that Sasol is not paying the health bills for residents suffering from respiratory diseases.	Mr Thomas Mnguni	Greater Middelburg Residents' Association	22 May 2014	Public Meeting, Kruik Conference Centre, Secunda	Sasol has indeed considered the impacts of its application on the health of residents in the area of its operation, as part of the requirements for a postponement application prescribed in the MES. The full results of the studies are available to stakeholders in the Atmospheric Impact Report (AIR) and are summarised in the draft motivation reports. The AIR demonstrates that Sasol's emissions do not cause exceedances of these pollutants as regulated by the NAAQS.
Since H <sub>2</sub> S does not	Angela	Legal	16 June 2014	Written submission	As part of its application for exemption from the MES for Category 3.6

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
comply with health protective air quality standards in Secunda, any request for postponements for H <sub>2</sub> S limits should therefore also not be granted.	Andrews	Resources Centre		(Full text included as Annexure 6)	governing Sasol's H <sub>2</sub> S emissions, and in the absence of a National Ambient Air Quality Standard for H <sub>2</sub> S for South Africa, Sasol appointed an independent toxicologist to conduct a desktop literature study to identify an appropriate health benchmark for H <sub>2</sub> S. The toxicologist report was shared with stakeholders during the public commenting period.  The benchmark used is Haahtele <i>et al.</i> (1992), and the dispersion model results indicate that measured ambient concentrations of H <sub>2</sub> S, as well as predicted concentrations from Sasol's proposed alternative emission limit, lie well within the benchmark. From this, it is concluded that no negative impact on health arises from Sasol's H <sub>2</sub> S emissions.
Comprehensive information on H <sub>2</sub> S toxicity and negative impact on human health is presented in the submission.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	Noted. Information in support of the conclusions reached in the AIR demonstrates that the H <sub>2</sub> S emissions are within permissible limits.
Sasol and 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. Sasol and 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, NEMA, AQA and international guidelines. Legislation puts onus on polluter to demonstrate that it will not harm health. Sasol and Natref have provided insufficient data	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6).	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 its application has been detailed in the AIR.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<p>from which to conclude that granting the application would not result in (or prolong) adverse health impacts to surrounding community members. 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</p>					

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
impacts at issue are, the competent authority must adhere to the precautionary principle and deny the applications.					
Sasol and Natref reports on total sulphur (S) and nitrogen (N) emissions focus on acid deposition and not on the health impacts of compounds at issue (SO <sub>2</sub> , NO <sub>2</sub> ).	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6).	The AIR was prepared in accordance with the Regulations prescribing the format of an atmospheric impact report. The health impacts are discussed in Section 5.1 of each of the AIRs.
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 Annexure 6)	The assessment of health impacts of emissions was assessed as provided for in the Regulations describing the format of an atmospheric impact report.
The postponement and exemption requests should not be granted as the compounds that exemption is requested for	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	Sasol does emit pollutants which, beyond certain thresholds, are known to contribute to various respiratory diseases. This is why NAAQS have been set for these pollutants.  The Atmospheric Impact Report (AIR) prepared for Sasol's applications demonstrates that Sasol's emissions do not cause exceedances of



Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
are harmful and toxic to human health and wildlife. Particularly PM, H <sub>2</sub> S and VOCs. Information on the effects of SO <sub>2</sub> , NO <sub>x</sub> and H <sub>2</sub> S is provided in the submission.					these pollutants as regulated by the NAAQS. The AIR has been prepared in accordance with the AIR Regulations, which guides how the analysis of emissions' impact on human health must be assessed. In the case of pollutants such as hydrogen sulphide, for which no NAAQS have been prescribed, international health guidelines have been used as benchmarks for comparison with dispersion modelling results.
"Material benefit" is difficult to quantify, as human health is at stake and any reduction in adverse health impacts should be seen as material.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	Human health is a key consideration for a risk based approach which informed Sasol's approach and the NAAQS. NAAQS are standards set by the Minister which are required to be informed by taking into consideration health, wellbeing and the environment.
Communities in the areas affected by Sasol's operations are concerned about the impact of emissions on their health, but are unsure of the extent to which Sasol is impacting on their health.	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	Sasol has indeed considered the impacts of its application on the health of residents in the area of its operation, as part of the requirements for a postponement application prescribed in the MES. The full results of the studies are available to stakeholders in the Atmospheric Impact Report (AIR) and are summarised in the draft motivation reports.
It is a concern that Sasol has not undertaken a health impact study to determine its health effect on residents. Sasol should be able to prove that its emissions do not cause health impacts.	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	The Atmospheric Impact Report (AIR) for Sasol's applications has been prepared in accordance with the AIR Regulations, which guides how the analysis of emissions' impact on human health must be assessed. The AIR demonstrates that Sasol's emissions do not cause exceedances of these pollutants as regulated by the NAAQS. In the case of pollutants such as hydrogen sulphide, for which no NAAQS have been prescribed, international health guidelines have been used as benchmarks for comparison with dispersion modelling results.
Was the healthcare cost spent by communities living within Sasol's areas of operations, due to illness caused by air pollution, considered in calculating the cost-	Mr Thomas Mnguni	Greater Middelburg Residents' Association	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	The Atmospheric Impact Report (AIR) for Sasol's applications has been prepared in accordance with the AIR Regulations, which guides how the analysis of emissions' impact on human health must be assessed. Please refer to the motivation reports for the reasons for which postponement or exemption applications are made.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
effectiveness of retrofitting Sasol plants?					
Residents living within the areas of Sasol's operations experience respiratory problems due to Sasol's emissions.	Ms Ndivile Mokoena	Justice and Peace Commission of the Catholic Church	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	The DEA hosts quarterly Multi Stakeholder Reference Group meetings in the Highveld and Vaal Triangle priority areas, which are platforms whether the community concerns relating to air quality can be raised. The relevant local authorities can also be contacted directly on these matters. Their contact details are available on the SAAQIS website, at <a href="http://www.saaqis.org.za/SearchAQOfficial.aspx">http://www.saaqis.org.za/SearchAQOfficial.aspx</a> .
Has Sasol considered the health of communities when lodging applications, or did profits take priority?	Ms Nomcebo Makhubela	Mpumalanga Youth Against Climate Change	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall	The health of communities was considered by comparing ambient air quality and Sasol's contribution to ambient air quality with the NAAQS. The assessment was done by an independent specialist in accordance with the AIR Regulations, and the results are provided in the AIRs. The reasons for Sasol's applications are included in the motivation reports, along with Sasol's roadmaps for sustainable air quality improvement.  As a responsible corporate citizen, Sasol wants to ensure that money in air quality improvements is spent wisely, and hence supports investments that are reasonable and practicable, and which also deliver tangible and sustainable improvements in ambient air quality.
<b>5 SOCIO – ECONOMIC ISSUES</b>					
Large companies like Sasol need to re-invest into the communities in their areas of operation.	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	Sasol's community investment and enterprise development initiatives seek to promote people-centred, needs-driven sustainable development of the communities in which it operates. During the year July 2012 – June 2013, Sasol invested R593.2 million in South African social investments. Broadly, the areas of investment include education, job creation, health and welfare, the environment and arts, culture and sports development. More detail can be found in the Sustainable Development Report available for download from <a href="http://www.sasol.com/sustainability/reports">http://www.sasol.com/sustainability/reports</a> .
Local residents do not object to Sasol's existence, but do not benefit from its operation in their area.	Mr Falami Mahlangu	Resident of eMbalenhle	10 Oct 2013	Written comment (Comment Sheet)	In the previous year, Sasol also announced its R800 million commitment to the Ikusasa public/private partnership, to be executed over a period of four years.  Sasol ChemCity, Sasol's enterprise development vehicle, focuses on developing and supporting independent, small and medium enterprises in the energy, chemicals and related industries. The ChemCity Eco Industrial Park in Sasolburg has been earmarked for micro industries

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
					that will contribute to the economic development of the region. Through the Siyakha Development Trust, Sasol's supplier-funding vehicle, R54 million in loans have been disbursed. Since 2005, Sasol ChemCity has supported over 700 small and medium sized enterprises, and created some 10,000 direct jobs.
There is need for Sasol to focus some of its Corporate Social Investment effort to improve air quality in areas outside its operations, and empowering communities to care for the environment.	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	<p>One of Sasol's social investment pillars includes the protection of the environment. Sasol recognises the significant contribution of domestic fuel burning to exceedances of the PM<sub>10</sub> NAAQS in the Highveld and Vaal Triangle priority areas in which its major facilities are located.</p> <p>To this end, many years ago Sasol invested in the pioneering Basa Magogo programme, to realise improvements in dust emissions from domestic fires through low smoke cooking techniques. Sasol is furthermore currently undertaking a detailed air quality offset pilot study in a community near Secunda. The intent of the study is to inform Sasol's understanding of the potential of offsets for sustainable ambient air quality improvement, delivering environmental improvements along with concomitant benefits for social and economic outcomes.</p> <p>Offsets, if clearly defined in scope and properly supported by regulations providing long-term incentives for investment, may provide a more significant improvement in air quality, with direct health benefits, than even full compliance with the MES.</p> <p>Sasol furthermore believes that without a mechanism to address domestic fuel burning, the ambient air quality improvement objectives of the NEMAQA will not be met, even if all industries conform to new plant standards.</p>
Stakeholders request more information on Sasol's intentions in terms of this application and how the situation of the people can be improved.	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	Sasol's applications include draft motivation reports, which provide Sasol's detailed reasons for its applications. Furthermore, an Atmospheric Impact Report has been prepared (in accordance with the Atmospheric Impact Report Regulations) by an independent specialist, to assess the impacts of Sasol's applications for ambient air quality.
There are concerns about air pollution in the Govan Mbeki municipal area and it is proposed that Sasol investigate buying gas	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	<p>Sasol recognises the significant contribution of domestic fuel burning to exceedances of the PM<sub>10</sub> NAAQS in the Highveld and Vaal Triangle priority areas in which its major facilities are located.</p> <p>To this end, many years ago Sasol invested in the pioneering Basa Magogo programme, to realise improvements in dust emissions from</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
stoves for communities as an offset to reduce air pollution, and improve the air quality in eMbalenhle and surrounding areas.					<p>domestic fires through low smoke cooking techniques. Sasol is furthermore currently undertaking a detailed air quality offset pilot study in a community near Secunda. The intent of the study is to inform Sasol's understanding of the potential of offsets for sustainable ambient air quality improvement, delivering environmental improvements along with concomitant benefits for social and economic outcomes.</p> <p>Gas stoves, along with a number of other community-based solutions, have been identified as potential offset initiatives, in the Department of Environmental Affairs' draft air quality offset policy which is expected to be published in the near future for public comment.</p> <p>Sasol is supportive of appropriate alternative compliance mechanisms to achieve the objectives of the Constitution, the Framework for Air Quality Management and the NEMAQA.</p>
Beautification of the area is a good project, but should priority not be given to more important quality-of-life issues affecting local communities, i. e. the sewer problems in eMbalenhle, extension 18?	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	<p>Sasol balances its social investments along a number of investment areas, including education, job creation, health and welfare, the environment and arts, culture and sports development. Beautification is an example of an investment which contributes to health and welfare of Sasol's communities. Through social investment portfolios including Sasol Mining's Social and Labour Plan, and the Ikusasa public/private partnership (where investments are prioritised in collaborations with the municipality), investments are currently being made in numerous other quality-of-life interventions, including investments to address sewer problems in eMbalenhle.</p>
Given Sasol's history of totally disregarding the health of their employees as well as their effect on the environment, profit being their only concern, we as the developers of an industrial park adjacent to Sasol need to know if Sasol is considering compensating people affected by their transgressions?	Mr Derick Erasmus	Templemore Trading	23 April 2014	Written comment (email)	<p>Sasol takes compliance with all applicable laws very seriously, and has not wilfully transgressed any environmental laws. Sasol remains committed to delivering reasonable and sustainable improvements in air quality management across its operations.</p> <p>In support of its applications, and as required by the law, Sasol has appointed an independent consultant to prepare an Atmospheric Impact Report (AIR) which provides an assessment of the implications of Sasol's applications for ambient air quality. In terms of this assessment, Sasol's emissions are not predicted to cause exceedances of the NAAQS.</p>
It must be noted that in	Ms Ndivile	Justice and	23 May 2014	Focus Group Meeting,	There is no indication that Sasol's activities are inhibiting the success

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
terms of community livelihoods, food gardens cannot be started in areas situated around the Sasol plants, due to contamination of soil.	Mokoena	Peace Commission of the Catholic Church		Hacklebrooke Conference Centre, Craig Hall, Johannesburg	of food gardens. There may be a variety of issues contributing to the sustainability of food gardens in the area, which would require further investigation.
When people are ill, it affects the economy of the country. Therefore, solutions must be found to ensure the healthy functioning of the economy in the long-term.	Mr Jacob Kganedi	Soweto Electricity Crisis Committee	23 May 2014	Focus Group Meeting, Hacklebrooke Conference Centre, Craig Hall, Johannesburg	Sasol remains committed to delivering reasonable and sustainable improvements in air quality management across its operations. Sasol's motivation reports include roadmaps to sustainable air quality improvement.  Furthermore, Sasol is investigating the possibility of air quality offsets as potential solutions to deliver meaningful sustainable development benefits in terms of improved air quality and corresponding reductions in health risk
<b>6 INFRASTRUCTURE AND TECHNOLOGY ISSUES</b>					
Why does Sasol Secunda not use gas like in Sasolburg?	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	The technology employed by Sasol at its Synfuels facility in Secunda was designed for operation on coal. The primary technology used to produce the syngas for the Fischer Tropsch process is coal gasification. As it is not possible to feed natural gas to a coal gasification unit a conversion to gas would involve the shutdown of coal gasification units and construction of natural gas reforming units. Effectively, this would entail the closure of the coal-to-liquids facility and construction of a gas-to-liquid facility alongside. This would be impracticable both from an economic perspective and a project execution perspective  Socio-economic impacts in the form of significant job losses would occur in the event of coal mining operations closing down – gas supply is a significant less labour-intensive process than is coal mining.
Why does Sasol not move towards eliminating the use of coal as a fuel source?	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	
Sasol's logo "Reaching new frontiers through technology" does not seem appropriate, given that Sasol faces technology challenges and infrastructure maintenance	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	Sasol supports new plant standards being prescribed for new plants. Where new plants are being designed, Sasol will comply with these standards. Complying with new plant standards at existing plants, however, faces significant challenges, and is not, in many instances, reasonable or achievable with presently available technology, and hence is not well aligned with the intent of the NEMAQA and the National Framework for Air Quality Management in South Africa

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
issues.					("NAQF"). This limitation is a phenomenon recognised in many other countries which do not require that old plants meet new plant standards in all instances. In these instances, Sasol seeks exemption from strict compliance with the stringent point source standards that have been set for existing plants, and specifically proposes compliance to alternative emission limits and arrangements.
<p>It is disputed that emission of H<sub>2</sub>S from large scale industrial processes is a unique phenomenon and that H<sub>2</sub>S 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 H<sub>2</sub>S problem.</p> <p>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.</p>	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	<p>H<sub>2</sub>S is not unique in industrial processes. However, the manner in which H<sub>2</sub>S is produced in the Sasol process is unique. The Secunda coal-to-liquid facility is the only large-scale process in existence whereby coal is gasified and converted to liquid fuels. As a result of this process's unique complexities, a technology solution to addressing has proved exceptionally difficult to find and implement.</p> <p>Sasol has clearly indicated its approach to addressing H<sub>2</sub>S in its motivation reports and associated technical appendices, and the assertions made in this regard are unfounded.</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
Sasol Synfuels operates at levels significantly below this standard (at approximately 75% recovery). Operating at 95% efficiency would render emissions far closer to the emission limits of Subcategory 3.6. Emissions of H <sub>2</sub> S at such concentrations cannot be justified in locations close to large communities of vulnerable and disadvantaged persons. (Referring to the calculated tons emitted >80000 t/a)					
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 Sasol and Natref’s risk-assessment approach.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	The appropriate principle is the BPEO principle which is informed by BAT. Sasol and Natref’s approach is consistent with this.
<b>7 GENERAL</b>					
Veri-Green Solutions (Pty) Ltd is ready to roll out a joint pilot project, of methanol/ ethanol energy	Mr Mamokopo Abram Phaahla	Veri-Green Solutions	12 Sept 2013	Written comment (Letter – full text included as Annexure 4)	Stoves fired by fuels other than coal, along with a number of other community-based solutions, have been identified as potential offset initiatives, in the Department of Environmental Affairs’ draft air quality offset policy which is expected to be published in the near future for



Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
stoves in the three areas of Sasol's operations. Sasol is currently the only company which converts natural gas to methanol for our stoves. They are the strategic supplier of fuel for our project.					public comment. Sasol is supportive of appropriate alternative compliance mechanisms to achieve the objectives of the Constitution, the Framework for Air Quality Management and the NEMAQA.
Sasol seems to focus more on other sources of pollution rather than its own – this creates the impression that Sasol does not care.	Mr Sithabileng Zuma	South African Communist Party (SACP)	9 Oct 2013	Focus Group Meeting (upon request)	<p>Sasol recognises that continuous improvement in environmental management performance is an important business imperative. Introducing capital intensive environmental improvements must be balanced with the focus on socio-economic sustainability of its business. Sasol has a history of proactive environmental performance improvements and in respect of air quality management has significantly reduced atmospheric emissions from its various facilities in line with a risk-based environmental improvement approach, regardless of whether or not such emissions reductions were required in law. For that reason numerous of the emissions from Sasol's various facilities already comply with much of the MES. In addition, and in response to the outcome of the Highveld Priority Area (HPA) assessment and Air Quality Management Plan (AQMP), Sasol voluntarily committed to certain emissions reductions for the furtherance of ambient air quality improvements. Based on an assessment of significant capital expenditure on projects which have resulted in significant environmental improvements over the past ten years, Sasol has spent over R20 billion, averaging at R2 billion annually. The bulks of these improvements have delivered ambient air quality and greenhouse gas emission improvements, and were not compelled by law.</p> <p>With regards to the regulatory requirements prescribed in the MES, as a first priority, Sasol has explored all reasonable avenues to comply with the standards. While many of Sasol's process emissions will comply with the MES, through investments which have realised significant environmental improvements, there are some that cannot meet the standards within the required timeframes, and others which are unlikely to meet the standards at all. The reasons for Sasol's applications for postponement and exemption from default application of the MES are provided in Sasol's draft motivation reports.</p>



Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
					Sasol commits to investigating identify reasonable measures to reduce emissions that may emerge over time. Introducing capital intensive environmental improvements must be balanced with the focus on socio-economic sustainability of its business.
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. Sasol will decide what abatement measures are too expensive and not the State. Costs and risks must not be passed to communities.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	The principle of sustainable development requires balancing environmental, social (including health) and economic considerations. The information provided by Sasol and Natref is sufficient to perform this exercise. In applying its risk based approach, Sasol has already implemented and is implementing those projects which require that environmental and social considerations take precedence over economic considerations.
Sasol's business decisions should not be regarded as a relevant consideration. Previous investment is not an excuse for current non-compliance with MES.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	What the information seeks to demonstrate is that previous investment decisions were informed by a risk based approach. These are examples of Sasol's risk based approach and its practical implementation. These also indicate that Sasol will make and has made investments where such investments sustainably achieve their environmental improvement objectives.
Sasol should have presented its approach during the parliamentary portfolio committee	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	Sasol's rights to participate in parliamentary processes do not have a bearing on its present applications.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
meetings.					
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.  Sasol and Natref were identified as being the main contributing sources to ambient air quality.	Angela Andrews	Legal Resource Centre	16 June 2014	Written submission (Full text included as Annexure 6)	In the VTAPA the impacts of Sasol and Natref were identified and in accordance with those impacts, commitments aligned to ambient air quality improvement were made. Sasol and Natref have agreed to uphold these commitments. These commitments are informed by their impact and followed a risk based approach.  As indicated in the results of the AIRs which are aligned with the VTAPA commitments, Sasol and Natref are negligible contributors to ambient PM concentrations. This is recognised in the VTAPA.
<b>8 COMMENTS RECEIVED ON FINAL INITIAL POSTPONMENT SUBMISSION</b>					
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	Legal Resource Centre	27 Oct 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	Legal Resource Centre	27 Oct 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	Legal Resource Centre	27 Oct 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	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	This is addressed per specific assertion below.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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.					
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 addressed this issue, and incorrectly states the law.	Ms Angela Andrews	Legal Resource Centre	27 Oct 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.
The postponement application does not comply with Section 5.4.3.3. of the Framework, in that it cannot	Ms Angela Andrews	Legal Resource Centre	27 Oct 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.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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.					
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	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	Rather than Sasol substituting its own scheme, Sasol is proposing an approach which may support the NAQO in exercising her discretion.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
proposition.					
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 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.	Ms Angela Andrews	Legal Resource Centre	27 Oct 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.
The applicants are required to compile an air	Ms Angela Andrews	Legal Resource	27 Oct 2014	LRC Submission	A comparison between the AIR approach and the regulations is included as Appendix B of the AIR.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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.		Centre			
<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 SO<sub>2</sub> and NO<sub>2</sub> convert to PM, every request for postponement for a limit on a criteria pollutant (i.e. PM, SO<sub>2</sub>, NOX) should be rejected. Hazardous air pollutants which are also particulates should not be allowed postponements for</p>	Ms Angela Andrews	Legal Resource Centre	27 Oct 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>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<p>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 SO<sub>2</sub> are not compliant in Sasolburg and compliance with NAAQSs 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</p>			27 Oct 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"> <li>• 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</li> <li>• Location of monitoring stations for purposes of model validation</li> <li>• Locations of maximum modelled ambient impact to determine the maximum impact of the emissions.</li> </ul> <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 isopleth plots, the</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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 e.g. residential areas and schools, and emitters of concern based on volumes of emission and the nature of the pollutant."					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	Legal Resource Centre	27 Oct 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	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	



Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
intention is not an action and Sasol is therefore still not compliant with this requirement.					
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	Legal Resource Centre	27 Oct 2014	LRC Submission	
In Sasolburg, PM levels are not in compliance with the NAAQSs for PM <sub>10</sub> (daily AAQS of 75 ug/mg). Ambient levels of PM <sub>2.5</sub> 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 PM <sub>10</sub> that are being requested by Natref for its facility in Sasolburg.	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	<p>The ambient impacts as modelled for PM consider both the PM<sub>10</sub> and PM<sub>2.5</sub> fraction (with PM<sub>2.5</sub> conservatively assumed to be total PM). This is as discussed in Section 5.1.8.1.3 in the AIRs. In reality, the PM<sub>2.5</sub> accounts for approximately 50% of Sasol's fly ash emissions on a particle count basis.</p> <p>Although reference to PM<sub>2.5</sub> was made in the AIR, clarity on the contribution of simulated PM ground level concentrations to PM<sub>2.5</sub> NAAQS limits is provided as follows:</p> <p>The current emissions from the source groups of concern at the Secunda operations result in low ground-level concentrations of particulates (PM); less than 25 µg/m<sup>3</sup> for daily averaging period for all source groups (below the PM<sub>2.5</sub> daily NAAQS). The simulated 99th percentile daily ground-level PM concentrations are presented as a result of the Baseline (AIR: Figure 5-72) and Alternative Emission Limits (AIR: Figure 5-73) from the Steam Stations. The simulated 99th percentile ground-level PM concentration, at the point of maximum ambient impact, was 28% of the daily PM<sub>2.5</sub> NAAQS (7 µg/m<sup>3</sup>). At</p>

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					Secunda secondary particulates contribute 75% - 88% of total predicted PM (due to higher background ammonia concentrations with which NO <sub>2</sub> and SO <sub>2</sub> will associate to form aerosols).
<p>The conversion of SO<sub>2</sub> emissions from a refinery into particulate matter is not a trivial matter. SO<sub>2</sub> emissions from a refinery are much greater than PM emissions.</p> <p>In Sasolburg, NO<sub>2</sub> levels are in compliance with NAAQs. However, we must apply the sample principle with NO<sub>2</sub> emissions as with SO<sub>2</sub> emissions since conversion of NO<sub>2</sub> 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<sub>2</sub> emissions should be granted.</p>	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	<p>The AIR indeed considers the impact of secondary particulates (in the form of sulphates and nitrates) from Sasol's SO<sub>2</sub> and NO<sub>x</sub> 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 that the methodology for estimating the conversion of SO<sub>2</sub> and NO<sub>x</sub> 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.</p>
<p>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</p>	Ms Angela Andrews	Legal Resource Centre	27 Oct 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
<p>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 that adverse environmental impacts are not distributed in such a manner as to unfairly discriminate against any person particularly vulnerable and</p>					

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
disadvantaged communities.					
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". Compliance is determined on the basis of averaging periods.	Prof EK Cairncross	Legal Resource Centre	27 Oct 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 administrative basis of the MES.</p>
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	Legal Resource Centre	27 Oct 2014	LRC Submission	<p>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</p> <p>Note that Sasol and Natref have outlined air quality improvement roadmaps to sustainably contribute towards improved ambient air quality.</p> <p>As large industries supporting local communities, if postponements are not available, the socio-economic implications will be very significant.</p>
Hence in circumstances where the air quality in an airshed exceeds the NAAQS for any of the ambient air standards,	Ms Angela Andrews	Legal Resource Centre	27 Oct 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.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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.					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.
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	Legal Resource Centre	27 Oct 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>
Recommendation: It is recommended that a maximum period of	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	Noted. Please refer to the technical appendix for an explanation of Sasol's project development and governance framework and the application for the incinerator in question.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
postponement of the MES for 3 years be granted to allow Sasol to bring the sewage solids incinerator into compliance or to dispose of the waste stream by other acceptable means, rather than the 5 years requested by Sasol.					
As regards H <sub>2</sub> S there are no South African ambient air standards for this very dangerous chemical. However in the light of the exceedances of other ambient air standards and the fact that H <sub>2</sub> S levels far exceed acceptable levels from a health point of view no postponement should be granted.	Prof EK Cairncross	Legal Resource Centre	27 Oct 2014	LRC Submission	Please refer to the report prepared by the independent toxicologist, Infotox. A standard of 135ug/m <sup>3</sup> over a 4 hour averaging period was recommended as a health screening level. The impacts of Sasol Synfuels' H <sub>2</sub> S emission on ambient air quality are detailed in Section 5 of the AIR, using this screening level.
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	Legal Resource Centre	27 Oct 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.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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 Modelling Guidelines.	Ms Angela Andrews	Legal Resource Centre	27 Oct 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 NO<sub>2</sub> concentrations. Similarly, domestic fuel burning is known to contribute to airborne particulate air concentrations (PM<sub>10</sub> and PM<sub>2.5</sub>). Other industrial activities in and near the vicinity of the modelling domain may contribute significantly to ambient concentrations of SO<sub>2</sub>. Although most of the sources of air emissions within the Sasol operation were included in the 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</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
					<p>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>
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	Legal Resource Centre	27 Oct 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.
Sasol incorrectly uses a "delta" approach. The problem for SASOL is that the so-called "Delta	Prof EK Cairncross	Legal Resource Centre	27 Oct 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.



Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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.					
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 of the delta approach is requested by the term 'fit for purpose' in the July 2014 National Air Quality Modelling Guidelines is incorrect and untenable.	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	<p>Noted. The meaning of "fit for purpose" in this context is detailed in the AIR.</p> <p>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 ambient data is also presented on these graphs, which clearly indicate the significance of Sasol's emissions.</p>
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	Prof EK Cairncross	Legal Resource Centre	27 Oct 2014	LRC Submission	<p>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.</p> <p>Note that it is only the Secunda facility which emits H<sub>2</sub>S in a significant</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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 <sub>2</sub> S and other toxic compounds from several of the applicant's operations, which have an additional impact on the health of the receiving community.					quantity, and not any other Sasol facility, which is why ambient monitoring of H <sub>2</sub> S is conducted in Secunda and not at Sasol's other facilities. With respect to abnormal emissions of H <sub>2</sub> S, to the extent that these occur, the ambient impact thereof is reflected in the measured ambient concentrations reported in the AIR.
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	Legal Resource Centre	27 Oct 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.
The postponements are sought in a context where there is an application for postponement from emission standards for H <sub>2</sub> S. The applications for postponements for SO <sub>2</sub>	Ms Angela Andrews	Legal Resource Centre	27 Oct 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 with the regulations on dispersion modelling, is detailed in Appendix B of the AIR.</p> <p>Since no NAAQS is published for H<sub>2</sub>S, Sasol appointed independent</p>

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
NOx and others must therefore be seen in the context of non-compliant ambient air standards for PM as well as unhealthy levels of H <sub>2</sub> S in Secunda and unknown levels of H <sub>2</sub> S in Sasolburg. The applications for postponements for the various entities of Sasol cannot be seen in isolation from each other.					<p>toxicologist, Infotox, to conduct a literature review on available international guidelines, as a means of assess the impact of H<sub>2</sub>S on human health. A standard of 135ug/m<sup>3</sup> over a 4 hour averaging period was recommended as a health screening level.</p> <p>Accordingly, the impacts of Sasol Synfuels' H<sub>2</sub>S emissions on ambient air quality as detailed in Section 5 of the AIR have used this screening level.</p> <p>Ambient monitoring of H<sub>2</sub>S is conducted in Secunda and not at Sasol's other facilities, since other H<sub>2</sub>S emission sources are very small. The town of Sasolburg does not detect H<sub>2</sub>S odours from the Natref refinery and historical ambient H<sub>2</sub>S measurements are typical low level background H<sub>2</sub>S concentrations. This is evidenced by the fact that no odour complaints related to H<sub>2</sub>S emissions have been recorded.</p>
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 the NF and cannot be applied to standards after they have been promulgated.	Prof EK Cairncross	Legal Resource Centre	27 Oct 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.
Sasol's "roadmap to sustainable air quality improvements" (paragraph 7) which is predicated on Sasol's risk based	Prof EK Cairncross	Legal Resource Centre	27 Oct 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 Chapter 7 of

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
approach is therefore also irrelevant, as it relates to a vague approach to air quality management whereas the requirements for postponements have been set out by the AQA and its regulations and Sasol does not comply with them					the motivation report, as a summary of the information provided therein and in the technical appendices.
The intended purpose of the alternative emission limits proposed by Sasol is to define the proposed licence conditions that Sasol 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. This proposal if adopted stands to be reviewed and set aside as unlawful.	Prof EK Cairncross	Legal Resource Centre	27 Oct 2014	LRC Submission	<p>The alternative emission limits and alternative special arrangements proposed by Sasol are informed by the technical assessments as described in detail in the technical appendices to the motivation reports, based on what is reasonably achievable. These proposed alternative emission limits have also been assessed in the AIR to confirm that when taken together with the impacts of other sources, they 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 which include limits as contained in Sasol's previous registration certificates issued under the APPA until 1 April 2015. Where the current licences contain no emission limit for particular pollutants, these alternative emission limits make provision for 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.</p> <p>If no alternative emission limits were proposed, it would be tantamount to Sasol seeking a blanket exemption from complying with any standards.</p> <p>Any decision on a postponement application must be taken with the concurrence of the licensing authority.</p>
Summary table of postponements that cannot be granted because of degraded air quality as contained at page 24 of LRC	Prof EK Cairncross	Legal Resource Centre	27 Oct 2014	LRC Submission	The reasons for these postponements are contained in the motivation reports and supporting documents. Specific responses on the underlying reasons for the conclusions reached in the table are included in this report.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
submission.					
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 an irrelevant and misleading consideration.	Prof EK Cairncross	Legal Resource Centre	27 Oct 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.
I vehemently oppose the request by Sasol for the postponement of compliance with the Air Quality Act. For far too long Sasol's emissions have violated the rights of the communities to clean air. Compliance with the Air Quality Act is not beyond the capability of this highly profitable company and must be enforced for the future health of the communities whom they vicariously pollute on a daily basis.	Judith Taylor	Earthlife Africa	12 Oct 2014	Written comment (email)	Noted but denied. Reference is made to the reasons for the applications made by Sasol as well as the AIR (more particularly section 5.1).
The technological interventions required to achieve a less than 200oC exit gas temperature (a	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	Noted. Please refer to Chapter 1 of the technical appendix for an explanation of Sasol's project development and governance framework.

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
<p>heat recovery or a quench system) are relatively simple and are achievable, well within a 3 year time frame.</p> <p>Recommendation: It is recommended that a maximum period of postponement of the MES for 3 years be granted to allow Sasol to bring the sewage solids incinerator into compliance or to dispose of the waste stream by other acceptable means, rather than the 5 years requested by Sasol.</p>					
<p>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) without being made more stringent for the Sasol industries regulated thereunder.</p>	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	Sasol has detailed the reasons for its postponement applications in the motivation reports and associated technical appendices.
<p>It is further noted that even if compliance is indicated at a few monitoring</p>	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	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

Comments raised by stakeholders	Stakeholder name	Organisation/ community	Date	Source	Response
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.					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. 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.
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.	Ms Angela Andrews	Legal Resource Centre	27 Oct 2014	LRC Submission	The restatement of section 9(a) of the Air Quality Act and its purpose is not disputed.  As indicated in its AIRs and motivation reports the affected airshed's challenge has been identified in the form of high ambient levels of particulate matter. It is for this reason that Sasol supports the development of an appropriate offset mechanism.

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





# groundWork

**Environmental justice action**

P.O. Box 2375, Pietermaritzburg, 3200, South Africa ☉ 6 Raven Street, Pietermaritzburg, 3201, South Africa  
Tel: +27-33-342 5662 ☉ Fax: +27-33-342 5665 ☉ team@groundwork.org.za ☉ www.groundwork.org.za

Tuesday, 15<sup>th</sup> October 2013

Lysette Rothmann-Guest  
SRK Consulting

By e-mail: [lrothmann-guest@srk.co.za](mailto:lrothmann-guest@srk.co.za)

Dear Ms Rothmann-Guest

APPLICATIONS FOR POSTPONEMENT AND EXEMPTION FROM CERTAIN REQUIREMENTS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT NO. 39 OF 2004 - MINIMUM EMISSIONS STANDARDS, FOR SASOL'S OPERATIONS IN SECUNDA, SASOLBURG AND EKANDUSTRIA

We, groundWork – Friends of the Earth, South Africa, Earthlife African Jhb and the Vaal Environmental Justice Alliance hereby register as interested and affected parties. We three are environmental justice organisations working with people in the Vaal Triangle Airshed Priority Area (VTAPA) and the Highveld Priority Area (HPA). This submission is also made with Middelburg Environmental Justice Network; Greater Middelburg Residents' Association; Guqa Community Service Centre; Southern Africa Green Revolutionary Council; Greater Delmas Civic Movement; Schoongesicht Community Movement; Highveld Environmental Network; Wonderfontein Resettlement Forum; and Mpumalanga Youth Against Climate Change. Kindly register all of these parties as interested and affected parties in this process.

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 Sasol's application.

Upfront, we wish to point out that it is impossible to provide meaningful input on the BID in circumstances where Sasol 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 Eskom'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 Sasol's applications. 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 Sasol 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. Sasol's BID fails to provide any detail about the AIRs – it merely indicates that these “will determine Sasol's impacts on air quality in the areas affected by the facilities”.

According to the BID, the “motivation reports” will “include detail on each of 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 AIRs and for the motivation reports 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.

In relation to the section of the BID entitled “alternative mechanisms to bring about sustainable improvements in ambient air quality, through approved offsets”, we point out that there is no legislative provision that permits Sasol to “offset” its non-compliance with MES “by reducing other Emissions sources contributing to ambient air quality”.

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 PM<sub>10</sub> and PM<sub>2.5</sub>, SO<sub>2</sub>, nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), and benzene (C<sub>6</sub>H<sub>6</sub>).

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.

Sasol's operations for both their Secunda and Sasolburg plants are situated in the HPA and VTAPA area, respectively. In other words, air quality in the areas where Sasol seeks exemptions and postponements are situated is already problematic areas – 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 and the HPA. These data were then analysed to determine their compliance with the AAQS – with a focus on PM<sub>10</sub> and PM<sub>2.5</sub>.

The analysis of such data as is available revealed that, over this period, there have been multiple exceedances of the AAQS - and particularly PM<sub>10</sub> and PM<sub>2.5</sub> - in both the HPA and 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](https://dl.dropboxusercontent.com/u/41036903/Annexure%201%20Eskom%20MES_submissions%20on%20the%20BID.pptx)

It is also apparent from our analysis that air pollution in the HPA acts in a regional manner. The fact that the substances measured track each other seems to suggest that, in the HPA, defined sources are responsible for air pollution. In meetings we attended regarding the VTAPA and HPA, the Department of Environmental Affairs (DEA) has maintained that the exceedances of PM10 and PM2.5 in the Vaal and Highveld (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

Sasol 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 Sasol's pollution has on peoples' health. This, despite the exhaustive evidence of Sasol's pollution being found in air pollution samples undertaken by groundWork and communities since 2000. Subsequently, this has been reinforced by Sasol's own air pollution sampling in the community.

Sasol'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, Sasol's methods and research need to be considered by all parties before government can make an informed and meaningful decision.

Sasol 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 areas impacted by Sasol's Sasolburg and Secunda plants 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.<sup>1</sup>

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 Sasol needs to provide the public with what costs it would entail and for whom if the MES are not met.

#### e. Financial implications

Sasol claims a spend of approximately R2 billion per year over the past decade on environmental improvements. This claim, and its link to Sasol's opinion that 'high cost on-site investments are unlikely to materially improve poor air quality in the priority' needs to

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<sup>1</sup> s.5.5.3.1.





be better understood in light of Sasol's own developments for improved performance and economic returns of their operations. Critically, it must be understood which investments were for environmental improvement only, and which were for development for improved economic returns. Sasol is called upon to provide full information to justify these claims.

Sasol's claim that the 'the cost of implementing abatement technology to meet new plant standards at Sasol's existing facilities will materially affect the remaining economic lifetime of the facilities' and furthermore, the 'socio-economic consequences of this need to be considered in ensuring that a balanced and sustainable approach to environmental management is taken' is something that we need to fully understand. Sasol is called upon to provide full information to justify these claims.

We recognise that Sasol has been a profitable venture because of huge subsidies in the past, which included state financial subsidies for ensuring 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. 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. Sasol was aware of the implications of meeting MES and new MES since March 2010. It is critical that Sasol explains - with evidence - what research has been undertaken since then, and why steps could not have been taken more timeously. Sasol 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 Sasol'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,<sup>2</sup> 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.<sup>3</sup> Depriving us of a reasonable opportunity to make submissions on the documents would be procedurally unfair and therefore subject to judicial review.

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.<sup>4</sup> NEMA also requires that decisions take into account the interests, needs and values of all interested and affected parties.<sup>5</sup> 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 Sasol 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

'Sasol's reasons for applying for selected postponements and exemptions' are vague and dismissive of society's environmental and health concerns regarding Sasol'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 Sasol 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 Sasol'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

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<sup>2</sup> s.33(1) of Constitution of the Republic of South Africa, 1996.

<sup>3</sup> s.3 PAJA.

<sup>4</sup> s.2(4)(f) NEMA.

<sup>5</sup> s.2(4)(g) NEMA.



compliance timeframes and/or exemptions must be made available immediately in order that the present operations are understood, and the applications placed in context.

#### h. Conclusion

As Sasol 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 Sasol'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, SA



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](mailto: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 SASOL'S OPERATIONS IN SECUNDA, SASOLBURG AND EKANDUSTRIA**

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 documents 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 Sasol's Motivation documents. 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 Sasol'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 documents and its supporting technical information, as

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necessary, to ensure that a comprehensive and relevant submission is placed before the competent authority considering Sasol's applications.

With respect to your request for additional time to consider the documents we make available to the public in this process, Sasol 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](mailto: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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460365/41705-Report  
5026-6021-078-HQWV  
This signature has been printed digitally. The signature is printed on this document. The details are stored in the SRK Signature Database

Lysette Rothmann  
Senior Stakeholder Engagement Specialist

## **Annexure 2: Article – Secunda Resident**

MAY 31, 2013

# Sasol does not care

I would like to comment on the article "Sasol: Smoke poses no health risk" in the *Ridge Times* of 24 May.

My children have been diagnosed with chronic bronchitis and asthma since we have been staying in Secunda.

Sad to say, our air is polluted by the factory.

Sasol is releasing their products in the night when everyone is asleep and are not able to see what we are inhaling.

You can hear it blowing from a distance.

You wake up in the mornings with a blocked nose, a tight chest and burning eyes.

Perhaps we should contact Dr Henk Coetzee of the Council for Geoscience to come and test the quality of air in Secunda, like they did in Witbank, classifying Witbank's air to be the dirtiest in the world.

I think they will get a huge surprise when they test our environment.

Sasol does not care about the community or the environment.

What happened to their emission centres which they established in different areas of Secunda to monitor the levels of "poison" so to say?

No feedback was given whatsoever, which makes you wonder, do they really care?

Our medical aid is depleted by the middle of the year because of children being sick monthly.

What are you going to do about this?

When you visit the doctors, they do not even hesitate to tell you that it is the environment that we are staying in, causing everyone to be ill.

Sasol has shutdowns every year, but clearly there is a lot of maintenance that need to be done to get the factory up to standard and the environment clean.

I do think measures should be taken and people such as Green Peace should pay our town a visit, to see what we see, and feel like we feel.

Perhaps only then will we receive proper feedback and solutions.

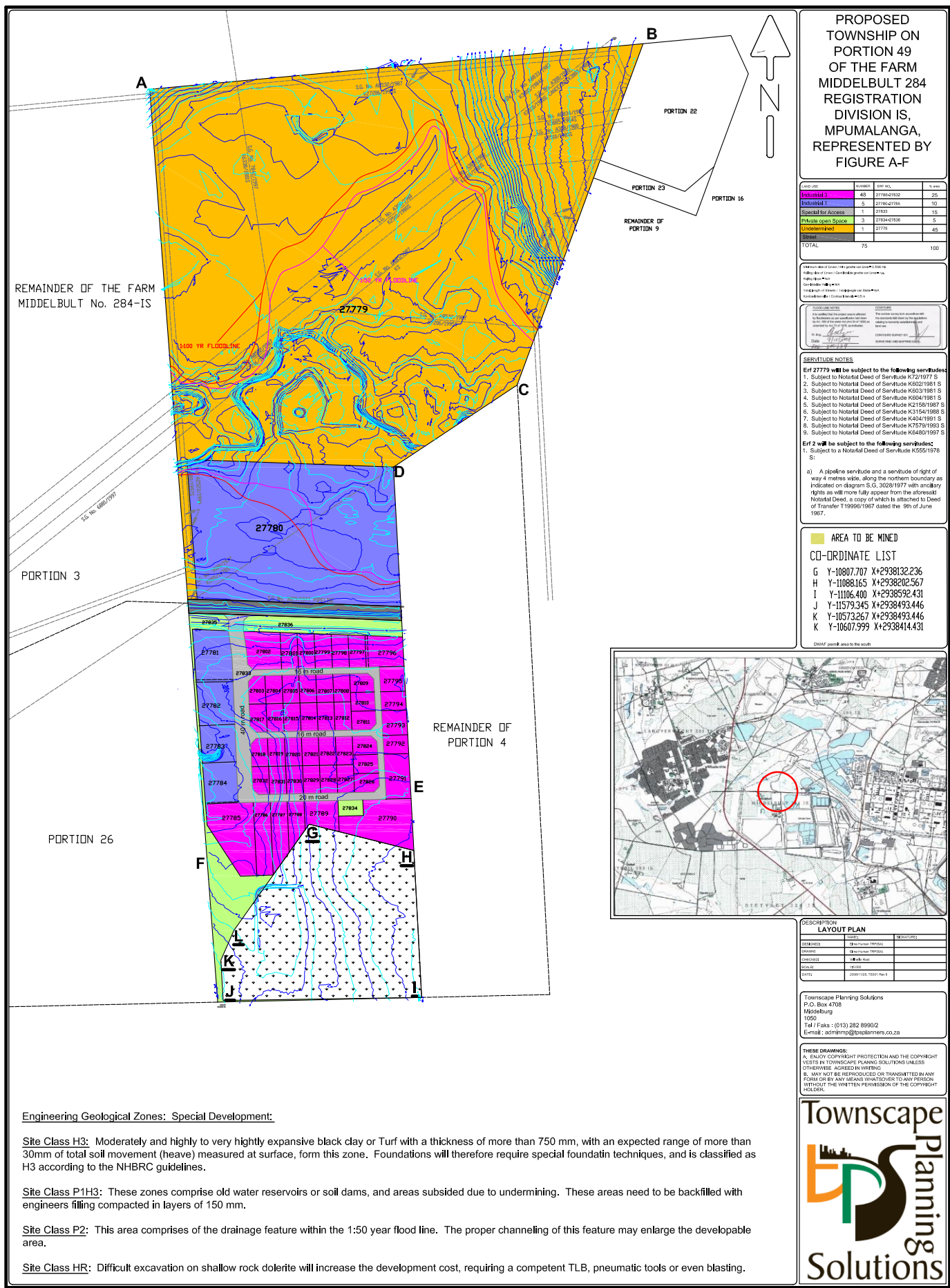
It is not fair against our children, they are the ones suffering.

They are our future.

**Concerned parent, Secunda.**

## **Annexure 3: Site Plan – Templemore Trading 69**





PROPOSED  
TOWNSHIP ON  
PORTION 49  
OF THE FARM  
MIDDELBULT 284  
REGISTRATION  
DIVISION IS,  
MPUMALANGA,  
REPRESENTED BY  
FIGURE A-F

NO.	DESCRIPTION	AREA (HA)	PERCENTAGE
1	Industrial 1	45	2779-2782
2	Special for Access	5	2779-2782
3	Special for Access	1	2783
4	Special for Access	1	2784-2785
5	Special for Access	1	2779
6	Special for Access	1	2779
7	Special for Access	1	2779
8	Special for Access	1	2779
9	Special for Access	1	2779
10	Special for Access	1	2779
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1:100 YR FLOODLINE

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20 m road

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## **Annexure 4: Letter – Verigreen Solutions**

# Letter



**Ekurhuleni**  
METROPOLITAN MUNICIPALITY

**Veri-Green Solutions (Pty) Ltd**

Reg.: 2012/079934/07

9 Simon Road

Witfield

**Boksburg**

1459

**ENVIRONMENTAL RESOURCE  
MANAGEMENT DEPARTMENT**

**Environmental Protection & Resilience  
(Air Quality Management)**

Cnr Long and Margaret Streets  
1<sup>st</sup> Floor, City House Building  
**KEMPTON PARK**

P. O. Box 13  
**KEMPTON PARK**  
1620

Tel: (011) 999- 2971

Fax: 086 559 5652

[www.ekurhuleni.com](http://www.ekurhuleni.com)

**Date:** 12 September 2013

Attention: Mr A. Phaahla

**SUBJECT: JOINT PILOT PROJECT ON THE ROLL OUT PROJECT OF METHANOL/ ETHANOL STOVES AROUND DUKATHOLE INFORMAL SETTLEMENT AS A WAY OF CLEAN AND GREEN ENERGY TO IMPROVE AIR QUALITY AND REDUCE NEGATIVE CLIMATE CHANGE IMPACT**

The Environmental Resource Management (Air Quality Management) is currently working with Veri-Green Solutions (Pty) Ltd, on a methanol/ethanol energy stoves project around Dukathole Informal Settlement in Germiston. The project if implemented will assist in reduction of poor air quality, maximise the use of cleaner energy in terms of National Energy Strategy, reduce negative climate change impact and global warming.

Ekurhuleni metro has been declared a priority area with other districts such as Gert Sibande and Emalahleni in terms of air pollution by the minister of National Department of Environmental Affairs. This implies the air quality in Ekurhuleni is poor due to emissions from different type of sources such as industries, vehicular emissions and residential coal burning, paraffin and wood which contribute significantly to high levels of air pollution especially with particulate matters, carbon monoxide and other emissions.

The project was piloted with one stove utilized for a period of one month while Air Quality section is conducting some passive sampling tests within the house and outside for emission levels comparisons. Methanol/ ethanol have been proven from literature to have no emissions other than water vapour and carbon dioxide. The results have been send for analysis to an accredited laboratory (CSIR) and will be available once finalised. Veri-Green Solutions (Pty) Ltd, can be sponsored by any other sponsor that have interest on energy efficiency and poverty alleviation mechanisms as the company contribute towards clean energy.

Hoping that you find this in order

A handwritten signature in black ink, appearing to read 'J. Legadima', written over a horizontal line.

**MR. JACOB LEGADIMA**  
**MANAGER: AIR QUALITY MANAGEMENT/SPECIALIST**

## **Annexure 5: SRK Response Letter – Mr Breetzke**

4 October 2013  
460365

## **Application for postponement and exemption from certain requirements of the National Environmental Management: Air Quality Act No. 39 of 2004 (NEMAQA) - Minimum Emissions Standards for Sasol's operations in Secunda, Sasolburg and Ekandustria**

Dear Mr Breetzke,

Thank you for the comments and questions raised regarding Sasol's application process.

We record your questions and comments from your email dated 25 September 2013, and your subsequent telephonic communication with Ms Lysette Rothmann-Guest of SRK Consulting on 27 September 2013.

### **1. Is the Background Information Document (BID) for the application process and other documentation forwarded to Interested and Affected Parties (I&APs) confidential?**

Sasol is following an application process that meets the stipulated requirements in the Air Quality Act and Minimum Emission Standards, over and above which, it is engaging in a public participation process informed by the National Environmental Management Act (NEMA) guidelines. As with any typical public participation process, the announcement documentation prepared for Sasol's application process, such as the BID and invitation letters, are public documents and can be distributed in the public domain.

### **2. Will Sasol provide answers to questions from stakeholders prior to the public meetings?**

Sasol intends to follow a public participation process informed by NEMA guidelines. In line with this practice, Sasol intends to formally address questions and comments during the public meetings as well as thereafter, in a formal Comments and Response Report for the purposes of sharing these with all Interested and Affected Parties. However, where individual stakeholders raise queries seeking responses prior to the meetings, to the extent that is practical, Sasol will consider such requests. The Sasol application process has just been announced and as part of this first phase of the public participation process, initial information has been made available to stakeholders in the form of documents such as the BID. In addition, public meetings will be held to present initial information to stakeholders and to provide them with the opportunity to raise questions and comments. Stakeholders can also raise questions and comments telephonically, via email or in written form. All comments and questions from stakeholders will be collectively recorded in a Comment and Response Report (CRR) and responses will be provided by Sasol for each question and comment in this document. This will naturally include your questions, and these responses. In the event that some stakeholders would like issues to be raised in the public domain but do not wish to be personally identified in the public documents, this can be accommodated.

**Partners** AH Bracken, MJ Braune, JM Brown, CD Dalglish, JR Dixon, DM Duthe, BM Engelsman, R Gardiner, DJD Gibson, GC Howell, WC Joughin, DA Kilian, PR Labrum, DJ Mahlangu, RRW McNeill, HAC Meintjes, JA Middleton, MJ Morris, WA Naismith, GP Nel, VS Reddy, PN Rosewarne, PE Schmidt, PJ Shepherd, MJ Sim, VM Simposya, AA Smithen, HFJ Theart, KM Uderstadt, DJ Venter, ML Wertz, MD Wanless, A Wood

**Directors** AJ Barrett, JR Dixon, PR Labrum, DJ Mahlangu, VS Reddy, PE Schmidt, PJ Shepherd

**Associate Partners** M Hinsch, JA Lake, B Liber, V Maharaj, SA McDonald, M Ristic, JJ Slabbert, D Visser

**Consultants** AC Burger, *BSc(Hons)*; IS Cameron-Clarke, *PrSciNat, MSc*; JAC Cowan, *PrSciNat, BSc(Hons)*; JH de Beer, *PrSci Nat, MSc*; T Hart, *MA, TTHD*; GA Jones, *PrEng, PhD*; TR Stacey, *PrEng, DSc*; OKH Steffen, *PrEng, PhD*; PJ Terbrugge, *PrSciNat, MSc*; DW Warwick, *PrSciNat, BSc(Hons)*

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Australia  
Europe  
North America  
South America



During the next phase of the process, more detailed information regarding Sasol's application process will be documented in a Draft Motivation Report that will also be made available for public comment. A second round of public meetings will be held and various opportunities will again be available for stakeholders to participate in the process. The CRR will accompany this report and will be updated during the second round of stakeholder engagement before the final report is submitted to the Department of Environmental Affairs for consideration. The final Motivation Report will be available for public information in public places (as was during announcement), and on the SRK website. In addition stakeholders can request a copy of the report from the Stakeholder Engagement Team, which will be available on CD.

### **3. What are the current emissions at the Secunda plant?**

Sasol reports on atmospheric emissions annually through the Sasol Sustainable Development Report, which is a publicly available document, and at public meetings in the communities in which we operate.

The most recent Sustainable Development Report is available at the following link:

[http://www.sasol.com/sites/default/files/content/files/SASOL\\_SDR%25202012\\_1353934690274.pdf](http://www.sasol.com/sites/default/files/content/files/SASOL_SDR%25202012_1353934690274.pdf)

Please also note that as a part of the application process, Sasol has appointed independent air quality specialists to prepare an Atmospheric Impact Report (AIR), which will provide further information about the emissions from Sasol's processes. This will be made available to the public as a part of the Draft Motivation Report.

### **4. What are the legal requirements for postponement and exemption?**

The process is explained further on page 3 and 4 of Sasol's Background Information Document.

Section 21 of the Air Quality Act provides for the listing of activities that must be licensed in accordance with the Minimum Emission Standards (MES). The MES prescribes the limits for point source emissions from existing plants that must be met by 1 April 2015, as well as more stringent limits that must be met by 1 April 2020 (the so-called 'new plant standards').

Section 59(1) of Air Quality Act allows any person to apply for exemption from a provision of the Act. This application must be made to the Minister of the Department of Environmental Affairs. The applicant must provide reasons for the application and must take steps, as may be required, to bring it to the attention of relevant organs of state, interested persons and the public. This includes publication of a notice in two national newspapers.

Section 6 of the MES permits applications for postponements of the Compliance Timeframes. These applications must be made to the National Air Quality Officer at the Department of Environmental Affairs. As part of its application, Sasol is required to submit an Atmospheric Impact Report (AIR) and detailed justification and reasons. Postponement applications must be announced by way of notice in at least one newspaper circulating in the area affected by the plant.

As indicated above, over and above following an application process that meets the stipulated requirements, Sasol is engaging in a public participation process informed by the National Environmental Management Act (NEMA) guidelines, to give an opportunity for Interested and Affected Parties to provide their comments and questions on Sasol's applications.

### **5. Why is Sasol applying for postponement and exemptions?**

While most of Sasol's process emissions will comply with the future Minimum Emission Standards through proactive environmental investments, there are some that cannot meet the standards within the required timeframes, and others which are unlikely to meet the standards at all.

Seeking exemptions from the Minimum Emission Standards is not a decision that Sasol takes lightly. As a first priority, Sasol has explored all reasonable avenues to comply with the standards. For a number of Sasol's air emission sources, particularly in respect of the 2020 new plant standards, detailed analysis has shown that the cost of compliance will be prohibitively high. In these cases there is good reason for Sasol to critically examine its contribution to air pollution in relation to other sources, so as to determine

the overall social cost - benefit of this level of expenditure. Sasol believes that there are other alternatives, including judicious corporate expenditure on offsets, which could provide more sustainable solutions to these problems. In its applications for exemptions, Sasol will provide a full motivation for each case, supported by an independent air quality assessment, as required by the Air Quality Act.

Sasol's need for exemptions is also partly driven by the Air Quality Act Minimum Emissions Standard timeframes, which it believes to be unreasonably onerous for old plants. Where very large capital expenditure on non-productive assets is involved, the costs must be carefully integrated with other expenditure so as not to detrimentally affect the overall competitiveness and profitability of Sasol's business. Sasol feels that postponements are an inappropriate mechanism to manage these ongoing risks, since they provide no long-term certainty as they may not be granted at a future re-application date or might be withdrawn at any point. While in some instances compliance with the standards could be achieved if longer time frames were available, the current requirements make exemptions a necessity in order for Sasol's businesses to remain legally compliant.

**6. Will comments and questions from stakeholders be submitted to the Department of Environment Affairs and can stakeholders submit questions and comments directly to the Minister?**

All comments and questions raised during the stakeholder engagement process will be recorded in the CRR which will accompany the Motivation Document that will be submitted to the Department of Environment Affairs, in line with the required exemption application process which is explained further on page 7 and 8 of Sasol's Background Information Document.

**7. Why will the public meeting in Secunda only be held in eMbalenhle?**

One public meeting has been scheduled in each of the areas where the Sasol plants are applying for postponement and exemption, i.e. in Sasolburg, Ekandustria and Secunda.

Should stakeholders be unable to attend the public meeting, they can also raise questions and comments telephonically, via email or in written form. All comments and questions from stakeholders will be collectively recorded in the CRR, and responses will be provided by Sasol for each question and comment in this document.

Please do not hesitate to contact SRK Consulting should you wish to clarify and confirm the questions and comments reflected above.

We thank you for your participation in this application process.

Yours faithfully,

**SRK Consulting (South Africa) (Pty) Ltd**

SRK Consulting - Certified Electronic Signature  
  
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4790-05-01-000001  
This signature has been digitally signed by the Authority given permission to use for this document. The details are stored in the SRK Signature Database.

**VASSIE MAHARAJ**

Stakeholder Engagement Office

Associate Partner: Stakeholder Engagement

## **Annexure 6: Written Submission: Legal Resources Centre (June 2014)**



LEGAL RESOURCES CENTRE

PBO No. 930003292

3<sup>rd</sup> Floor Greenmarket Place • 54 Shortmarket Street • Cape Town 8001 • South Africa • [www.lrc.org.za](http://www.lrc.org.za)

PO Box 5227 • Cape Town 8000 • South Africa • Tel: (021) 481 3000 • Fax: (021) 423 0935

Your Ref:

Our Ref:

16<sup>th</sup> June 2014

SRK Consulting (South Africa) Pty Ltd

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Postal Address: PO Box 55291,

Northlands, 2116

Tel: +27(0)11 441 1111

Fax: +27(0)86 5061737

Email: [lrothmann-guest@srk.co.za](mailto:lrothmann-guest@srk.co.za)

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 Standards<sup>1</sup> (NAAQs) in Secunda and Sasolburg and since SO<sub>2</sub> and NO<sub>2</sub> convert to PM, every request for postponement for a limit on a criteria pollutant (ie PM, SO<sub>2</sub>, NO<sub>x</sub>) 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 H<sub>2</sub>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<sub>2</sub>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. Since H<sub>2</sub>S does not comply with health protective air quality standards in Secunda, any request for postponements for H<sub>2</sub>S 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

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<sup>1</sup> 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)<sup>2</sup> without being made more stringent for the Sasol and Natref industries regulated thereunder, except in respect of Category 8.<sup>3</sup> The 2012 National Framework for Air Quality Management<sup>4</sup> (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.<sup>5</sup> 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

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<sup>2</sup>GN893 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.

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

<sup>4</sup>established in terms of Section 7 of AQA

<sup>5</sup>See 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 AQA<sup>6</sup>), 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.<sup>7</sup> 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.<sup>8</sup>
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*

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<sup>6</sup>S 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.”

<sup>7</sup>S1

<sup>8</sup>S7(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 SO<sub>2</sub> 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.”<sup>9</sup>*

9. Pollutants of concern are then identified in table 16<sup>10</sup> 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

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<sup>9</sup>Page 64

<sup>10</sup>Paragraph 5.3.2 Table 16

economic impacts arising due to the emission standard set.”<sup>11</sup> 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 Standards<sup>12</sup> (NAAQSs) in Secunda and Sasolburg and since SO<sub>2</sub> and NO<sub>2</sub> convert to PM, every request for postponement for a limit on a criteria pollutant (ie PM, SO<sub>2</sub>, NO<sub>x</sub>) 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 H<sub>2</sub>S does not comply with health protective air quality standards in Secunda, a request for postponements for H<sub>2</sub>S limits should be rejected as well. There is no data on H<sub>2</sub>S from Sasolberg so Natref's application for postponement of MES relating to H<sub>2</sub>S 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

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<sup>11</sup>2007 Framework paragraph 5.4.3.3

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

Quality Standards (NAAQSs).<sup>13</sup> 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.<sup>14</sup>

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**

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

<sup>14</sup> 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 SO<sub>2</sub> and NO<sub>2</sub> 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, SO<sub>2</sub> 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 SO<sub>2</sub> emissions from a refinery will convert to particulate matter<sup>15</sup> then a request for postponement of emissions standards for SO<sub>2</sub> by the Sasol Synfuels facility in Secunda cannot be granted because SO<sub>2</sub> emissions that further worsen PM levels would necessarily cause adverse impacts on the surrounding environment.
22. NOTE: The conversion of SO<sub>2</sub> emissions from a refinery into particulate matter is not a trivial matter. SO<sub>2</sub> emissions from a refinery are much greater than PM emissions. See the table below showing how overall SO<sub>2</sub> emissions from the Sasol Synfuels facility in Secunda are about 10 times higher than overall PM emissions (about 300 grams per second of SO<sub>2</sub> 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 SO<sub>2</sub> emissions from the refinery converts to ultrafine particulate matter, then the refinery’s SO<sub>2</sub> emissions can indirectly contribute as much to ambient levels of PM than PM emissions do directly.

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<sup>15</sup> (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 <sub>x</sub> (g/s)	NO <sub>x</sub> (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 <sub>3</sub> (g/s)	HCl (g/s)	TOCs (g/s)	Dioxins/Furans (g/s)
<b>Baseline</b>												
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
<b>At Existing Plant Emission Standards</b>												
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
<b>At New Plant Emission Standards</b>												
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
<b>At Alternative Emission Limits</b>												
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, NO<sub>2</sub> levels are in compliance with NAAQSs. However, we must apply the same principle with NO<sub>2</sub> emissions as with SO<sub>2</sub> emissions since conversion of NO<sub>2</sub> 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 NO<sub>2</sub> emissions should be granted.
24. For H<sub>2</sub>S 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 H<sub>2</sub>S above 42 ug/m<sup>3</sup> should be considered high in South Africa.

Table 3.18: Pollutant thresholds

Pollutant*	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>2</sub>	CO	O <sub>3</sub>	H <sub>2</sub> S
Units	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>
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 H<sub>2</sub>S concentrations at monitoring stations around Secunda

Table G-3: Predicted and observed H<sub>2</sub>S concentration statistics

		H <sub>2</sub> S Concentration (µg/m <sup>3</sup> )					
		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 99<sup>th</sup> 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 99<sup>th</sup> percentile H<sub>2</sub>S concentrations are all above 42 ug/m<sup>3</sup> (which they are), then hourly H<sub>2</sub>S levels should be considered high in South Africa. If hourly H<sub>2</sub>S levels are high around the Sasol Synfuels facility in Secunda, then granting a postponement (or exemptions) for H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S (high by SA as well as international standards) no postponement for H<sub>2</sub>S should be granted.
28. Detailed information on the compliance with ambient air standards are contained in footnotes, below.<sup>16</sup>

<sup>16</sup> The Atmospheric Impact Report for the Sasol Synfuels facility in Secunda.

On page 51: “The daily 99th percentiles for PM<sub>10</sub> exceeded the limit value (75 µg/m<sup>3</sup>; 2015 standard) at both Secunda Club (Figure 5-20) and Langverwacht stations (Figure 5-21) for all three years. While the SO<sub>2</sub> and NO<sub>2</sub> annual averages were below the NAAQs, the PM<sub>10</sub> annual averages exceeded the 2015 limit value of 40 µg/m<sup>3</sup> for all three years at Langverwacht and were close to the limit value at Secunda Club.”

## Conclusion

29. As regards H<sub>2</sub>S 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 H<sub>2</sub>S levels far exceed acceptable levels from a health point of view no postponement should be granted. Sasol is the principle contributor of H<sub>2</sub>S 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 requirements<sup>17</sup>**

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.<sup>18</sup>
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

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On page 45: "The hourly 99th percentiles for SO<sub>2</sub> were below the limit value of 350 µg/m<sup>3</sup> at all three stations for all three years (Figure 5-11, Figure 5-13, and Figure 5-15). The daily 99th percentiles for SO<sub>2</sub> were below the limit value (125 µg/m<sup>3</sup>) 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 SO<sub>2</sub> were below the limit value of 350 µg/m<sup>3</sup> at both stations for all three years (Figure 5-9 and Figure 5-10). The daily 99th percentiles for SO<sub>2</sub> were below the limit value (125 µg/m<sup>3</sup>) 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 PM<sub>10</sub> exceeded the limit value (75 µg/m<sup>3</sup>; 2015 standard) at both stations and for all three years (Figure 5-15 and Figure 5-16). While the SO<sub>2</sub> and NO<sub>2</sub> annual averages were below the NAAQS, the PM<sub>10</sub> annual averages exceeded the 2015 limit value of 40 µg/m<sup>3</sup> for all three years at Leitrims. The PM<sub>10</sub> 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 SO<sub>2</sub> were below the limit value of 350 µg/m<sup>3</sup> at both stations for all three years (Figure 5-9 and Figure 5-10). The daily 99th percentiles for SO<sub>2</sub> were below the limit value (125 µg/m<sup>3</sup>) 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 PM<sub>10</sub> exceed the limit value (75 µg/m<sup>3</sup>; 2015 standard) at both stations and for all three years (Figure 5-15 and Figure 5-16). While the SO<sub>2</sub> and NO<sub>2</sub> annual averages were below the NAAQS, the PM<sub>10</sub> annual averages exceeded the 2015 limit value of 40 µg/m<sup>3</sup> for all three years at Leitrims. The PM<sub>10</sub> 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.

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

<sup>18</sup>PARAGRAPH 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.<sup>19</sup> 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.<sup>20</sup> 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.<sup>21</sup> 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.”*

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<sup>19</sup>section 2

<sup>20</sup>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,

<sup>21</sup>Section 5(2)

35. Section 5.4.6.10<sup>22</sup> 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”<sup>23</sup>*

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.<sup>24</sup> 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 H<sub>2</sub>S and other toxic compounds from several of the applicant’s operations,

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<sup>22</sup> Human health Impact assessments

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

<sup>24</sup> 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 NO<sub>2</sub>, SO<sub>2</sub>, H<sub>2</sub>S and PM<sub>10</sub> 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.<sup>25</sup>***

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 SO<sub>2</sub> and PM in Secunda and SO<sub>2</sub> in Sasolberg proves there is a direct threat to health from air pollution in these areas emanating from the applicants. Levels of H<sub>2</sub>S in Secunda exceed health protective standards ie international benchmarks for the protection of health for H<sub>2</sub>S.<sup>26</sup> Therefore there is a direct threat to health from H<sub>2</sub>S 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

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<sup>25</sup>Framework at paragraph 5.4.3.3, page 67

<sup>26</sup>See parag

standards, and health protective standards, including but not limited to PM and SO<sub>2</sub>. As set out below Sasol is the principle source of H<sub>2</sub>S in Secunda and Natref is the principle source in Sasolberg

42. In areas where SO<sub>2</sub> and NO<sub>x</sub> 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 SO<sub>2</sub>, and NO<sub>x</sub> 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 H<sub>2</sub>S. The applications for postponements for SO<sub>2</sub> NO<sub>x</sub> and others must therefore be seen in the context of non compliant ambient air standards for PM as well as unhealthy levels of H<sub>2</sub>S in Secunda and unknown levels of H<sub>2</sub>S 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 H<sub>2</sub>S and the status of H<sub>2</sub>S 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),<sup>27</sup> 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.

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<sup>27</sup> AIR report for



Sasol highlights its participation in the development of the Vaal Triangle Air-shed Priority Area (VTAPA) Air Quality Management Plan.<sup>28</sup> 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.<sup>29</sup> Notably, Sasol is seeking an exemption from complying with standards for each of these compounds.<sup>30</sup> The communities of Sasolberg, Zamdela and Coalbrook were identified as sensitive receptors within the zone.<sup>31</sup>

#### **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.”<sup>32</sup> As discussed herein, particulate matter is a significant and specific source of concern in the VTAPA, where Sasol’s facilities are located.

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<sup>28</sup> See Sasol Infrachem Exemption Application at 12.

<sup>29</sup> Vaal Triangle Airshed Priority Area Air Quality Management Plan at 13.

<sup>30</sup> See e.g. Sasol Infrachem Exemption Application at 7-8.

<sup>31</sup> Vaal Triangle Airshed Priority Area Air Quality Management Plan at P 13

<sup>32</sup> 2013 State of the Air in South Africa Summary Report.

50. Hydrogen sulphide, or H<sub>2</sub>S, 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 H<sub>2</sub>S is principally through inhalation, and the gas is rapidly absorbed through the lungs.<sup>33</sup> Exposure to H<sub>2</sub>S 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 H<sub>2</sub>S can result in death.<sup>34</sup> Further information on the health impacts of H<sub>2</sub>S are provided in Annexure A below.
51. Sulfur dioxide: Sulphur dioxide (SO<sub>2</sub>) is a colourless gas with known health effects at even lower concentrations than previously believed.<sup>35</sup> The WHO has noted the following health effects associated with SO<sub>2</sub>: 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 SO<sub>2</sub> levels. When SO<sub>2</sub> combines with water, it forms sulphuric acid; this is the main component of acid rain which is a cause of deforestation.<sup>36</sup>
52. NO<sub>x</sub> is a toxic gas that causes significant inflammation of the airways.<sup>37</sup> The WHO has noted that symptoms of bronchitis in asthmatic children increase with long-term NO<sub>2</sub> exposure and that reduced lung function is linked to NO<sub>2</sub> at concentrations currently measured (or observed) in cities of Europe and North America.<sup>38</sup>
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.<sup>39</sup> 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.

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<sup>33</sup> Bhimsan, R. (2005): Implications of the new air quality bill on the management of H<sub>2</sub>S emissions from Sasol's operations in Secunda, South Africa (Doctoral dissertation, University of Pretoria) at 22.

<sup>34</sup> Bhimsan, R. (2005): Implications of the new air quality bill on the management of H<sub>2</sub>S emissions from Sasol's operations in Secunda, South Africa (Doctoral dissertation, University of Pretoria) at 23-26.

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

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

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

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

<sup>39</sup> AQA s2(a)(i)

## ANNEXURE A: Hydrogen Sulphide -H<sub>2</sub>S

1. Sasol (Synfuels) seeks exemption from emissions standards for its Rectisol plant in Secunda (category 3.6.) Natref seeks postponement of emissions standards for H<sub>2</sub>S in its refinery at Sasolberg. (category 2.1 and 2.3<sup>40</sup>). Neither postponements or exemptions should be granted from MES for H<sub>2</sub>S given the toxicity of the compound, the proximity to adjacent communities, the lack of compliance with ambient air standards both areas, the volumes of H<sub>2</sub>S 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 H<sub>2</sub>S in Secunda. Submissions regarding the Sasol exemption application for H<sub>2</sub>S in Secunda will be made separately.
2. Further information on the health impacts of H<sub>2</sub>S are provided below. South Africa does not have NAAQSS for H<sub>2</sub>S. 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 H<sub>2</sub>S above 42 µg/m<sup>3</sup> should be considered high in South Africa.<sup>41</sup>

Table 3.18: Pollutant thresholds

Pollutant*	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>2</sub>	CO	O <sub>3</sub>	H <sub>2</sub> S
Units	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>
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/m<sup>3</sup>)” and refers to the California OEHHA (first adopted as of August 2003).<sup>42</sup> The report defines “high pollution days” with reference to these

<sup>40</sup>“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.”

<sup>41</sup>[https://www.environment.gov.za/sites/default/files/docs/stateofair\\_executive\\_iaquality\\_standardsonjectives.pdf](https://www.environment.gov.za/sites/default/files/docs/stateofair_executive_iaquality_standardsonjectives.pdf)

<sup>42</sup>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 PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO, O<sub>3</sub>, and hydrogen sulphide (H<sub>2</sub>S) 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 H<sub>2</sub>S hourly average values were given as follows: the “low is given as < 30 ug/m<sup>3</sup>, medium is 30-42 ug/m<sup>3</sup> and high is given as 42 ug/m<sup>3</sup>.<sup>43</sup> These hourly values also correspond with the State of California 1 hour OEHHA standard.<sup>44</sup>

4. The Sasol Synfuels AIR indicates non-compliance with this standard in the Secunda area where the exemption is sought for H<sub>2</sub>S emissions from the Rectisol plant. It states that the observed 99<sup>th</sup> percentile H<sub>2</sub>S concentrations are all above 42ug/m<sup>3</sup>. This would be considered high in terms of the State of the Air Report criteria referred to above.<sup>45</sup> These readings all relate to SECUNDA and not Sasolberg, where there are postponements sought for Natref for compliance with emission standards for H<sub>2</sub>S. The NATREF air emission report does not mention H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S from large scale industrial processes is a unique phenomenon and that H<sub>2</sub>S 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 H<sub>2</sub>S problem.
6. Sasol is unique in that it exposes a large population to elevated levels of H<sub>2</sub>S. As stated above information about the baseline health should have been included in

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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.

<sup>43</sup>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 PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO, O<sub>3</sub>, and hydrogen sulphide (H<sub>2</sub>S) 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” PM<sub>10</sub> concentrations, were classified as “high pollution days”, and the pollutants resulting in this classification noted

<sup>44</sup>[http://www.oehha.ca.gov/air/hot\\_spots/2008/AppendixD2\\_final.pdf#page=144](http://www.oehha.ca.gov/air/hot_spots/2008/AppendixD2_final.pdf#page=144)

<sup>45</sup>See Sasol Synfuels AIR report Table G-3: Predicted and observed H<sub>2</sub>S concentration statistics. This report suggests that there would be numerous hourly average H<sub>2</sub>S 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 H<sub>2</sub>S in excess of 80 000 tons per year. The prevalence of so much H<sub>2</sub>S in the air in Secunda is relevant not only to the application for exemption from H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S, 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 SO<sub>2</sub>, VOC's

Categ 8.1 (sewerage solid incinerators: PM, CO, SO<sub>2</sub>, NO<sub>x</sub>, HCl, HF, Hg, Cd, Tl, TOC, NH<sub>3</sub> 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 H<sub>2</sub>S 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 H<sub>2</sub>S 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"<sup>46</sup>
9. However Sasol is still a substantial emitter of H<sub>2</sub>S. The Sasol Synfuels Facility in Secunda is a coal gasification plant that generates off-gases containing hydrogen sulfide (H<sub>2</sub>S) that are sent to a sulfur recovery plant, which converts the H<sub>2</sub>S 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

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<sup>46</sup>Parag 2.6.7 Postponement Application for Sasol Synfuels and others

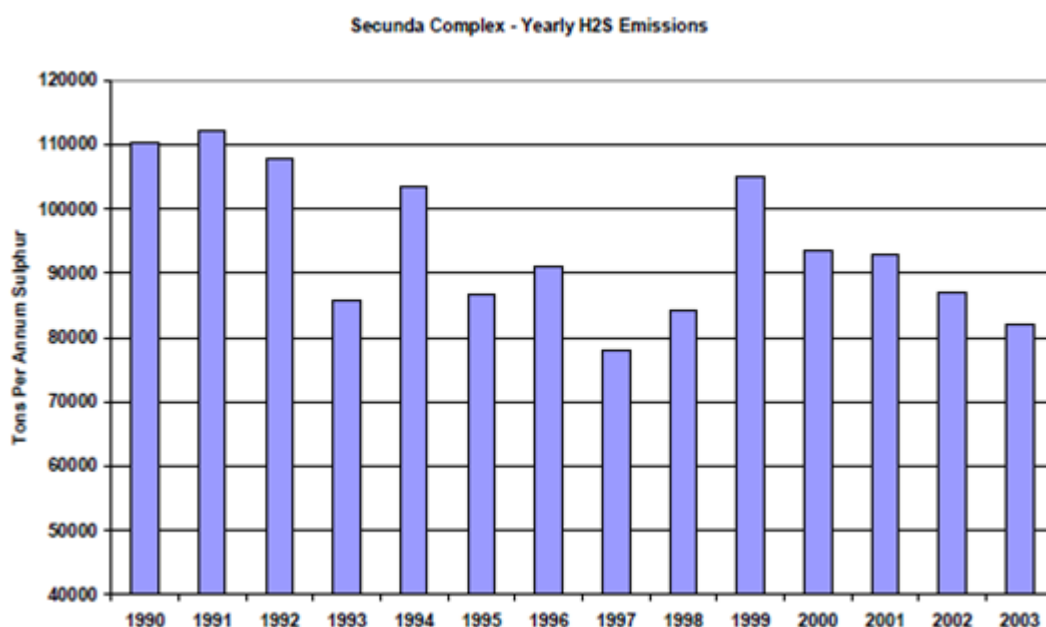
washing on coal properties.” This implies that 1,200 metric tons per day of sulfur (440,000 metric tons per year) comes in to the Sasol Synfuels Facility in Secunda facility. Two independent sources indicate that the amount of H<sub>2</sub>S that comes out of the Sasol Synfuels Facility in Secunda is 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 H<sub>2</sub>S 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 <sub>2</sub> (g/s)	NO <sub>x</sub> (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 <sub>3</sub> (g/s)	HCl (g/s)	H <sub>2</sub> 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 H<sub>2</sub>S EMISSIONS FROM SASOL’S OPERATIONS IN SECUNDA, SOUTH AFRICA” Bhimsan, R. (2005), Doctoral dissertation.<sup>47</sup>

<sup>47</sup>University 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.			
<b>Application:</b>		All installations	
<b>Substance or mixture of substances</b>		<b>Plant status</b>	<b>mg/Nm<sup>3</sup> under normal conditions of 273 Kelvin and 101.3 kPa.</b>
<b>Common name</b>	<b>Chemical symbol</b>		
Hydrogen Sulphide	H <sub>2</sub> 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/Nm<sup>3</sup> 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 H<sub>2</sub>S emissions and health impacts**

15. Sasol unique in that it exposes a large population to H<sub>2</sub>S and other air pollutant emissions in Secunda. Natref is a significant source of H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S levels are high, and above health protective thresholds around the Sasol Synfuels facility in Secunda, then granting an exemption or postponement allowing higher H<sub>2</sub>S emissions to continue would cause adverse impacts on the surrounding environment in conflict with the requirements of the National Framework.

### **Health studies regarding H<sub>2</sub>S**

17. Health studies have established that even low levels of H<sub>2</sub>S 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/m<sup>3</sup>), but to daily maximum hydrogen sulfide levels of up to 70 ppb (100 µg/m<sup>3</sup>), suffered excessively from irritation of the nose, cough, and headache compared to children in a non-polluted community.<sup>48</sup> 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/m<sup>3</sup>), but to daily maximum hydrogen sulfide levels of up to 17 ppb (24 µg/m<sup>3</sup>), 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."<sup>49</sup> 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/m<sup>3</sup>), but to daily maximum hydrogen sulfide levels of up to 80 ppb (112 µg/m<sup>3</sup>), 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."<sup>50</sup>

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<sup>48</sup> 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.

<sup>49</sup> 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

<sup>50</sup> 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.<sup>51</sup> 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.<sup>52</sup> 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.<sup>53</sup> 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.<sup>54</sup> 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 H<sub>2</sub>S 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  $42 \mu\text{g}/\text{m}^3$ .<sup>55</sup> These hourly values also correspond with the State of California hourly concentrations for health.

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<sup>51</sup> 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.

<sup>52</sup> 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

<sup>53</sup> 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.

<sup>54</sup> 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.

<sup>55</sup> 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.<sup>56</sup> 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.<sup>57</sup> 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**

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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

<sup>56</sup>see paragraph of this submission

<sup>57</sup>s 6(2)(e)(iii)

## **Annexure 7: Written Submission: Legal Resources Centre (October 2014)**

**Cape Town Office**

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**NPO No. 023-004**

# LRC

Legal Resources Centre

Your Ref:

Our Ref:

27<sup>nd</sup> October 2014

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Email: [lrothmann-guest@srk.co.za](mailto:lrothmann-guest@srk.co.za)

Att: Lysette Rothmann-Guest

Dear Ms Rothman-Guest

**RE: SUBMISSION ON SASOL 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, 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 applications. 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 our clients' objections to and comments on the applications for postponement of compliance with the timeframes for 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”.

As many of the issues raised by us 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. Our submission 16<sup>th</sup> 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), the 2012 National Framework for Air Quality Management<sup>1</sup> (Framework) and regulations. The Framework is a component of the AQA and is also legislation.<sup>2</sup> AQA is the empowering legislation in terms of which the Regulations Prescribing the Format of the Atmospheric Impact Report<sup>3</sup> (AIR regulations) were promulgated. The AIR 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 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 NF 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 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 addressed this issue, and incorrectly states the law.<sup>4</sup> Moreover as set out below, the postponement application does not

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<sup>1</sup>established in terms of Section 7 of AQA

<sup>2</sup> 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.

<sup>3</sup> GNR 747 of 11 October 2013

<sup>4</sup> see 460365 Final Comments and Response Form: Natref Operation.

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 52 hereunder and in the paragraphs that follow.

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 Sasol states that it confirmed its intention to submit a postponement application by the 1 year deadline.<sup>5</sup> An intention is not an action and Sasol is therefore still not compliant with this requirement.
5. 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.<sup>6</sup> The considerations submitted by Sasol should accordingly be ignored. They will be discussed in more detail in paragraph 71 hereunder and in the paragraphs that follow. 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.”

The management of air quality in South Africa is influenced by policy, legislation and best practice developed at international and national levels,<sup>7</sup> and in no jurisdiction where air pollution has been effectively managed has the approach of Sasol been adopted.

6. 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 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

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<sup>5</sup> id

<sup>6</sup> Section 6(2) (e) (iii) PAJA

<sup>7</sup> Framework parag 2

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 same argument must apply to the impacts on human health. The AIR does not therefor support the approach advocated for by Sasol.

### ***Detailed Analysis***

#### ***Section 1: Specific issues***

7. Sasol's request for initial Postponement of compliance with Subcategory 8.1 of the MES (GN893) is in respect of only two of its incinerators, namely incinerator B6990 (INFRACHEM) and the Sewage Solids incinerator (SYNFUELS). In the case of B6990 the basis of the request is that the special arrangement condition that the gas exit temperature be less than 200°C was added in GN893, Subcategory 8.1. In the case of the Sewage Sludge incinerator, the capacity is less than 10kg/h, so it only fell above the threshold when the threshold was decreased to 10kg/day in GN893.

***Recommendation:*** It is suggested that a 3 years postponement be granted on the basis that November 2013 (GN893) to 1 May 2015 is considerably less than the 5 years allowed for in the original regulation.

8. Re: the INFRACHEM incinerator B6990: in respect of the Subcategory 8.1 requirement that the flue gas temperature be maintained below 200°C. In the INFRACHEM Final Motivation for Initial Postponement Section 4, Sasol states:

"Category 8.1 includes a special arrangement to restrict exit gas temperatures to below 200 °C. One incinerator at the Thermal Oxidation facility, B6990, currently operates at elevated temperatures. The reasons for this application for postponement are based on the time it will take Sasol Infrachem to complete technical investigations, approve and fully implement the intervention needed to reduce the exit gas temperature to below 200 °C, to comply with the MES."

9. Under **4.2 Technology options and development schedule for compliance with special arrangement for Incinerator B6990** Sasol further states:

"Reducing the exit gas temperature to comply with the special arrangement would require the installation of appropriate technology, for example waste heat recovery or the addition of a quench. Sasol Infrachem is exploring solutions for compliance with this special arrangement, and hence will continue with a formal project for this purpose."

10. Sasol's postponement request (Section 4.3) is as follows: Sasol Infrachem applies for postponement of the obligation to comply with special

arrangement (a)(vi) under Category 8.1 for incinerator B6990, pertaining to exit gas temperatures. A five-year postponement is requested to allow for detailed investigations into the compliance implications, following the regulatory certainty obtained in November 2013.

11. Sasol does not provide details such as the current exit gas temperature of unit B6990 or the design capacities of each of the INFRACHEM incinerators B6993, B6930 and B6990 or the technological differences between the two incinerators B6993 and B6930 that do meet the exit gas requirement of the MES and the incinerator B6930 that does not comply. However it is clear from the information provided by Sasol in Tables 2-3 and 3-1 that units B6930, which meets the exit gas temperature requirement, and unit B6990, which does not, both process similar materials. The incinerator design which is compliant with the exit gas temperature requirement of 8.1 is therefore available to Sasol, and the technological interventions required to achieve a less than 200°C exit gas temperature (a heat recovery or a quench system) are relatively simple and are achievable, well within a 3 year time frame.
12. **Recommendation:** It is suggested that a maximum postponement of the MES for 3 years be granted, rather than the 5 years requested by Sasol.
13. Sasol Synfuels Sewage sludge incinerator in respect of the Subcategory 8.1 existing plant emission limits and the maximum exit gas temperature of 200°C. In its SYNFUELS Final Motivation for Initial Postponement Section 2, Sasol states:  
 “2.6.9 Sewage Solids Incinerator... The incinerator fell under the 10 kg / hour threshold of the 2010 MES, prior to the November 2013 amendments, which reduced the threshold size for a listed activity, and consequently included the sewage solids incinerator.”
14. Sasol is requesting postponement of compliance for both the 200°C exit gas temperature limit and the Subcategory 8.1 pollutant emission limits on the basis that the regulation only became applicable to this unit when GN893 was promulgated in November 2013. The sewage sludge incinerator is small (less than 10 kg/h or 240kg/day), it treats conventional sewage sludge rather than a waste stream arising out of Sasol’s processes and the unit can either be modified to meet the Subcategory 8.1 MES or the waste stream can be disposed of through other means such as appropriate landfill.  
**Recommendation:** It is recommended that a maximum period of postponement of the MES for 3 years be granted to allow Sasol to bring the sewage solids incinerator into compliance or to dispose of the waste stream by other acceptable means, rather than the 5 years requested by Sasol.

## ***Section 2: compliance with the regulatory scheme for postponements***



15. As will be set out below, the applications by Sasol cannot comply with the requirements for postponements of compliance time frames as set out in the AQA Framework and no other postponements should not be granted:
- The applications are made in air sheds where there is non-compliance with one or more national ambient air standards (NAAQS)<sup>8</sup>.
  - 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 the Regulations Regarding Air Dispersion Modelling, and they fail to comply with these requirements.

More particularly:

- Since PM does not comply with NAAQS in Secunda and Sasolburg and since SO<sub>2</sub> and NO<sub>2</sub> convert to PM, every request for postponement for a limit on a criteria pollutant (ie PM, SO<sub>2</sub>, NO<sub>x</sub>) 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.
- Since H<sub>2</sub>S does not comply with health protective air quality standards in Secunda, any request for postponements for H<sub>2</sub>S limits should be rejected there as well.
- 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 are not compliant in both Sasolberg and Secunda, and compliance with NAAQSs 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.

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<sup>8</sup> National Ambient Air Standards published under AQA GN 1210 in GG 32816 of 24 December 2009

## 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)<sup>9</sup> without being made more stringent for the Sasol industries regulated thereunder. The 2012 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.<sup>10</sup> The Sasol applications for postponement are noncompliant with these requirements and should not be granted, apart from what has been recommended above.

### ***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 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 AQA<sup>11</sup>), 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.

<sup>9</sup>GNR893 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.

<sup>10</sup>See 2013 National Framework for Air Quality Management at 5.4.3.3.

<sup>11</sup>S 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."

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.<sup>12</sup> 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.<sup>13</sup>
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 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 PM ambient air standards in the Secuda area and SO<sub>2</sub> and PM 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. The Framework indicates 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*

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<sup>12</sup>S1

<sup>13</sup>S7(4)

*residential areas and schools, and emitters of concern based on volumes of emission and the nature of the pollutant.”<sup>14</sup>*

9. Pollutants of concern are then identified in table 16<sup>15</sup> which includes the pollutants for which Sasol 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 Sasol 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 economic impacts arising due to the emission standard set.”<sup>16</sup> 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 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 Standards<sup>17</sup> (NAAQSs) in Secunda and Sasolburg and since SO<sub>2</sub> and NO<sub>2</sub> convert to PM, every request for postponement for a limit on a criteria pollutant (ie PM, SO<sub>2</sub>, NO<sub>x</sub>) should be rejected. Hazardous air pollutants which are also particulates

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<sup>14</sup>Page 64

<sup>15</sup>Paragraph 5.3.2 Table 16

<sup>16</sup>2007 Framework paragraph 5.4.3.3

<sup>17</sup> National Ambient Air Standards published under AQA GN 1210 in GG 32816 of 24 December 2009

should not be allowed postponements for compliance with MES in light of the non compliance with PM NAAQSs in both Sasol and Secunda.

- Since H<sub>2</sub>S does not comply with health protective air quality standards in Secunda, a request for postponements for H<sub>2</sub>S limits should be rejected as well. There is no data on H<sub>2</sub>S from Sasolberg so Sasol's application for postponement of MES relating to H<sub>2</sub>S 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 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).<sup>18</sup> 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.<sup>19</sup>
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.

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<sup>18</sup> National Ambient Air Standards published under AQA GN 1210 in GG 32816 of 24 December 2009

<sup>19</sup> S2(b) AQA

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

Town	Do PM levels comply with AAQS?	Do SO <sub>2</sub> levels comply with AAQS?	Do H <sub>2</sub> 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 <sub>2</sub> limit that therefore <u>cannot be granted</u>	<u>No</u>  Request to exempt/postpone compliance with an H <sub>2</sub> S limit that therefore <u>cannot be granted</u>  Sasol's Rectisol & Sulphur Recovery Plants
Town	Do PM levels comply with AAQS?	Do SO <sub>2</sub> levels comply with AAQS?	Do H <sub>2</sub> 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 <sub>2</sub> 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 <sub>2</sub> 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 SO<sub>2</sub> and NO<sub>2</sub> 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 Sasol Infrachem lies 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 facility in Sasolburg.
19. In Sasolburg, SO2 levels are not in compliance with the AAQS for SO2 (daily AAQS of 125 ug/m<sup>3</sup> 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 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, SO<sub>2</sub> 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 SO<sub>2</sub> emissions from a refinery will convert to particulate matter<sup>20</sup> then a request for postponement of emissions standards for SO<sub>2</sub> by the Sasol Synfuels facility in Secunda cannot be granted because SO<sub>2</sub> emissions that further worsen PM levels would necessarily cause adverse impacts on the surrounding environment.
22. NOTE: The conversion of SO<sub>2</sub> emissions from a refinery into particulate matter is not a trivial matter. SO<sub>2</sub> emissions from a refinery are much greater than PM emissions. See the table below showing how overall SO<sub>2</sub> emissions from the Sasol Synfuels facility in Secunda are about 10 times higher than overall PM emissions (about 300 grams per second of SO<sub>2</sub> 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 SO<sub>2</sub> emissions from the refinery converts to ultrafine particulate matter, then the refinery’s SO<sub>2</sub> emissions can indirectly contribute as much to ambient levels of PM than PM emissions do directly.

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<sup>20</sup> (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 <sub>x</sub> (g/s)	NO <sub>x</sub> (g/s)	Sum of Pb, As, Sb, Cr, Co, Cu, Mn, Ni, V (g/s)	Hg (g/s)	Cd+Pb (g/s)	HF (g/s)	NH <sub>3</sub> (g/s)	HCl (g/s)	TOCs (g/s)	Dioxins/Furans (g/s)
<b>Baseline</b>												
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
<b>At Existing Plant Emission Standards</b>												
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
<b>At New Plant Emission Standards</b>												
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
<b>At Alternative Emission Limits</b>												
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, NO<sub>2</sub> levels are in compliance with NAAQSs. However, we must apply the same principle with NO<sub>2</sub> emissions as with SO<sub>2</sub> emissions since conversion of NO<sub>2</sub> 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 NO<sub>2</sub> emissions should be granted.
24. For H<sub>2</sub>S 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 H<sub>2</sub>S above 42 ug/m<sup>3</sup> should be considered high in South Africa.

Table 3.18: Pollutant thresholds

Pollutant*	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>2</sub>	CO	O <sub>3</sub>	H <sub>2</sub> S
Units	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>
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 H<sub>2</sub>S concentrations at monitoring stations around Secunda

Table G-3: Predicted and observed H<sub>2</sub>S concentration statistics

		H <sub>2</sub> S Concentration (µg/m <sup>3</sup> )					
		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 99<sup>th</sup> 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 99<sup>th</sup> percentile H<sub>2</sub>S concentrations are all above 42 µg/m<sup>3</sup> (which they are), then hourly H<sub>2</sub>S levels should be considered high in South Africa. If hourly H<sub>2</sub>S levels are high around the Sasol Synfuels facility in Secunda, then granting a postponement (or exemptions) for H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S (high by SA as well as international standards) no postponement for H<sub>2</sub>S should be granted.
28. Detailed information on the compliance with ambient air standards are contained in footnotes, below.<sup>21</sup>

<sup>21</sup> The Atmospheric Impact Report for the Sasol Synfuels facility in Secunda.

On page 51: “The daily 99th percentiles for PM<sub>10</sub> exceeded the limit value (75 µg/m<sup>3</sup>; 2015 standard) at both Secunda Club (Figure 5-20) and Langverwacht stations (Figure 5-21) for all three years. While the SO<sub>2</sub> and NO<sub>2</sub> annual averages were below the NAAQs, the PM<sub>10</sub> annual averages exceeded the 2015 limit value of 40 µg/m<sup>3</sup> for all three years at Langverwacht and were close to the limit value at Secunda Club.”

## Conclusion

29. As regards H<sub>2</sub>S 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 H<sub>2</sub>S levels far exceed acceptable levels from a health point of view no postponement should be granted. Sasol is the principle contributor of H<sub>2</sub>S in Secunda. The same argument applies to all other chemicals for which postponements are sought including VOC's.

### ***Requirement 2: Air pollution impact assessment requirements<sup>22</sup>***

30. 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.<sup>23</sup>
31. The atmospheric impact report (AIR) submits insufficient information for a postponement to be considered and is not compliant with the regulatory scheme:

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On page 45: "The hourly 99th percentiles for SO<sub>2</sub> were below the limit value of 350 µg/m<sup>3</sup> at all three stations for all three years (Figure 5-11, Figure 5-13, and Figure 5-15). The daily 99th percentiles for SO<sub>2</sub> were below the limit value (125 µg/m<sup>3</sup>) 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 SO<sub>2</sub> were below the limit value of 350 µg/m<sup>3</sup> at both stations for all three years (Figure 5-9 and Figure 5-10). The daily 99th percentiles for SO<sub>2</sub> were below the limit value (125 µg/m<sup>3</sup>) at the Leirim 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 PM<sub>10</sub> exceeded the limit value (75 µg/m<sup>3</sup>; 2015 standard) at both stations and for all three years (Figure 5-15 and Figure 5-16). While the SO<sub>2</sub> and NO<sub>2</sub> annual averages were below the NAAQS, the PM<sub>10</sub> annual averages exceeded the 2015 limit value of 40 µg/m<sup>3</sup> for all three years at Leirim. The PM<sub>10</sub> 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 SO<sub>2</sub> were below the limit value of 350 µg/m<sup>3</sup> at both stations for all three years (Figure 5-9 and Figure 5-10). The daily 99th percentiles for SO<sub>2</sub> were below the limit value (125 µg/m<sup>3</sup>) at the Leirim 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 PM<sub>10</sub> exceed the limit value (75 µg/m<sup>3</sup>; 2015 standard) at both stations and for all three years (Figure 5-15 and Figure 5-16). While the SO<sub>2</sub> and NO<sub>2</sub> annual averages were below the NAAQS, the PM<sub>10</sub> annual averages exceeded the 2015 limit value of 40 µg/m<sup>3</sup> for all three years at Leirim. The PM<sub>10</sub> 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.

<sup>22</sup>Framework paragraph 5.4.3.3; Regulations prescribing format of Atmospheric Impact Reports GN 747 11 October 2013.

<sup>23</sup>PARAGRAPH 11 of the List of Activities published under section 21

- a. It fails to assess the cumulative impacts of emissions from the SASOL plants and the prevailing ambient air quality as required in the Regulations Prescribing the Format of the Atmospheric Impact Report <sup>24</sup>
- b. It fails to comply with the requirements of the Regulations for Air Dispersion Modelling <sup>25</sup>
- c. 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:

32. 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.<sup>26</sup> 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.<sup>27</sup> 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.<sup>28</sup> 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.

33. 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

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<sup>24</sup> GNR 747 of 11 October 2013

<sup>25</sup> GNR 533 of 11 July 2014

<sup>26</sup> section 2

<sup>27</sup> 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,

<sup>28</sup> Section 5(2)

be assessed a precautionary approach is mandated by the NEMA principles and pollution should be minimised.<sup>29</sup> As is clear from the AIR report it is not possible to predict the cumulative effect of so many pollutants. 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: Sasol Report No.: 13STL01N Report Version: 2.0 73

Although investigating the impact of atmospheric pollution from Sasol operations was beyond the scope of this study, some research findings suggest that grassland ecosystems of the Highveld are not yet affected by sulfur and nitrogen deposition (Reid 2007, Bird 2011); however, some areas may be approaching critical loads (Bird 2011, Josipovic *et al.* 2011).”

34. It is clear from this quote that the cumulative impact of the pollutant emissions from Sasol 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 Sasol itself as required in the following regulations.

**35. 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.”

36. Section 5.2 “Analysis of Emissions' Impact on the Environment” of the regulations states:

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<sup>29</sup> NEMA Principle s2(4)(a)(vii)

“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.”

37. Compliance with the requirements of the Regulations for Air Dispersion Modelling<sup>30</sup>

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).

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

“2.3.11 Step 11: Determine Background Air Quality

“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

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<sup>30</sup> GNR 533 of 11 July 2014

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.		

39. Sasol will be required to undertaken 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.
40. However, Sasol has completely ignored this requirement in its AIR. Instead, it incorrectly uses the so-called “delta-approach” as described below on page 108 of v.2.0 of the AIR for SASOL Infrachem, and page 154 of v.2.0 of the AIR for SASOL Synfuels.
41. of the SASOL 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 Sasol’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.”

42. 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 2.1 on Page 21 of v2.0 of the AIR)0 and which is nowhere required 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.”

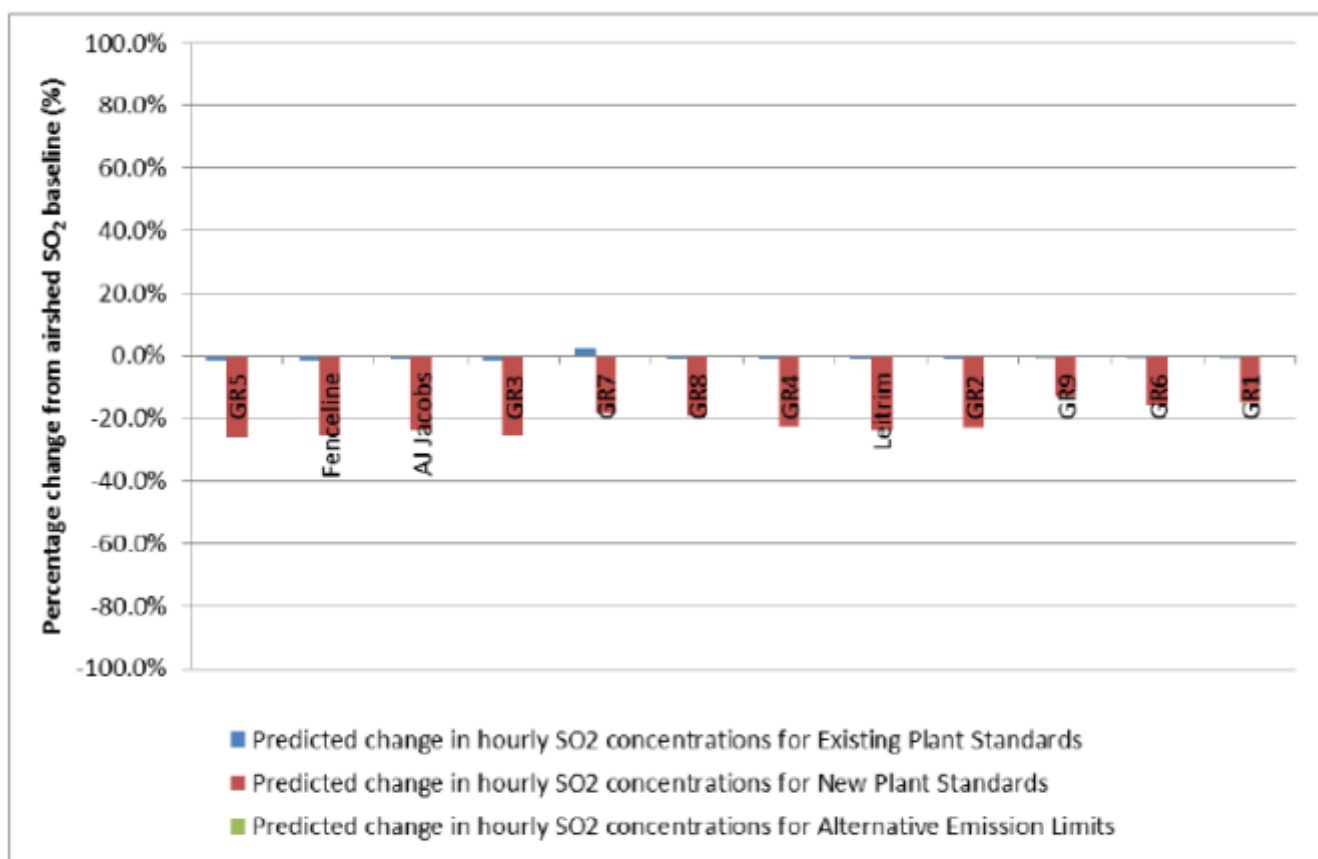
43. Therefore the term ‘fit for purpose’ refers only to the choice of which air pollutant dispersion model to use (any recommended model is acceptable as long as it is ‘fit to purpose’). The term ‘fit for purpose’ has nothing to do with how to present the significance of the modelling out (predicted ambient air quality) and whether air quality would comply with NAAQS or otherwise be healthy. Sasol’s implication that it’s use 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***

44. 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 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 SO<sub>2</sub> locations.



**Figure 5-32: Theoretical change in SO<sub>2</sub> 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 SO<sub>2</sub> at various locations in Sasolburg.

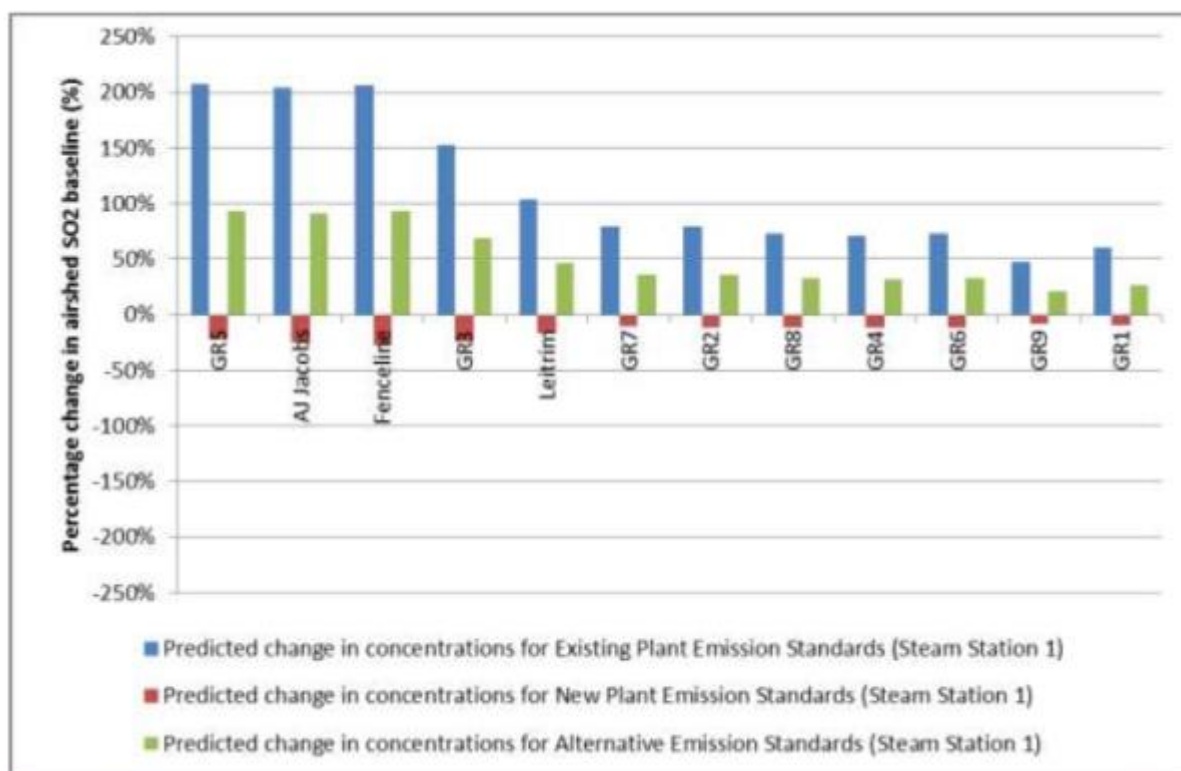


Figure 5-33: Theoretical change in hourly ambient SO<sub>2</sub> concentrations and the airshed baseline at the identified receptors for Infrachem Steam Station 1 (change calculated using Equation 1)

45. 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 affected. 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***

46. 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 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:
47. 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.<sup>31</sup> The Preamble to AQA recognises the

<sup>31</sup>section 2

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.<sup>32</sup> 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.<sup>33</sup> 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.

48. 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.”*

49. Section 5.4.6.10<sup>34</sup> 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*

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<sup>32</sup>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,

<sup>33</sup>Section 5(2)

<sup>34</sup>Human health Impact assessments

*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”<sup>35</sup>*

50. 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**

51. It is disputed that Sasol 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.<sup>36</sup> AIRs for the Sasol Synfuels facility in Secunda and the AIR for the Sasol facility in Sasolberg 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 H<sub>2</sub>S 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.

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<sup>35</sup> Framework at 5.5.3.1; see also Air Quality Act at Section 30, which states that an Atmospheric Impact Report must include

<sup>36</sup> 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.

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 NO<sub>2</sub>, SO<sub>2</sub>, H<sub>2</sub>S and PM<sub>10</sub> 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 Sasol facility in Sasolburg.

***Requirement 3: Failure to prove that the applicants air emissions are not and will not cause any adverse impacts on the surrounding environment.***<sup>37</sup>

52. Sasol 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.
53. 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 seeks further postponements and exemptions. These pollutants have a cumulative and synergistic effect which is not measurable.
54. In addition the presence of exceedences of NAAQSs for SO<sub>2</sub> and PM in Secunda and SO<sub>2</sub> in Sasolberg proves there is a direct threat to health from air pollution in these areas emanating from the applicants. Levels of H<sub>2</sub>S in Secunda exceed health protective standards ie international benchmarks for the protection of health for H<sub>2</sub>S.<sup>38</sup> Therefore there is a direct threat to health from H<sub>2</sub>S in Secunda.
55. Sasol 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 SO<sub>2</sub>. As set out below Sasol is the principle source of H<sub>2</sub>S in Secunda.
56. In areas where SO<sub>2</sub> and NO<sub>x</sub> are in compliance, the conversion of these pollutants to secondary PM pollutants means that they contribute to elevating of PM levels.

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<sup>37</sup>Framework at paragraph 5.4.3.3, page 67

<sup>38</sup>See parag

Allowing a postponement of the reduction in current emission levels for SO<sub>2</sub>, and NO<sub>x</sub> will impact adversely on the health of communities by continuing to contribute to PM levels which are in exceedence in both towns.

57. The postponements are sought in a context where there is an application for postponement from emission standards for H<sub>2</sub>S. The applications for postponements for SO<sub>2</sub> NO<sub>x</sub> and others must therefore be seen in the context of non compliant ambient air standards for PM as well as unhealthy levels of H<sub>2</sub>S in Secunda and unknown levels of H<sub>2</sub>S in Sasolburg. The applications for postponements for the various entities of Sasol cannot be seen in isolation from each other. A further discussion on the health impact of H<sub>2</sub>S and the status of H<sub>2</sub>S emissions will be discussed in the paragraphs that follow hereunder.
58. The cumulative impact of the air pollution as a result of Sasol and other sources 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.
59. Sasol bears 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),<sup>39</sup> 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.
60. Priority area: The Vaal Triangle is an Area of Concern.  
Sasol highlights its participation in the development of the Vaal Triangle Air-shed Priority Area (VTAPA) Air Quality Management Plan.<sup>40</sup> 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.
61. 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

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<sup>39</sup> AIR report for

<sup>40</sup> See Sasol Infrachem Exemption Application at 12.

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.<sup>41</sup> Notably, Sasol is seeking an exemption from complying with standards for each of these compounds.<sup>42</sup> The communities of Sasolberg, Zamdela and Coalbrook were identified as sensitive receptors within the zone.<sup>43</sup>

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

62. 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 yet there is no discussion of the vast majority of the health impacts of these compounds.
63. 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.”<sup>44</sup> As discussed herein, particulate matter is a significant and specific source of concern in the VTAPA, where Sasol’s facilities are located.
64. 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.<sup>45</sup> 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

<sup>41</sup> Vaal Triangle Airshed Priority Area Air Quality Management Plan at 13.

<sup>42</sup> See e.g. Sasol Infrachem Exemption Application at 7-8.

<sup>43</sup> Vaal Triangle Airshed Priority Area Air Quality Management Plan at P 13

<sup>44</sup> 2013 State of the Air in South Africa Summary Report.

<sup>45</sup> 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.

cases, exposure to H<sub>2</sub>S can result in death.<sup>46</sup> Further information on the health impacts of H<sub>2</sub>S are provided in Annexure A below.

65. Sulfur dioxide: Sulphur dioxide (SO<sub>2</sub>) is a colourless gas with known health effects at even lower concentrations than previously believed.<sup>47</sup> The WHO has noted the following health effects associated with SO<sub>2</sub>: 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 SO<sub>2</sub> levels. When SO<sub>2</sub> combines with water, it forms sulphuric acid; this is the main component of acid rain which is a cause of deforestation.<sup>48</sup>
66. NO<sub>x</sub> is a toxic gas that causes significant inflammation of the airways.<sup>49</sup> The WHO has noted that symptoms of bronchitis in asthmatic children increase with long-term NO<sub>2</sub> exposure and that reduced lung function is linked to NO<sub>2</sub> at concentrations currently measured (or observed) in cities of Europe and North America.<sup>50</sup>
67. Sasol 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.<sup>51</sup> The compounds that Sasol seeks exemptions for have been shown to cause adverse health effects. Granting Sasol'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.
68. 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***

71. 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

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<sup>46</sup> Bhimsan, R. (2005): Implications of the new air quality bill on the management of H<sub>2</sub>S emissions from Sasol's operations in Secunda, South Africa (Doctoral dissertation, University of Pretoria) at 23-26.

<sup>47</sup> <http://www.who.int/mediacentre/factsheets/fs313/en/>

<sup>48</sup> <http://www.who.int/mediacentre/factsheets/fs313/en/>

<sup>49</sup> <http://www.who.int/mediacentre/factsheets/fs313/en/>

<sup>50</sup> <http://www.who.int/mediacentre/factsheets/fs313/en/>

<sup>51</sup> AQA s2(a)(i)



Justice Act 2000 an application decided on the basis of irrelevant considerations will be unlawful.<sup>52</sup> These include the following considerations:

72. 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 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 levels<sup>53</sup> and best practice and in no jurisdiction where air pollution has been effectively managed has the approach suggested by Sasol been adopted.
73. 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 quality management whereas the requirements for postponements have been set out by the AQA and its regulations and Sasol does not comply with them,
74. Postponement application and proposed alternative emissions limits as a substitute for licensing:  
The intended purpose of the alternative emission limits proposed by Sasol is to define the proposed licence conditions that Sasol 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, and removes some of the requirements under these sections. This proposal if adopted stands to be reviewed and set aside as unlawful.
75. Ad paragraph 4: reasons for applying for initial postponements:  
  
Sasol’s economic constraints, which are disputed, are not relevant without complete comprehensive disclosure of the overall profitability of their operations
76. Ad paragraph 4.2 Sasol’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.
  - Sasol’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

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<sup>52</sup> Section 6(3) (b) (iii) PAJA

<sup>53</sup> Framework parag 2

it can demonstrate is how serious the levels of air pollution emissions in the past were from Sasol.

77. Ad parag 7.2: Commitments to the Highveld Priority area air quality management plan.

This information is not relevant to the postponement application save to demonstrate that the airshed in which Sasol 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

78. Ad paragraph 6.4 Overall findings of the AIR

As is clear from the above analysis of legal requirements for postponements from compliance with the MES, mere compliance by an individual polluter with individual NAAQS does not fulfil these requirements. As is clear from the Sasol postponement application, such compliance does not remove health risks.<sup>54</sup>

This is especially so where there are multiple health damaging and toxic air pollutants present, seeping into residential areas. Our clients have a constitutional right to reasonable measures that protect their health and well being and they are located inside a priority area. These facts must be considered when evaluating the following statement from Sasol.

“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 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 SO<sub>2</sub> exceed NAAQS in Sasolberg and PM exceeds NAAQS in Secunda.

79. 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.”

H<sub>2</sub>S 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. The most toxic air pollutants, usually because of their localised effect do not have ambient air standards.

80. The statement in paragraph 6.4:

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<sup>54</sup> See paragraph 6.4.3

“at the level of principle reducing emissions of these pollutants will serve to further reduce ambient concentrations that already comply with NAAQS”

is contradicted by the following statement contained in the next paragraph:

“It cannot be argued that compliance with the NAAQS means no health risk. Indeed the WHO indicates that there is no safe limit in respect of exposure to PM.”

Bear in mind that this statement relates to air pollutants considered individually. It says nothing about the cumulative impact of several air pollutants some of which are toxic and carcinogenic, as is typically found in the vicinity of oil refineries. 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 “minimisation of pollution through vigorous control, cleaner technologies and cleaner production practices is key to ensuring that air quality is improved.”<sup>55</sup>

#### 81. Ad paragraph 6.4.3

The statement that “NAAQS prescribe a permissible or tolerable level of health risk” is disputed and could only apply in cases where there is only one pollutant 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 are not a correct representation of our regulatory system and cannot supersede the requirements of the Framework<sup>56</sup> Such an approach could in any event never apply in airsheds such as Sasolberg and Secunda where there is a presence of high concentrations of so many criteria pollutants and toxic air emissions in the same airshed. Here, compliance with individual NAAQS is meaningless in terms of assessing risks to health. Cause and effect relationships in the context of a cocktail of air pollutants is not possible as was made clear in the AIR report.<sup>57</sup> It is especially the case in the context of exceedences of NAAQS for PM, given the health impacts of this pollutant. As stated above the following also appears in this paragraph:

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<sup>55</sup> 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”.

<sup>57</sup> See Report of L Burger and Others, Report number 13STLO1N dated September 2014 : see paragraph 33 above

“It cannot be argued that compliance with the NAAQS means no health risk. Indeed the WHO indicates that there is no safe limit in respect of exposure to PM.”

#### 82. Ad Chapter 4

Sasol states that certain MES are not reasonable and achievable with presently available technology. This statement is misleading. Sasol is not being required to implement BAT in the standards that are the subject of this postponement application. The statement that the standards are not reasonable and achievable is disputed.

83. Ad paragraph 4.5 – 4.7 Unintended cross-media environmental impacts and other alleged constraints. This paragraph once again makes vague statements which provide insufficient basis to depart from the standards.

84. Ad paragraph 5.2: Sasol refers to a need to have flexibility in implementing BAT. The fact is that the MES are not BAT in the standards that are the subject of this postponement application, and for these and existing plant standards the standards are less exacting than BAT.

### ANNEXURE A: Hydrogen Sulphide -H<sub>2</sub>S

1. Sasol (Synfuels) seeks postponement from emissions standards for its Rectisol plant in Secunda (category 3.6.). Postponements should not be granted from MES for H<sub>2</sub>S given the toxicity of the compound, the proximity to adjacent communities, the lack of compliance with ambient air standards both areas, the volumes of H<sub>2</sub>S emitted, and the fact that Sasol is the main emitters of this compound in Secunda.
2. Further information on the health impacts of H<sub>2</sub>S are provided below. South Africa does not have NAAQSs for H<sub>2</sub>S. 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 H<sub>2</sub>S above 42 ug/m<sup>3</sup> should be considered high in South Africa.<sup>58</sup>

Table 3.18: Pollutant thresholds

Pollutant*	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>2</sub>	CO	O <sub>3</sub>	H <sub>2</sub> S
Units	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>
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

<sup>58</sup> [https://www.environment.gov.za/sites/default/files/docs/stateofair\\_executive\\_iquality\\_standardsojectives.pdf](https://www.environment.gov.za/sites/default/files/docs/stateofair_executive_iquality_standardsojectives.pdf)

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 ( $\mu\text{g}/\text{m}^3$ )” and refers to the California OEHHA (first adopted as of August 2003).<sup>59</sup> 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 H<sub>2</sub>S hourly average values were given as follows: the “low is given as  $< 30 \text{ ug}/\text{m}^3$ , medium is  $30\text{-}42 \text{ ug}/\text{m}^3$  and high is given as  $42 \text{ ug}/\text{m}^3$ .<sup>60</sup> These hourly values also correspond with the State of California 1 hour OEHHA standard.<sup>61</sup>
4. The Sasol Synfuels AIR indicates non-compliance with this standard in the Secunda area where postponement is sought for H<sub>2</sub>S emissions from the Rectisol plant. It states that the observed 99<sup>th</sup> percentile H<sub>2</sub>S concentrations are all above  $42 \text{ ug}/\text{m}^3$ . This would be considered high in terms of the State of the Air Report criteria referred to above.<sup>62</sup> SASOL is the only significant source of H<sub>2</sub>S 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 H<sub>2</sub>S

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<sup>59</sup>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 PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO, O<sub>3</sub>, and hydrogen sulphide (H<sub>2</sub>S) 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.

<sup>60</sup>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 PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO, O<sub>3</sub>, and hydrogen sulphide (H<sub>2</sub>S) 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” PM<sub>10</sub> concentrations, were classified as “high pollution days”, and the pollutants

resulting in this classification noted

<sup>61</sup>[http://www.oehha.ca.gov/air/hot\\_spots/2008/AppendixD2\\_final.pdf#page=144](http://www.oehha.ca.gov/air/hot_spots/2008/AppendixD2_final.pdf#page=144)

<sup>62</sup>See Sasol Synfuels AIR report Table G-3: Predicted and observed H<sub>2</sub>S concentration statistics. This report suggests that there would be numerous hourly average H<sub>2</sub>S levels that are above the California 1-hour standard for the prevention of headache and nausea

from large scale industrial processes is a unique phenomenon and that H<sub>2</sub>S 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 H<sub>2</sub>S problem.

5. Sasol is unique in that it exposes a large population to elevated levels of H<sub>2</sub>S. As stated above information about the baseline health should have been included in the AIR including census figures as to the exposed population including vulnerable subpopulations.
6. Two independent sources show emissions of H<sub>2</sub>S in excess of 80 000 tons per year. The prevalence of so much H<sub>2</sub>S in the air in Secunda is relevant not only to the application for exemption from H<sub>2</sub>S 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 NAAQSs in Secunda but H<sub>2</sub>S 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 H<sub>2</sub>S this is almost entirely attributable to Sasol's operations. Sasol is also a significant contributor to PM which is not in compliant with NAAQSs 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 H<sub>2</sub>S, 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 SO<sub>2</sub>, VOC's

Categ 8.1 (sewerage solid incinerators: PM, CO, SO<sub>2</sub>, NO<sub>x</sub>, HCl, HF, Hg, Cd, Tl, TOC, NH<sub>3</sub> Sum of Lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium

7. 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 H<sub>2</sub>S 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 H<sub>2</sub>S 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"<sup>63</sup>
8. However Sasol is still a substantial emitter of H<sub>2</sub>S. The Sasol Synfuels Facility in Secunda is a coal gasification plant that generates off-gases containing hydrogen sulfide (H<sub>2</sub>S) that are sent to a sulfur recovery plant, which converts the H<sub>2</sub>S to

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<sup>63</sup>Parag 2.6.7 Postponement Application for Sasol Synfuels and others

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.

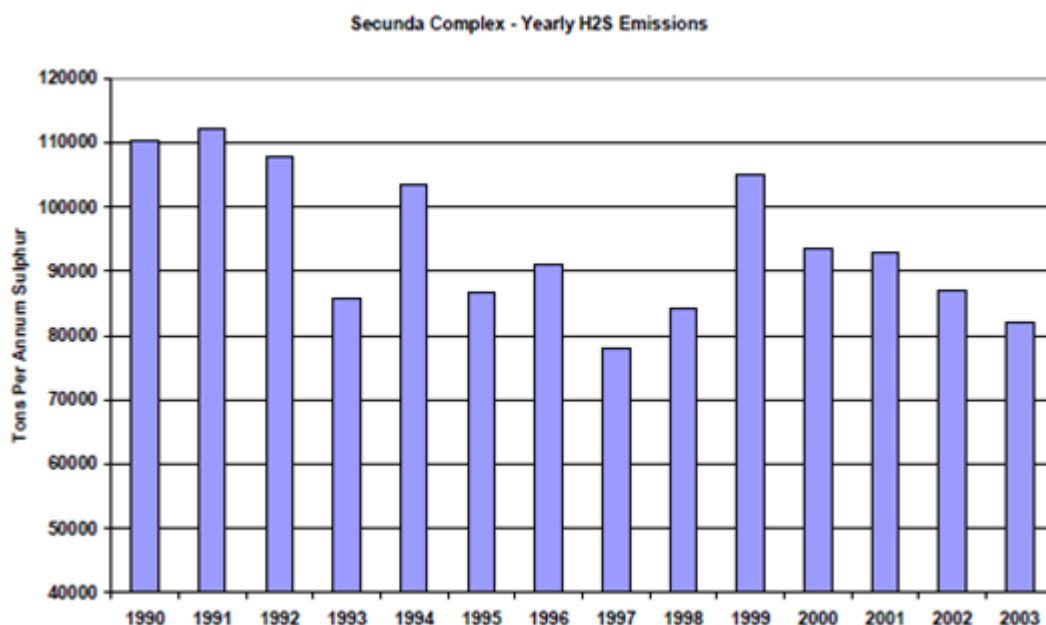
9. Sasol Synfuels Facility in Secunda processes 120,000 metric tons per day of coal (roughly 44 million metric tons per year) with a sulfur content of roughly 1%. See attached: “Characterization of inorganic material in Secunda coal and the effect of washing on coal properties.” This implies that 1,200 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 H<sub>2</sub>S 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 H<sub>2</sub>S 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 <sub>2</sub> (g/s)	NO <sub>x</sub> (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 <sub>3</sub> (g/s)	HCl (g/s)	H <sub>2</sub> S (g/s)	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	

10. The second of these independent sources is the dissertation “IMPLICATIONS OF THE NEW AIR QUALITY BILL ON THE MANAGEMENT OF H<sub>2</sub>S EMISSIONS FROM SASOL’S OPERATIONS IN SECUNDA, SOUTH AFRICA” Bhimsan, R. (2005), Doctoral dissertation.<sup>64</sup>

<sup>64</sup>University of Pretoria <http://upetd.up.ac.za/thesis/submitted/etd-03132006-110841/restricted/dissertation.pdf>



This also shows H<sub>2</sub>S emissions of around 80,000 to 100,000 tons per year, or, again, at least 20% of the input.

11. International best practice would require H<sub>2</sub>S 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, H<sub>2</sub>S 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.			
<b>Application:</b>		All installations	
<b>Substance or mixture of substances</b>		<b>Plant status</b>	<b>mg/Nm<sup>3</sup> under normal conditions of 273 Kelvin and 101.3 kPa.</b>
<b>Common name</b>	<b>Chemical symbol</b>		
Hydrogen Sulphide	H <sub>2</sub> S	New	3 500
		Existing	4 200

12. In fact, if reliance is placed on Table 5.22 of the AIR for the facility, the limit of 4,200 mg/Nm<sup>3</sup> 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), H<sub>2</sub>S emissions would be cut in half from the existing baseline, which represents a recovery efficiency of 80%.
13. 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 's H<sub>2</sub>S emissions and health impacts**

14. Sasol unique in that it exposes a large population to H<sub>2</sub>S and other air pollutant emissions in Secunda. 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 H<sub>2</sub>S in a remote area where human health is not at risk, as opposed to locations close to large communities of vulnerable and disadvantaged persons.
15. If hourly H<sub>2</sub>S levels are high, and above health protective thresholds around the Sasol Synfuels facility in Secunda, then granting any postponement allowing higher H<sub>2</sub>S emissions to continue would cause adverse impacts on the surrounding environment in conflict with the requirements of the National Framework.

### **Health studies regarding H<sub>2</sub>S**

16. Health studies have established that even low levels of H<sub>2</sub>S 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/m<sup>3</sup>), but to daily maximum hydrogen sulfide levels of up to 70 ppb (100 µg/m<sup>3</sup>), suffered excessively from irritation of the nose, cough, and headache compared to children in a non-polluted community.<sup>65</sup> 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/m<sup>3</sup>), but to daily maximum hydrogen sulfide levels of up to 17 ppb (24 µg/m<sup>3</sup>), 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."<sup>66</sup> 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/m<sup>3</sup>), but to daily maximum hydrogen sulfide levels of up to 80 ppb (112 µg/m<sup>3</sup>), suffered excessively from respiratory infections compared to a non-polluted community. These health

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<sup>65</sup> 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.

<sup>66</sup> 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

experts concluded that: "Our results suggest that exposure to malodorous compounds increases the risk of acute respiratory infections."<sup>67</sup>

17. 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.<sup>68</sup> 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."
18. 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.<sup>69</sup> These health experts concluded that: "The results suggest that exposure to malodorous sulfur compounds may affect the health of children."
19. 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.<sup>70</sup> These health experts concluded that: "These results indicate that adverse health effects of malodorous sulfur compounds occur at lower concentrations than previously reported."
20. 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.<sup>71</sup> These health experts concluded that: "Our results suggest

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<sup>67</sup> 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.

<sup>68</sup> 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.

<sup>69</sup> 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

<sup>70</sup> 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.

<sup>71</sup> 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.

that exposure to malodorous compounds increases the risk of acute respiratory infections.”

21. 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 H<sub>2</sub>S hourly average values were given as follows: the “low is given as < 30 ug/m<sup>3</sup>, medium is 30-42 ug/m<sup>3</sup> and high is given as 42 ug/m<sup>3</sup>.<sup>72</sup> These hourly values also correspond with the State of California hourly concentrations for health.

## **LEGAL RESOURCES CENTRE**

**Per:**

**ANGELA ANDREWS**

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<sup>72</sup>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 PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO, O<sub>3</sub>, and hydrogen sulphide (H<sub>2</sub>S) 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” PM<sub>10</sub> concentrations, were classified as “high pollution days”, and the pollutants resulting in this classification noted

## **Annexure 8: Information pertaining to upset conditions**

## Sasol Synfuels Shutdown and Upset Conditions Additional Information

Information on emissions during shutdown, upset and maintenance conditions and the challenges associated with measuring emissions under these conditions was provided in Section 4.1.3 of the AIR. Additional information is provided below to the extent possible.

From a maintenance perspective, planned factory shutdowns are conducted annually. The Sasol Synfuels plant consists of four 'phases'. Two phases are located at the Sasol Synfuels west factory; and two phases on the Sasol Synfuels east factory. Every year, one phase of the plant undergoes a "phase shutdown", and every four years, a "total shutdown" (representing two of the four phases) is undertaken. Statutory requirements sometimes drive the frequency of maintenance activities, for example, pressure vessel regulations drive boiler inspection schedules. These activities are also communicated to the Licensing Authority as well as the communities around the facilities, normally through a newspaper notice.

As for upset conditions, Section 30 of NEMA applies, and Sasol has not exceeded the 48 hour window in the preceding two years during start up, maintenance, upset and shutdown conditions, which has ensured that ambient impacts are limited in duration.

In mentioning the above, cognisance should be taken that Sasol's ambient air quality monitoring stations monitor ambient air quality over a 24-hour period and any upset, start-up or shut down events will reflect in the ambient air quality measurements and results. Therefore, maximum measured concentrations, although not quantified on site, are included in the measured values for ambient air quality.

Based on the expected impact of emissions as well as comments received from stakeholders, additional information on shutdown and upset conditions from the Boiler plants and Sulfur recovery unit will be provided in the Sections below.

### Section 1: Sasol Synfuels Boilers

The upset conditions, shutdowns and maintenance conditions on boilers are quantified by the number of boiler start-ups. During a boiler start-up, oil is fed to the boilers. It takes approximately 4 hours to start up each boiler, during which the boilers PM emissions are elevated. On average 13.4 boilers started up during the previous 12 months as shown in the table below. During start-up, SO<sub>2</sub> emissions will be lower, due to lower sulfur content of the oil when compared to the coal feed.

Sasol's atmospheric emission licence provides allowance for start-up, maintenance and shutdown conditions - but if any event exceeds 48 hours, it is regarded as a NEMA Section 30 incident. This time period was not exceeded for any start-up during this period, since as indicated above, boiler start-ups typically take 4 hours.

The boiler fleet at Synfuels consists of 17 boilers.

<b>Date</b>	<b>Boiler light-ups (east and west)</b>
Dec-13	15
Jan-14	11
Feb-14	9
Mar-14	9
Apr-14	13
May-14	16
Jun-14	13
Jul-14	11
Aug-14	12
Sep-14	21
Oct-14	20
Nov-14	11
Total	161
<b>Average per month</b>	<b>13.4</b>

## **Section 2: Sasol Synfuels Sulphur Plant – H<sub>2</sub>S**

Elevated concentrations of H<sub>2</sub>S can be experienced during upset, maintenance and shutdown conditions. It should be noted that, during the last two years, Sasol has not exceeded its permit conditions for H<sub>2</sub>S emissions. Elevated emissions are currently managed by reducing production volumes, as the current AEL conditions specify limits based on tonnage of emissions per hour. Cutting production volumes can reduce the tons of H<sub>2</sub>S emitted, but does not improve the concentration emitted, particularly under conditions of lower flue gas volumes. Much higher concentrations can be experienced due to lower flue gas volumes, even if the total tonnage of emissions does not increase.

During shutdown, upset and maintenance conditions, the impact of emissions are assessed by monitoring the ambient concentrations of H<sub>2</sub>S measured at Sasol's monitoring stations located at points around the facility. The Langverwacht monitoring station measures the ambient concentrations close to Embalenhle and the Club station monitors the ambient concentrations close to Secunda, as shown below. The Bosjesspruit station measures the ambient impact in the prevailing wind direction.



The number of each type of shutdown experienced during the last two years is shown in the table below.

Shut down type	Number of shutdowns in the last two years	Purpose of shutdown	Expected impact on H <sub>2</sub> S emissions
Circulation pump replacement (half phase)	1	Pump failure replacement with new pump.	Elevated concentrations due to half phase shut down, lower concentrations than for full phase shutdown
OCS (half phase)	9	Clean absorber to improve efficiency	Elevated concentrations due to half phase shut down, lower concentrations than for full phase shutdown
Reaction tank cleaning (whole phase)	1	Clean build-up of sulphur and salts in process equipment	Higher concentrations due to whole phase shutdown
Separator cleaning (whole phase)	6	Improves operation and efficiency of separators	Higher concentrations due to whole phase shutdown
Statutory shut down and start-up (whole phase)	2	STAT shutdown and project work implemented	High concentrations due to low flue gas temperatures