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Our ref: RH
23 March 2017

Dear Mesdames

PRELIMINARY COMMENTS ON THE DRAFT MID-TERM REVIEW OF THE HIGHVELD PRIORITY AREA AIR QUALITY MANAGEMENT PLAN

1. We address you on behalf of our clients groundWork and the Highveld Environmental Justice Network (HEJN). We refer to the following: the notification received on 16 February 2017 that the draft mid-term review (MTR) (“the draft review”) by the Department of Environmental Affairs (DEA) of the Highveld Priority Area (HPA) Air Quality Management Plan (AQMP) was available for 28 days’ comment, i.e. by 16 March 2017; the 19 February 2017 request from the Centre for Environmental Rights (CER) for an extension of time to submit comments on the draft review by 17 April 2017; and to the DEA’s 23 February 2017 response that an extension of only one week – i.e. 23 March 2017 – would be provided. This despite the fact that the draft review is dated December 2015 and was only made available in mid-February 2017. We place on record that we have not had enough time to provide comments on the draft review and our clients’ rights are reserved in this regard. You will note from our comments below that, in light of the serious limitations of the current document, we recommend that the draft review requires substantial reworking and should then be resubmitted for a fair and reasonable comment period.
2. As indicated in our 19 February 2017 correspondence, November 2017 will be ten years since the declaration of the HPA, and it is five years since the AQMP was promulgated. We are aware that a full review is recommended once the AQMP has been in operation for five years, and we understand that a MTR would have been due after two-and-a-half years. We agree with the DEA (as expressed in the executive summary of the draft review) that *“on-going evaluation is an essential element of AQMP implementation”* and we note the Department’s comment that the draft review will help *“for early detection of shortfalls and reprioritization of resources accordingly”*. It is not clear what ongoing evaluation has been undertaken by the DEA. We note, for example, that the AQMP requires six-monthly monitoring and progress reports, as well as regular evaluation progress reports, and annual

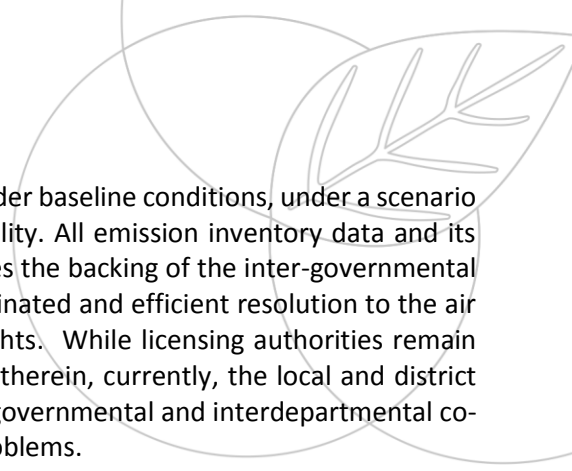
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evaluations. These documents are highly relevant for an assessment of the AQMP. We requested copies of these documents in our correspondence of 19 February 2017, and reiterate that request.

3. We place on record that the period of 24 working days to comment, without access to the critical records set out above, on this extremely-important, substantially-delayed document is unreasonable, unfair, unlawful, and is insufficient to comply with our clients' rights to just administrative action in terms of the Promotion of Administrative Justice Act, 2000. This is particularly so in circumstances where the CER and its clients have been actively participating in HPA processes for a few years, have made various contributions in relation to the improvement of these processes, and were one of a few – if not the only – stakeholders to provide input on the July 2015 MTR questionnaire. In fact, given the completely-inactive role played by industries in HPA meetings, it seems quite possible that the CER's comments on the draft review might be the only ones received by the DEA.
4. We have also participated in discussions about the MTR at HPA meetings (including the multi-stakeholder workshop in September 2016), and have met with some municipalities in the HPA to discuss air quality-related issues. As the DEA is also aware, we are working on an independent assessment of progress made in implementation of the AQMP.
5. The DEA itself acknowledged the important role played by the CER and its clients in an email on 30 August 2016 inviting the CER to present at the November 2016 Multi-Stakeholder Reference Group (MSRG) meeting on our assessment of the AQMP's implementation; indicating, *"your positive response will be highly appreciated since you are playing a crucial role in the implementation of the HPA AQMP."* This presentation was made by Sylvia Kamanja at the November 2016 MSRG meeting.
6. As a result of our and our clients' expertise and experience, as well as the fact that HEJN members reside within the HPA and are significantly impacted by the poor state of air quality, a meaningful opportunity to make inputs is essential to the review process. Given that such opportunity has been significantly curtailed, our clients' rights are reserved; including the right to make additional comments on the draft review.
7. Below, we summarise our main concerns with the draft review; whereafter, we address certain issues in more detail.

Overview

8. The methodology used for the MTR lacks a systematic approach, is uneven and unacceptably narrows the scope of the review. In principle, the draft review should be a systematic evaluation of whether or not the stated goals of the HPA AQMP have been met, or if sufficient progress has been made towards the fulfilment of these goals and the associated objectives, activities and action plans contained in the HPA AQMP; and if not, why not. Superficially, the draft review attempts to adopt this approach, but does so unevenly and incompletely. In a number of important instances, it fails to present relevant data and draws conclusions without presenting supporting evidence. As indicated above, the draft review is dated December 2015, which means it is already outdated – it was only published for comment in February 2017. Consequently, potentially valuable data contained in the first round of annual emission reports submitted in terms of the atmospheric emission licences (AELs) since the minimum emission standards (MES) applied from April 2015 and 2016 monitoring data have not been incorporated into the MTR. In addition, the base year for the estimate of emissions from the combustion of household fuels appears to be 2011, making these data even more outdated.
9. There is widespread non-compliance with health-based national ambient air quality standards (NAAQS) in the HPA, despite its declaration as a priority area. However, it appears that the HPA has not received the requisite resources to implement an AQMP that directly addresses the key air quality challenges at hand. Although the draft review reflects that a lot of work is taking place, it appears that such work as is happening is not achieving the desired outcomes. For example, there is a lot of focus on education, training and campaigns to have improved stove-burning techniques, but the issue of who is causing the pollution and how to address this has not been



comprehensively addressed. There is no clear tabulation of emissions under baseline conditions, under a scenario of MES and emission levels that will ensure compliant ambient air quality. All emission inventory data and its analysis must be publicly available. Priority area implementation requires the backing of the inter-governmental political and institutional support, such that there is a structured, coordinated and efficient resolution to the air pollution problem, with its accompanying impacts on constitutional rights. While licensing authorities remain responsible for the AELs and the management of emissions addressed therein, currently, the local and district municipalities appear to be caught up in a frustrating battle to get intergovernmental and interdepartmental co-operation, which is essential for resolving cross-sectoral air pollution problems.

10. The overall objective of the HPA AQMP is that ambient air quality complies with all NAAQS. That objective is intended to guide government, communities and other stakeholders and frame the implementation of the AQMP.¹ The stated purpose (implicitly the Terms of Reference) of the MTR and the draft review narrow the scope of the review significantly, compared with reviewing progress achieved against all the objectives and detailed plans set out in the baseline HPA AQMP. The stated purpose of the HPA AQMP review is:
 - Update the emission inventory;
 - Assess changes in ambient air quality since the declaration;
 - Review progress on interventions implementation; and
 - Provide recommendations to strengthen the interventions implementation.²
11. In a number of instances, the Review Table³ re-interprets the Objectives and Activities contained in the baseline HPA AQMP. The MTR lacks comparably-detailed information in several instances. For example, the baseline HPA AQMP included a complete list of all industries included in its emission inventory,⁴ but the MTR does not. Importantly, progress towards the implementation of Industrial Intervention Plans⁵ incorporated into the baseline HPA AQMP is not reviewed in the draft review.
12. The draft review does not assess the implementation status of each of the seven goals and associated objectives and implementation plans of the baseline HPA AQMP. Instead it presents an “Audit of the Plan Implementation Status Quo”,⁶ with categories that do not align with the Goals, Objectives and Activities of the baseline HPA AQMP.
13. It is submitted that the method of assessing the “implementation status quo” through the multi-stakeholder workshop held on 28 September 2016 is woefully inadequate. At this meeting, participants were split into groups and allocated themes for discussion – based on the HPA AQMP objectives – and could move to other themes after fifteen minutes. It is understood that the responses provided by participants in this short period were used to compile the draft report. Annexure A: Review Table states as follows: “*the implementation status quo was assessed through a [MSRG] Meeting. This forum enables the interaction of various stakeholders simultaneously thus facilitating consolidated feedback*”.⁷ The incompleteness of this method is demonstrated by, for example, the fact, that many of the colour-coded conclusions drawn from the data and calculations are not substantiated or explained in the body of the draft review.
14. We provide a more detailed analysis regarding some of the goals below. Goal 1 of the HPA AQMP provides:⁸

¹ p 108 HPA AQMP.

² p ii of the draft review.

³ pp 87-165 of the draft review – Annexure A.

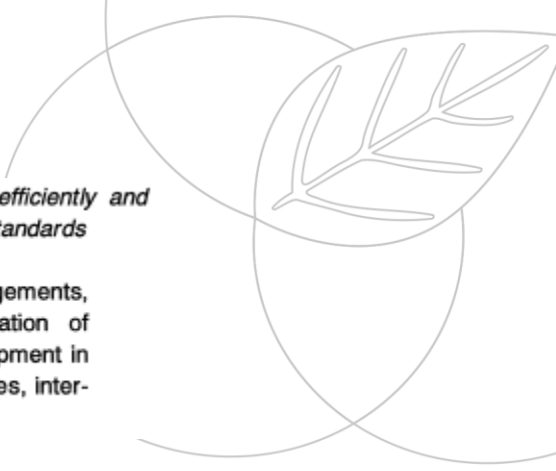
⁴ p 172 HPA AQMP – Appendix 6.

⁵ pp 179-233 HPA AQMP.

⁶ S 6 of the draft review.

⁷ p 87 of the draft review.

⁸ p xvi HPA AQMP.



Goal 1: By 2015, organisational capacity in government is optimised to efficiently and effectively maintain, monitor and enforce compliance with ambient air quality standards

To achieve the goal, it is necessary to focus on institutional arrangements, resource availability, cooperation and collaboration, and maximisation of regulatory and management tools. The goal addresses capacity development in the AQMP, looking at the necessary structures, systems, skills, incentives, inter-relationships and strategy.

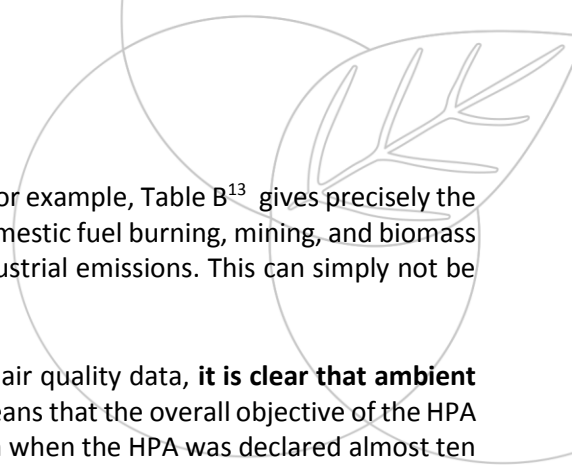
15. The draft review fails to provide sufficiently-detailed data on the current status of the monitoring network and other relevant information to enable a full and accurate assessment of Goal 1 of the baseline HPA AQMP. Based on the limited data presented, Goal 1 has not been achieved. The MTR accepts that air quality has not improved significantly. However, the draft review also concludes that there has been *“an increase in ambient air quality monitoring stations across the HPA”*, while admitting that the majority of these monitoring stations are not functional.⁹ The MTR does not present information as to the quality of data available from the functional monitoring stations. It is uncertain whether there has been meaningful progress in respect of improvements in the monitoring network. The available data indicate that the monitoring network has deteriorated over the intervening years.
16. The MTR has adapted or changed the emissions-estimation methodologies in order to arrive at updated emissions estimates for comparison with the baseline HPA AQMP estimates. While it is acceptable to adapt and update the estimation methodology, the draft review fails to provide sufficient details as to its emissions-estimation methodology and to quantitatively assess if the differences between the two estimates are due to changes in the emissions-estimating methodology or actual changes in emissions from individual sources and /or aggregate emissions.
17. The draft review does not list the facilities included in its estimate of industrial emissions, which means that it is not possible to ascertain which facilities have been added to or removed from the baseline list. It admits that it cannot account for or explain the considerable differences in the number of facilities or the spatial distribution of facilities.¹⁰ The result is that a credible statement as to the changes in total industrial emissions cannot be made on the basis of the data presented in the MTR. We therefore strongly dispute the draft review’s claim that *“the methodology used in the current emission inventory is believed to be more robust than the previous one.”*¹¹
18. We note that the draft review also identifies various concerns with the accuracy of the data; such as: *“only 75% of the listed activities in the HPA reported emissions to the [National Atmospheric Emissions Inventory System]. Additionally, Section 23 (S23) emission inventory was not compiled due to data unavailability...Domestic fuel Burning-It is notable that there are inconsistencies in the information pertaining to fuel types combusted, emission factors to be used, volumes of fuel used, diurnal and seasonal patterns of fuel usage, the combustion equipment used as well as the manner in which fuel is used within combustion equipment. Additionally, another limitation is the reliance on census data. The way in which the census data questionnaire was structured residents could only say one fuel they used for heating, lighting etc. This can be misleading as some households may use more than one fuel, for instances houses that use predominantly coal for heating may use wood to start before adding the coal. This information is lost within the current structure of the census questionnaire. Biomass -the lack of appropriate fuel load (or mass of fuel combusted) specific data to grassland in South Africa breeds an uncertainty in the estimated emissions.”*¹²

⁹ p 84 of the draft review.

¹⁰ p 54 of the draft review.

¹¹ p 53 of the draft review.

¹² pp iii-iv of the draft review.

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19. This inaccuracy is clearly illustrated in several cases in the draft review. For example, Table B¹³ gives precisely the same PM₁₀ figures for 2010 and 2015 for transport-related emissions, domestic fuel burning, mining, and biomass burning, and almost exactly the same figures for 2010 and 2015 for industrial emissions. This can simply not be the case and again calls into question the accuracy of this data.
20. Despite our concerns about the accuracy and completeness of ambient air quality data, **it is clear that ambient air quality remains out of compliance with NAAQS in the HPA**, which means that the overall objective of the HPA AQMP is not being met, and it appears to be no closer to being met than when the HPA was declared almost ten years ago.
21. Our preliminary assessment agrees with many of the statements in the draft review, such as:

“there are several improvements required in terms of improving the AQMP and the tools therein to achieve the ultimate objective of air quality that is not harmful to health in the HPA. These broadly include, but are not limited to:… improved reporting of industrial and mining emissions to the National Atmospheric Emissions Inventory System (NAEIS); improved quantification of emissions through the development and use of standardised emissions inventory approach; …. robust engagements with the relevant National departments to influence their policy; increase in capacity to ensure implementation of the AQMP can be achieved; and improved management of the implementation and review of the AQMP progress with better accountability and feedback”¹⁴ (we do not agree that source apportionment as a separate activity is necessary – insofar as it will delay interventions: we note that air quality modelling was used for comprehensive source apportionment in the baseline AQMP and that, if the planned modelling activities related to Goal 1, Objective 9 are carried out, model-based source apportionment would be available on an ongoing basis; whilst we agree that the NAEIS system will, when fully functional and accessible, generally improve emissions reporting, we also note the limitation that the NAEIS system requires reporting of annual emissions on an annual basis only, which is an inadequate frequency for air quality management (AQM) purposes; and that the MES requires compliance with daily average emission limits and that AELs may require more frequent (for example 3 monthly or 6 monthly) reports to demonstrate ongoing compliance with limit values; and we also do not agree that it is appropriate simply to “update objectives and targets” where these have not been met, as the draft review recommends);

“the industrial sources in total are by far the largest contributor of SO₂ and NO_x in the HPA,… while mining is the largest contributor of PM₁₀ emissions”¹⁵ and

“measured ambient data does not indicate any significant improvement in air quality since the gazetting of the AQMP. These data also indicate significant exceedances of the National Ambient Air Quality standards (NAAQS)… It is clear that from these and measured results for other pollutants, that ambient air quality is still a concern in the HPA”¹⁶.

22. Our clients also agree with the conclusion from the September 2016 workshop that *“there is limited progress in many of the activities assigned”¹⁷* and that such industrial interventions as may have been made are not adequate to enable the achievement of AQMP goals.¹⁸ The statement about progress with industrial interventions is contradicted within the draft review itself, which also indicates that those at the September 2016 stakeholder workshop took the view that only 29% of industrial emissions interventions had been achieved, and 39% were a

¹³ p iv of the draft review.

¹⁴ p 1 of the draft review – this should be p viii. We point out that there are various typographical errors within the draft review; including the duplication of table and figure numbers and page numbers.

¹⁵ p ii of the draft review.

¹⁶ p v of the draft review.

¹⁷ p 1 of the draft review – this should be p viii.

¹⁸ p 1 of the draft review – this should be p viii.

“work in progress”.¹⁹ No explanation is provided for these different conclusions, but what is clear is that industrial interventions have made no meaningful impact on ambient air pollution.

23. We also agree that cooperative governance has to be strengthened.²⁰ In this regard, we refer, for example, to our correspondence requiring that the Departments of Mineral Resources (DMR) and Health (DoH) attend HPA meetings. No responses were received to these letters, and, as far as we are aware, neither Department has attended HPA meetings, despite the crucial role each should be playing in the HPA. We and our clients also agree that there has been no significant implementation in relation to mining and for dust control. We have addressed various correspondence to the DEA regarding dust and also participated in a meeting in February 2017 about this.²¹

The need for timeous access to accurate, updated data

24. The National Atmospheric Emission Reporting Regulations, 2015 required facilities to report emissions on an annual basis by 31 March 2016 (and by 31 March of each subsequent calendar year). As the draft review points out, *“this reporting is critical for assessing any changes in emissions across industries/sectors that has a bearing on the successes and failures in the implementation of the air quality management plans”*.²² Unfortunately, many industries are simply failing to ensure compliance with the Reporting Regulations. In a meeting in August 2016, the DEA advised that there had only been about 70% industry compliance with the NAEIS reporting requirement and that an auditing process was underway.
25. While a fully functional NAEIS is important for the national AQM system, it has significant limitations with respect to Priority Area and local AQM - such as a lack of or limited capability to include fugitive dust or domestic fuel burning emissions, and an annual reporting cycle. It should not be seen a substitute for the development and maintenance of a detailed and comprehensive emission inventory at the Priority Area level, as proposed in the baseline AQMP.
26. We note from the draft review that 75% of industries in the HPA reported to the NAEIS.²³ We strongly recommend that action be taking against defaulting industries. Regulations 13 and 14 of the Reporting Regulations make it an offence, punishable by a fine of R5 million and/or five years’ imprisonment (for a first offence) or R10 million and/or ten years’ imprisonment (for a further offence), not to report to the NAEIS or to report false or misleading information. We also point out that, in terms of regulation 12 of the Reporting Regulations, the default position is that NAEIS data must be public (unless it promotes unfair competition, contravenes section 36 of the Promotion of Access to Information Act, or contravenes section 17 of the Statistics Act).
27. In the August 2016 meeting, the DEA advised that there was, at that stage, no emission inventory that could be made public, and that, by the end of the financial year, there would be a draft narrative NAEIS report. The DEA indicated that the summary NAEI listing and accompany narrative report were expected to be made publicly available. We request a copy of that listing and report as soon as those documents are available. The DEA also advised that the questions of making sector, area and facility level emissions publicly available (for example online) had yet to be resolved. CER and their clients argue that it is clearly in the public interest that fully detailed data be available to the public without impediment or delay.
28. The draft review recommends that NAEIS data be used as the new baseline for HPA emissions “going forward”.²⁴ However, the NAEIS does not capture short-term changes in emissions as may be reported, for example, under

¹⁹ p 78 of the draft review.

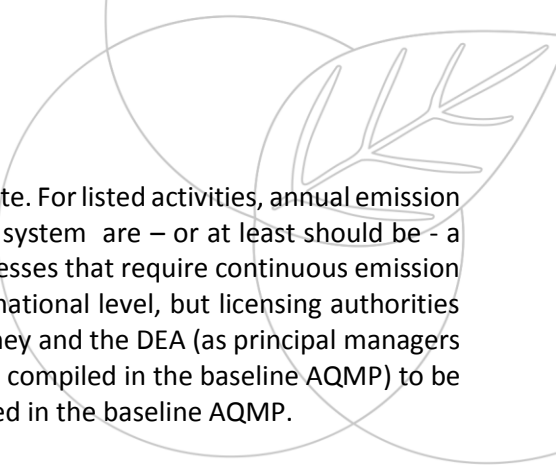
²⁰ p 1 of the draft review – this should be p viii.

²¹ As indicated below, Prof Cairncross and Mariette Lieferink also participant in a DEA-NACA seminar about the Dust Control Regulations.

²² p 9 of the draft review.

²³ p iii of the draft review.

²⁴ p 53 of the draft review.



the AEL system. Data may only be available months after the annual due date. For listed activities, annual emission reports and more frequent intermediate reports required under the AEL system are – or at least should be – a more accurate and timeous sources of emissions data, especially for processes that require continuous emission monitoring. As indicated above, the NAEIS is essential, especially at the national level, but licensing authorities cannot manage air quality in the HPA effectively using only NAEIS data. They and the DEA (as principal managers of the HPA) require a comprehensive emission inventory (such as the one compiled in the baseline AQMP) to be maintained and updated in a systematic way. That was what was envisaged in the baseline AQMP.

29. According to the draft review: *“since the formulation of the HPA AQMP, there has been an increase in ambient air quality monitoring stations across the HPA. Most of these monitoring stations belong to DEA, Sasol and Eskom. Furthermore, The Ekurhuleni Metropolitan Municipality (EMM) have recently resuscitated their monitoring network, however there are still some lags in data availability for certain periods (EMM, 2015). Additionally, the MDEDET own some monitoring stations within the priority area, however, data is currently not available due to technical issues with these stations.”*²⁵ It also states that *“ever since the implementation of the HPA AQMP was initiated in 2013, the monitoring network has grown from 20 to 31. The challenge is that some of the stations are not functional due to resource and capacity reasons”*.²⁶
30. Also in the August 2016 meeting, the DEA advised that only about 47 of about 136 stations report 'live' data to the South African Weather Service (SAWS) (the custodians of the South African Air Quality Information System (SAAQIS)), and that there was some reluctance from local government and certain industries to report live data.
31. We were also advised that the monitoring network was under significant strain. We understand that several municipal stations are not operating and/or are apparently located in the wrong areas. We were advised that an ambient air quality monitoring strategy had been devised and that the DEA was providing training, capacity and support to local government. The DEA also advised that, once the Norms and Standards for Air Quality Monitoring were in place, live data reporting to SAAQIS would be required. Kindly advise us of the status of the monitoring strategy and norms and standards and whether and when they will be available for comment.
32. As the draft review also points out, SAAQIS *“makes air quality information available to stakeholders, provide a common system for managing air quality in South Africa and provide uniformity in the way data; information and reporting are managed in South Africa. A central aim of the SAAQIS is that it allows the public access to air quality information. Improving the availability of information facilitates transparency in processes, informs decision making, and builds capacity. The SAAQIS streamlines the flow of relevant information; provides a tool to assist in managing air quality and builds awareness about air quality among stakeholders in general.”*²⁷
33. However, SAAQIS is functioning sub-optimally. The draft review acknowledges that there are issues with accessibility of SAAQIS.²⁸ Our concerns in this regard have previously been addressed with the DEA. In the August 2016 meeting, the DEA and SAWS indicated that the documentation of the code (software) supporting the system is poor or non-existent, rendering upgrading or modification of the existing system risky and excessively time-consuming: modification of the existing system would be a waste of time and effort in view of the current plan for a major upgrade, essentially by starting from scratch. We were advised that SAAQIS was undergoing an upgrade - the service provider had recently been appointed and was required to have done the work within 8 months from mid-August 2016.
34. However, in February 2017, the National Air Quality Officer indicated to CER that the service provider had decided it was not able to do the work and the project had to be re-advertised. Once the new service provider is appointed, the upgrades are expected to take a year. This delay is very disappointing to us – no doubt also to the DEA, given

²⁵ p iv of the draft review.

²⁶ p 29 of the draft review.

²⁷ p 10 of the draft review.

²⁸ p 81 of the draft review.

that SAAQIS is supposed to provide “a common platform for managing air quality information in South Africa. It makes data available to stakeholders including the public and provides a mechanism to ensure uniformity in the way air quality data is managed i.e. captured, stored, validated, analysed and reported on in South Africa.”²⁹ It has, to date, failed to reach its promised potential.

Organisational capacity optimised to ensure NAAQS compliance (goal 1)

35. As indicated above, goal 1 of the HPA AQMP is that organisational capacity in government is optimised to efficiently and effectively maintain, monitor and enforce compliance with NAAQS. According to the draft review, “governance in terms of knowledge and organisational capacity has made significant progress in meeting their intervention commitments”.³⁰ Notwithstanding the acknowledged development in organisational capacity in government, the goal to “efficiently and effectively maintain, monitor and enforce compliance with ambient air quality standards” has clearly not been attained.
36. The draft review states that “the devolution of authority requires that provincial and local government undertake to improve capacity in terms of air quality management functions and duties assigned to them in the Act. Although this capacity is lacking at present in other (sic) municipalities, the fulfilment of these roles and responsibilities is expected to significantly improve the potential for reaching the primary goals of the HPA AQMP.”³¹
37. Insofar as organisational capacity is concerned, our assessment of the AQMP’s implementation – which focuses on Nkangala District Municipality (NDM) and eMalahleni Local Municipality - was that the relevant authorities are severely under-capacitated – both in terms of finances and personnel. Municipalities only have a few of the right people to do AQM work. These officials have too many responsibilities and are over-stretched to the extent that they are unable to devote adequate time to AQM compliance and/or enforcement. We recommend that more people be trained and equipped with the skills to focus on AQM work centred on the reduction of emissions and improvement of ambient air quality in NDM and HPA in general. In addition, more environmental management inspectors must be trained and designated to undertake compliance monitoring and enforcement of AQA. We recommend that more money and resources be devoted towards improving ambient air quality in NDM and HPA in general; in other words that priority areas are actually treated as a priority.
38. The draft review has not presented data to support the conclusion that “since the formulation of the HPA AQMP, there has been an increase in ambient air quality monitoring stations across the HPA.”³²
39. The monitoring of air quality in the HPA remains inadequate, which is partially acknowledged in the draft review as follows: “ever since the implementation of the HPA AQMP was initiated in 2013, the monitoring network has grown from 20 to 31. The challenge is that some of the stations are not functional due to resource and capacity reasons.”³³
40. The MTR contains insufficient data on status of the monitoring networks in the HPA. The draft review should state, for example in tabular form, how many of the 31 stations mentioned are functional, which pollutants are monitored by each of the functioning stations, and what the annual data recoveries are for each of the stations and for each of the pollutants. Table 4-3,³⁴ for example, only lists nine stations, together with the list of pollutants each station is monitoring, but does not contain information of data recoveries. We note that an annual data recovery – the percentage of valid values – in excess of 80% is regarded as satisfactory by SAWS.³⁵ Tables 4-4 and

²⁹ www.saaqis.org.za

³⁰ p 86 of the draft review.

³¹ p 83 of the draft review.

³² p 83 of the draft review.

³³ p 29 of the draft review.

³⁴ p 32 of the draft review.

³⁵ However, the NAAQS refer to 5.2.1.13 of the (now-repealed) 2007 National Framework for Air Quality Management, which indicates that SANS 1929 applies. SANS 1929:2011 says ‘data capture’ should be more than 90%. The current Framework does not

4-5 only list eight stations. By comparison, the baseline HPA AQMP lists 23 monitoring sites with available data in the HPA (Table 16).³⁶

41. Worryingly, the Ekurhuleni monitoring network (stations: Bedfordview, Etatwa, Germiston, Tembisa, Thokoza and Wattville) data have not been included in the MTR. Ekurhuleni is the most dense area in terms of population and industry scale and complexity. Ekurhuleni emissions, but not monitoring data, have been included. Research shows that ambient PM_{2.5} levels are significantly higher in Ekurhuleni than in the rest of the HPA.³⁷ It is clear that an assessment of air quality in Ekurhuleni must be included in the draft review.
42. The list of pollutants measured and the data recoveries achieved over the period 2011 to 2016 for each station will provide the basis for an assessment of whether or not the monitoring network has improved since 2012, not only in terms of the number of stations that are functional, but also the quality of the data reported by these stations. The available data indicate that the monitoring network has deteriorated over the intervening years.
43. The draft review has assessed compliance with the PM_{2.5} 24h (Figure 4-4) and annual national standards at five monitoring stations only. In respect of PM₁₀, the draft review reports and analyses 24h average data from seven monitoring stations (Figure 4-5) and annual average values from nine monitoring stations. The subset of five to nine monitoring stations cannot be said to represent ambient concentrations throughout the HPA. We note again the absence of data in the monitoring network for Ekurhuleni - the most densely populated area.
44. A fully functional 31 monitoring stations would obviously greatly enhance the spatial coverage and representativity of the dataset. The general statement that *"the analysis of the available monitored data (2008-2014) showed that ambient PM10 and PM2.5 concentrations are still elevated over many areas in the HPA (Figure 4-4 and Figure 4-5)"*³⁸ is applicable only for the region covered by the monitoring stations reported on. The tables (Tables 4-4 and 4-5) listing exceedences of respective PM_{2.5} and PM₁₀ 24h limit values should take cognisance of data recoveries in the corresponding years, since missing data (low data recoveries) will bias the reported number of exceedences. The draft review does not present an analysis to support the concluding statement (in relation to elevated PM₁₀ and PM_{2.5} concentrations) that this was *"in particular areas proximate to significant industrial operations as well as residential areas where domestic coal burning is occurring."*³⁹ We note that the baseline AQMP used dispersion modelling to identify 'hotspot' areas associated with different emissions source categories. This is a far more comprehensive means to assess emissions and should be done in the draft review.
45. Similar comments apply to ambient SO₂ and NO₂ monitoring – there are too few functioning monitoring stations reporting good quality data. Exceedences of 24h average SO₂ limits are still occurring: *"in the current AQMP review the daily averages for SO2 monitored data are still showing a number of exceedances at the DEA stations located in Ermelo, Hendrina, Witbank and Secunda (Figure 4-8, Table 4-6)."*⁴⁰ Exceedences of 1hr average NO₂ limit values are still occurring: *"the review shows exceedances of 1-hr NO2 for the period 2012-2014 were observed at all the monitoring stations within the HPA with the exception of Leandre and Grootvlei (Figure 4-10 and Table 4-7 below)."*⁴¹
46. Monitoring of ozone appears to occur at only the five DEA monitoring stations. There is non-compliance with the ozone ambient air quality standard at all of these stations. The ambient concentrations of ozone is of concern. As a secondary pollutant, ozone is not emitted from sources, but formed due to complex interaction of emissions of

refer to SANS 1929. There are some uncertainties here and we recommend that this issue be properly considered and the NAAQS amended accordingly.

³⁶ p 40 of the draft review.

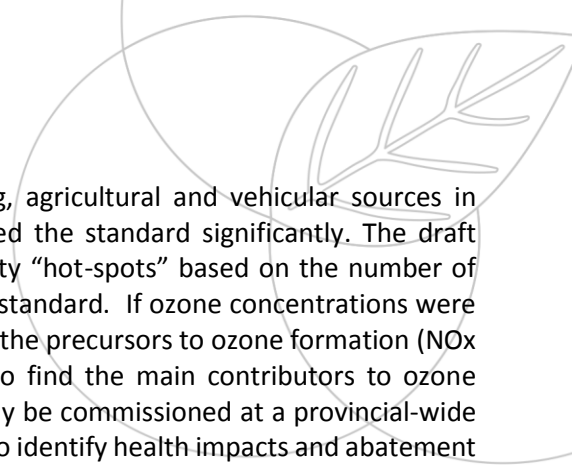
³⁷ Eugene Cairncross's 2016 paper on "The State of South Africa's Air Quality Monitoring Network, and its Air Quality" presented at NACA's 2016 conference is available on request.

³⁸ p 32 of the draft review.

³⁹ p 32 of the draft review.

⁴⁰ p 39 of the draft review.

⁴¹ p 45 of the draft review.



NO_x and volatile organic carbons (VOCs) from industrial, fuel-burning, agricultural and vehicular sources in interaction with solar irradiation. The ambient levels frequently exceed the standard significantly. The draft review refers to the HPA AQMP, which also identified several air quality “hot-spots” based on the number of modelled exceedances of the 8-hours running averages ozone ambient standard. If ozone concentrations were modelled, this means that a model is or was operational with respect to the precursors to ozone formation (NO_x and VOCs), and that further work can be done by using the model to find the main contributors to ozone formation. It is recommended that an expert health and air quality study be commissioned at a provincial-wide scale to determine the cause for ozone concentration exceedances and to identify health impacts and abatement measures. These abatement measures should be incorporated into the AQMP and AEL conditions.

47. The draft review states, in relation to annual trends for PM₁₀ and PM_{2.5}, that: *“the analyses of the annual trends as indicated on Figure 4-6 and Figure 4-7 shown that some areas have witnessed significant improvements whereas others have very little-to-no improvement and even further deterioration. For an instance; monitoring data shown that areas in the vicinity of Ermelo, Middelburg, Secunda and Emalahleni have witnessed significant improvements from 2012 to date. **From this trend, it is evident that the development of the priority area AQMP and the subsequent implementation as from the year 2013 has an important bearing on the observed improvements.***

Nonetheless, an area in the vicinity of Hendrina has witnessed very slow improvement whereas Grootvlei and Leandra have witnessed an increased in the ambient concentrations of both PM₁₀ and PM_{2.5}. It is therefore recommended that these areas require more focused and strategic attention in terms of compliance and enforcement in respect of all regulated activities including communities”⁴² (our emphasis).

48. It does not make sense to say that the AQMP and its implementation have had an important bearing on some improvements in air quality, while simultaneously stating that air quality in some areas has not improved and has even deteriorated. As indicated below, the draft report again contradicts itself, claiming that the contribution of the AQMP interventions is “questionable”.
49. In this regard, in relation to SO₂ daily averages, the draft report indicates: *“in the current AQMP review the daily averages for SO₂ monitored data are still showing a number of exceedances at the DEA stations located in Ermelo, Hendrina, Witbank and Secunda (Figure 4-8, Table 4-6).*

*Eskom stations located in Grootvlei, Majuba and Leandra also recorded various exceedances of the daily averages for SO₂ as reflected on Table 4-6 below. **However, the status of the AQMP interventions and subsequent implementation as initiated in 2013 is quite questionable in this regard.** There are no clear trends in the number of exceedances for SO₂ limit value of the NAAQS”⁴³ (our emphasis).*

50. In relation to annual NO₂ averages, it is stated in the draft review that: *“annual average ambient NO₂ concentrations recorded in the HPA are well within the National Ambient Air Quality Standards (NAAQS). The exceedances of the NO₂ annual standard were only observed in Ermelo (2008), Grootvlei (2009), Hendrina (2010), Middelburg (2008), Witbank (2008 and 2009) and Hendrina (2012). It is imperative to emphasise that, with the exception of Hendrina, none of these exceedances were recorded from 2010 to date (Figure 4-11).*

***Nonetheless, it is questionable whether the declaration of an area as priority area and the subsequent development and implementation of the AQMP have an important bearing on the compliance with annual NO₂ target values highlighted above.** This is because, from year 2012 to date, there was a gradual increase in ambient NO₂ concentrations in Ermelo, Grootvlei, Hendrina, Middelburg and Secunda. In light of the fact that the abovementioned areas were amongst previously identified hot-spots, it is therefore recommended that more focused and strategic attention in terms of compliance and enforcement in respect of all regulated activities*

⁴² pp 37-38 of the draft review.

⁴³ pp 39-40 of the draft review

including communities be instituted. Conversely, stations located in Witbank and Majuba have since recorded gradual decrease of ambient NO₂ concentrations in 2009 and 2011, respectively”⁴⁴ (our emphasis).

51. In any event, the draft review confirms that, “in general, the ambient air quality data in the HPA shows that there are significant exceedances of the NAAQS for several pollutants in several locations. There are no clear trends in the data from year to year and it can thus be concluded that there has not been an appreciable improvement in ambient air quality since the gazetting of the HPA AQMP and subsequent implementation.”⁴⁵ This makes clear that Goal 1 has not been met.
52. The objectives listed in the baseline AQMP⁴⁶ under each goal are steps towards attaining the goal, not ends in themselves. Nonetheless, it is useful and important to assess whether or not progress has been made towards completing each objective, as is done in Annexure A: Review Table.⁴⁷ However the performance measures reflected in this table should be critically examined. Where specific quantitative data has not been gathered, these objectives should be rated as “not measured”. Annexure 1 hereto provides a suggested example of a more thorough and adequate approach to evaluating compliance with the objectives.

Industries reduce emissions to ensure compliance with NAAQS and dust fallout limit values (goal 2)

53. Goal 2 of the HPA AQMP is that by 2020, industrial emissions are equitably reduced to achieve compliance with NAAQS and dust fallout limit values.⁴⁸
54. It is difficult to make independent assessments as to whether key industries have reduced emissions, given that there are very few documents publicly available for review for the relevant period. Some of the information is available in annual emission reports and/or from the NAEIS and SAAQIS, but this information is not complete or updated, nor is it very easily accessible to the public. Such information as is available, also has to be evaluated and interpreted by air quality experts. We recommend that, for future review purposes, municipalities should assess and report on whether key facilities in their areas have made progress in reducing their emissions, the reasons for this, and future plans to reduce emissions and to ensure compliance with AELs and MES.
55. It is, however, clear from government’s own reports – including the draft review – and from expert analyses of data, that air quality has not improved, despite the declaration of the HPA and the development of the AQMP. It is likely that the continued non-compliance with NAAQS is, in large part, due to the failure of key industrial facilities to reduce their emissions either adequately, or at all. This can also be attributed to the failure of licensing authorities to impose emission limits stricter than the MES in AELs. Of course the decision to grant postponement of MES compliance to all of Eskom’s coal-fired power stations also exacerbated this problem.
56. According to the draft review, “industrial sources in total are by far the largest contributor of SO₂ and NO_x in the HPA, accounting for approximately, 99.57 % of SO₂ and 95.97% of NO_x, while mining is the largest contributor of PM₁₀ emissions”;⁴⁹ and “there has not been a significant decrease in emissions of industrial and mining sources... Nonetheless, industrial sources are still the largest contributors of SO₂ and NO_x in the HPA with mining being the main contributor of PM₁₀.”⁵⁰ In addition, those at the September 2016 stakeholder workshop took the view that only 29% of industrial emissions interventions had been achieved, and 39% were a “work in progress”.⁵¹ This is contradicted by a statement earlier in the draft review, to the effect that those at the workshop took the view that “industrial interventions are largely implemented, however stakeholders argued that the interventions were

⁴⁴ p 48 of the draft review.

⁴⁵ p 52 of the draft review.

⁴⁶ p 111 onwards HPA AQMP – Implementation Plan.

⁴⁷ p 87 onwards of the draft review.

⁴⁸ p xvi HPA AQMP.

⁴⁹ p ii of the draft review.

⁵⁰ p 85 of the draft review.

⁵¹ p 78 of the draft review.

not adequate enough to enable the achievement of the AQMP goals”.⁵² No explanation is provided for these different conclusions, but industrial interventions have clearly been inadequate, given that these are the biggest source of air pollution and the HPA remains in widespread non-compliance with NAAQS.

57. Goal 2 incorporated 12 Objectives and a number of specific activities per objective, with timeframes, responsibilities and indicators. Objective 1 - “emissions are quantified from all sources”, requires that site emissions inventories are completed and that emissions reports are available on an ongoing basis.
58. The baseline HPA AQMP estimated emissions of PM₁₀, NO_x and SO₂ from 11 source types (Table 5):⁵³ Ekurhuleni MM Industrial, Mpumalanga Industrial, Clay Brick manufacturing, Power Generation, Primary Metallurgical, Secondary Metallurgical, Petrochemical, Mine Haul Roads, Motor Vehicles, Household Fuel Burning, and Biomass Burning. The MTR, in contrast, estimates emissions from only five source categories: industrial sources, domestic fuel burning, biomass burning, vehicles and mining operations.
59. Any comparison between the draft review estimates of emissions and those of the baseline HPA AQMP should carefully account for differences in the categorisation of emission sources, as well as possible differences in emissions-estimation methodology and gaps in the data. The MTR does not provide sufficiently-detailed information to enable such an analysis. For example, the baseline HPA AQMP included a total of 346 Atmospheric Pollution Prevention Act-registered operations (Table 6)⁵⁴, grouped per HPA municipality, and listed emission sources by name in Appendix 6,⁵⁵ but the MTR fails to present a comparable level of detail.
60. Table 5-1 of the MTR⁵⁶ compares the number of industries considered in the current (2015 review) emission inventory and the previous (2010 baseline) emission inventory:

Municipality	Total number of facilities considered in the current (2015) emission inventory	Total number of facilities considered in the 2010 baseline emission inventory
Ekurhuleni Metropolitan Municipality	172	244
Nkangala District Municipality	94	29
Gert Sibande District Municipality	47	25

Note the very significant differences in the numbers of facilities in each municipality.

61. The following comment in the draft review accompanies Table 5-1:

⁵² p 1 of the draft review – this should be p viii.

⁵³ p 19 HPA AQMP.

⁵⁴ p 21 HPA AQMP.

⁵⁵ p 172 HPA AQMP.

⁵⁶ p 54 of the draft review.

It is assumed that the decrease in the number of industrial facilities could be attributed to:

- Some of the facilities closing down and no longer operational.
- Some facilities no longer listed in terms of section 21. The amendment of the AQA Section 21 listed activities led to some of the Atmospheric Pollution Prevention Act (APPA) scheduled activities being delisted.

Even with this updating of emission inventories, it should be noted that there are still industries that are not registered in any of the databases utilised. These facilities could be operating illegally. It should also be noted that the inventory did not take into account smaller industrial activities that are not listed in terms of AQA Section 21. Consequently, there is a need for further investigation particularly on those facilities that are not reporting their emissions to the NAEIS.

62. It is therefore clear that there is great uncertainty regarding these numbers.

63. The draft review claims that “there has been a gradual decrease in emissions of all the pollutants in HPA, but the decrease is not significant”.⁵⁷ Table 5-2⁵⁸ presents changes in total annual emissions:

Total industrial emissions in HPA	PM ₁₀		SO ₂		NO _x	
	2010	2015	2010	2015	2010	2015
	111 782	92 575	1 612 174	1 460 701	886 024	885 990

64. The following comment accompanies Table 5-2:

The decrease in emissions presented in **Table 5-2** above is not entirely attributable to improvements in emission from specific sources. The changes in emissions qualities can be attributable to the following factors:

- **The source of information:** Previous industrial emissions inventories used APPA registration certificates. With the changes in legislation that came after the first baseline emissions inventories, the listed activities have AELs and are required to report emissions annually to the NAEIS. The latter was used in the current emission inventory update.
- **Closing down of some industries:** Some industries in the HPA were confirmed to have closed down since the previous inventory was done.

65. The comments accompanying Tables 5-1 and 5-2 clearly indicate that there is considerable uncertainty in the 2015 estimate, and that the sources of uncertainty have not been identified. The draft review does not list the facilities included in its estimate of industrial emissions estimate, making it impossible to ascertain which facilities have been added to or removed from the baseline list. The result is that a credible statement as to the changes in total industrial emissions cannot be made on the basis of the data presented in the draft review.

⁵⁷ p 55 of the draft review.

⁵⁸ p 56 of the draft review.

66. In order to enable a rigorous comparison of the industrial source emissions estimates and hence to determine if a significant change or improvement in total emissions has been achieved, we recommend that the draft review be revised with the addition of a table in the following or similar format:

Facility	PM10 emissions (tonnes)		SO2 emissions (tonnes)		NOx emissions (tonnes)	
	2010	2016	2010	2016	2010	2016
Facility A	...					

67. The baseline HPA AQMP groups industrial emissions into eight sub-categories: Power Generation, Coal Mining, Primary Metallurgical Operations, Secondary Metallurgical Operations, Brick Manufacturers, Petrochemical Industry, Ekurhuleni Industrial Sources, and Mpumalanga Industrial Sources.⁵⁹ In order to further facilitate comparison of industrial emissions, we recommend that the 2015 (or better, 2016) emissions estimate be grouped into the same sub-categories.
68. A number of companies submitted emission reduction plans and targets which were incorporated into the baseline HPA AQMP, including plans to reduce fugitive dust emissions and to improve air quality monitoring. The draft review does not assess the progress made with respect to these emission reduction plans. This is a significant omission and should be addressed.
69. As for compliance with the dust fallout limit value, we reiterate our and our clients' major concerns with the Dust Control Regulations, which have been set out in correspondence and addressed in a meeting with the DEA and in a workshop attended by Prof Cairncross and Mariette Liefferink of the Federation for a Sustainable Environment. The draft review points out that, in any event, not all facilities are conducting dust monitoring.⁶⁰
70. Due to the uncertainties in the draft review estimates, a definitive statement as to whether or not industrial emissions, which are, by far, the largest source category of emissions, have reduced or increased cannot be made. The limited data presented suggest that there has been no significant reduction in overall emissions from this source category. In conclusion, goal 2 has not been attained, nor has there been significant progress towards achieving this goal.

Air quality in low-income settlements complies with NAAQS (goal 3)

71. Goal 3 is that, by 2020, air quality in all low-income settlements is in full compliance with NAAQS.⁶¹ We are aware that there has not been much intervention, apart from the draft Strategy to address Air Pollution in Dense Low-income Settlements that was published for public comment in July 2016, and in relation to which two workshops were convened in November and December, with a third in January 2017; in eMalahleni, Zamdela and Ivory Park, respectively. In order to comply with constitutional requirements to protect health and wellbeing, we recommend that urgent measures be taken to reduce the prevalent problem of domestic fuel burning in the already extremely-polluted NDM and in the wider HPA area. Municipalities should take measures locally to provide easier access to alternative, cleaner forms of cooking and heating energy and/or subsidised electricity, especially in winter, to limit domestic fuel burning. The DEA, and departments like the DoH and the DMR, must collaborate closely with the municipalities, industries and communities to find alternatives to domestic fuel burning.
72. The draft review claims that domestic fuel burning emissions are improving more than any other sector.⁶²

⁵⁹ p x HPA AQMP.

⁶⁰ p 81 of the draft review.

⁶¹ p xvi HPA AQMP

⁶² p 85 of the draft review.

73. The draft review uses a similar methodology for estimating the emissions from domestic or household use of polluting fuels (coal, wood and paraffin) as used in the 2012 AQMP. The draft review uses the same emission factors and, apparently (this it is not explicitly stated), the same household fuel use consumption rates as the baseline study, but uses more recent - Census 2011 - population distribution data, rather than the HPA 2007 mini-census data (Table 12)⁶³ used in the baseline study. Therefore, the total draft review domestic fuel burning emissions should be proportional to the change in the number of households estimated to be using these fuels. Table 5-4⁶⁴ presents the estimated changes in total annual emissions from this source category:

Table 5-4: Changes over years in total annual emissions due to domestic fuel burning (tons/annum)

Total domestic fuel burning emissions in HPA	PM ₁₀		SO ₂		NO _x	
	2010	2015	2010	2015	2010	2015
	17 239	7 876	-	4921	5 600	2 397
-means data was not available						

74. From the context of the draft review, it appears that '2010' refers to estimated 2007 emissions and '2015' to 2011 emissions - the respective dates of the census campaigns. It seems that there was a more than 50% reduction in the aggregate use of coal, wood and paraffin during 2007 and 2011. The draft review does not, however, present data to indicate if this reduction in the use of these fuels has continued to the present.

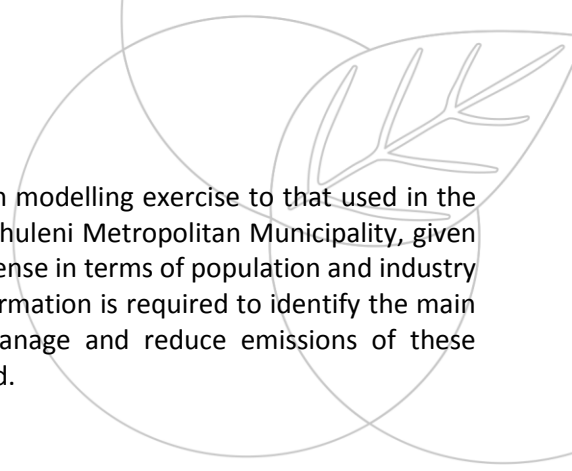
75. The baseline HPA AQMP use dispersion modelling to identify nine 'hotspots' - areas of exceedance of ambient 24h SO₂ and/or PM₁₀ standards. Source apportionment was done within each of the hotspots to determine the relative contribution of each modelled sector to the total ambient pollutant concentration.⁶⁵ Source apportionment was done at seven of the hotspots - Emalahleni, Kriel, Steve Tshwete, Ermelo, Secunda, Ekurhuleni, and Delmas. At these hotspots, household fuel burning contributed 2 to 12% of total ambient PM₁₀, with industries contributing 87 to 98% of total ambient PM₁₀ at these locations. It is not clear if these hotspots coincide with the definition of 'low-income settlements' as used in the statement of Goal 3. However, the baseline modelling and source apportionment study showed that in the 'hotspots' – areas of highest concentrations – household fuel burning constituted a relatively small fraction, less than 12%, of total ambient PM₁₀, implying that the attainment of compliance with PM₁₀ standards requires the simultaneous reduction of emissions from industrial emissions.

76. The draft review has not included a similar dispersion modelling and source apportionment study, nor has it conducted targeted measurement campaigns in identified 'low-income settlements' to evaluate time trends in air quality. It is therefore not possible to determine whether or not Goal 3 – that air quality in these areas would meet NAAQS by 2020 - has been met or whether progress is being made towards the attainment of this goal. PM_{2.5} and NO₂ monitoring stations should be established in selected 'low-income' settlements using wood, coal and paraffin for household energy, together with annual surveys of household fuel use, so that air quality in these areas can be properly monitored.

⁶³ p 30 of the draft review.

⁶⁴ p 59 of the draft review.

⁶⁵ p 42 HPA AQMP.



77. We recommend that the draft review includes a comparable dispersion modelling exercise to that used in the baseline study, but with the addition of focussed attention on the Ekurhuleni Metropolitan Municipality, given that air quality is known to be poor in this area, and that it is the most dense in terms of population and industry scale and complexity. In addition, photochemical modelling of ozone formation is required to identify the main precursors of ozone formation and to take appropriate steps to manage and reduce emissions of these precursors, with the objective of achieving the ozone air quality standard.

Conclusion

78. As set out above, the draft review is incomplete and extremely sparse in some places. It is completely inadequate, and we argue, inappropriate, simply to revise the AQMP to change the objectives that have not been met and to include “more realistic” targets, as the draft review recommends.⁶⁶ A more rigorous approach is needed. We refer again to Annexure 1.
79. The strategic objective of the AQMP is to achieve compliance to the health-based standards in the shortest timeframe. Clearly the current approach is not working. A proper assessment of the goals and objectives must be undertaken, as well as of the reasons for the failure to meet relevant objectives and to carry out planned activities; and proactive steps identified to address these failures.
80. Immediate and urgent action should be taken to reduce emissions so as to avoid additional negative health impacts and social costs (like deepening poverty, absenteeism, shortened livelihoods) on the people of the HPA and on constitutional rights, and more resources must be devoted towards compliance monitoring and enforcement, in order to ensure improvement in air quality in the HPA. Compliance with so-called acceptable pollution levels is a social imperative and a constitutional mandate. We recommend measures such as: limiting new polluting industrial developments; refusing further MES postponements or other AEL variations that permit exceedances of AEL emission standards; including stricter emission limits in AELs; and taking strict compliance and enforcement action against non-compliant facilities.
81. In relation to air quality governance, a strategy must be developed in terms of the relationship between the province and the local government, clarifying who does what. In a resource-constrained (in terms of finances and technical skills) environment, the management strategy should be to optimise the AQMP approach by sharing critical resources and plans. The Province and District municipalities could anchor the high-end resources such as the air dispersion modelling team and licence-developers for the priority industries. The local municipality could assist in other functions of the AQMP, such as the day-to-day compliance management of licensed facilities.
82. As a first step, and in order to produce a meaningful document that will help to address the HPA AQMP objectives, we strongly recommend that it be substantially revised, taking our recommendations into account, and recirculated to stakeholders for a fair and reasonable comment period.
83. We also reiterate our request for access to various documents set out above.
84. Kindly keep us updated on the further process of the review. We look forward to further comment opportunities.

⁶⁶ p 86 of the draft review.

Yours sincerely
CENTRE FOR ENVIRONMENTAL RIGHTS

per: 

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