



BROKEN PROMISES

The Failure of the Highveld Priority Area

October 2017

In 2007, government promised to clean up air pollution on the Highveld by declaring it a priority area under the Air Quality Act. A decade later, the environmental injustice remains: toxic air pollution continues to destroy the health and well-being of the people of the Highveld.





A house in front of Eskom's coal-fired Duvha Power Station on the outskirts of eMalahleni on the Mpumalanga Highveld. Image: © Gallo Images

The air pollution on the Mpumalanga Highveld

has been a feature of the South African

landscape since the 1950s.

Major towns like eMalahleni, Middelburg, Secunda, Standerton, Edenvale, Boksburg, and Benoni are well-known for their poor air quality. Home to 12 of Eskom's 15 coal-fired power stations; petrochemical plants like Sasol's giant refinery in Secunda; metal smelters; hundreds of primarily coal mines; brick and stone works; fertiliser and chemical producers; explosives producers; charcoal producers; and other small additional industrial operations, the Highveld is one of South Africa's industrial heartlands.

In November 2007, following demands by civil society for intervention, the then Minister of Environmental Affairs declared 31,000 km² of the heavily-polluted Mpumalanga Highveld, then home to about 3.6 million people, a "priority area" in terms of the National Environmental Management: Air Quality Act, 2004. The Highveld Priority Area (HPA) was declared because, as the Department of Environmental Affairs (DEA) said at the time, "people living and working in these areas do not enjoy air quality that is not harmful to their health and well-being", as required by section 24 of the Constitution.

After 2007, it took more than 4 years for an air quality management plan (AQMP) for the HPA to be published in March 2012. The main aim of this AQMP is for ambient air quality in the HPA to comply with all health-based national ambient air quality standards (NAAQS), with seven goals formulated to address different aspects of meeting this overall objective. These goals are the following:

Goal 1

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



Goal 2

By 2020, industrial emissions are equitably reduced to achieve compliance with ambient air quality standards and dust fallout limit values



Goal 3

By 2020, air quality in all low-income settlements is in full compliance with ambient air quality standards



Goal 4

By 2020, all vehicles comply with the requirements of the National Vehicle Emission Strategy



Goal 5

By 2020, a measurable increase in awareness and knowledge of air quality exists



Goal 6

By 2020, biomass burning and agricultural emissions are 30% less than current



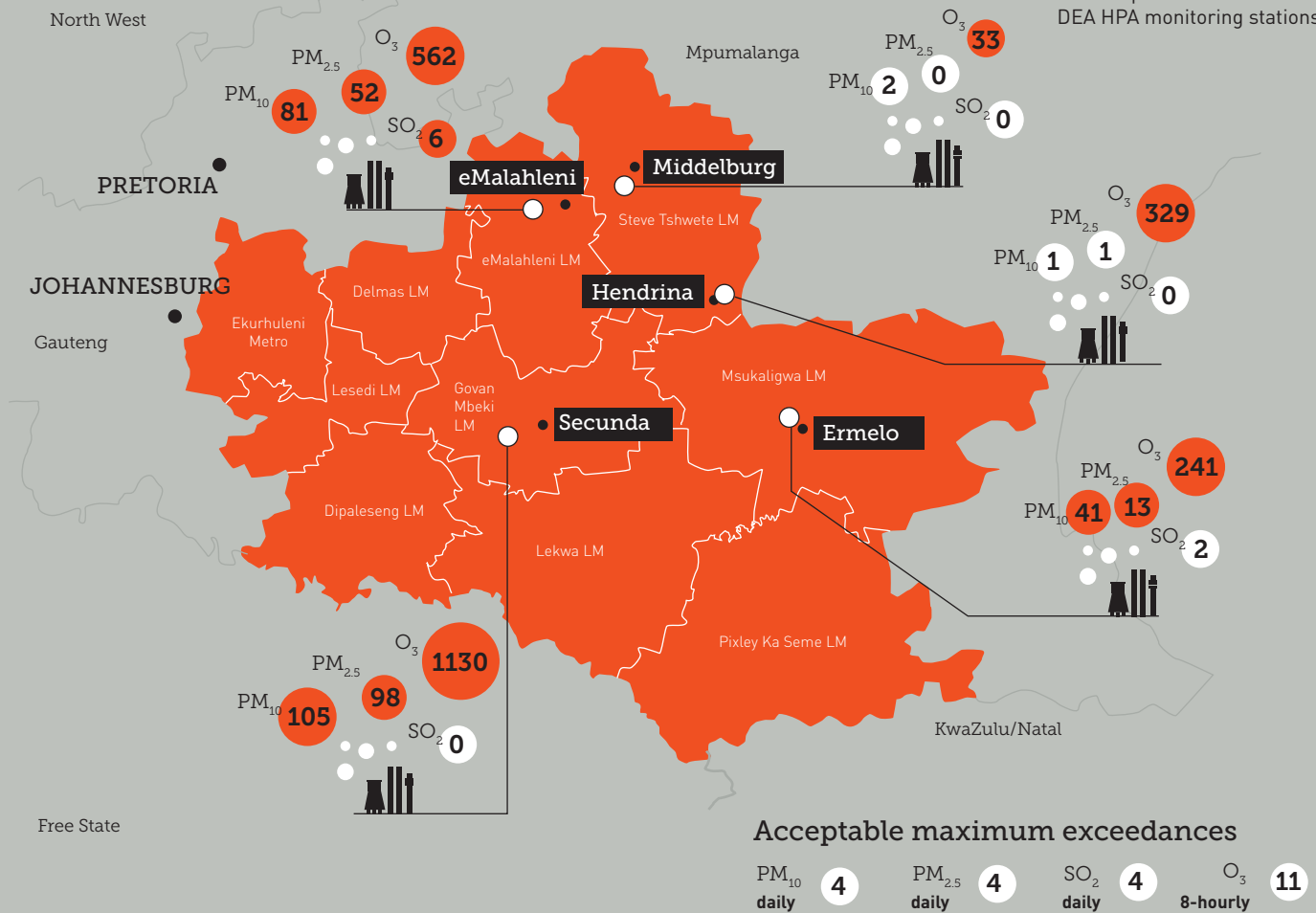
Goal 7

By 2020, emissions from waste management are 40% less than current



Highveld Priority Area Map

DEA's May 2017 Multi-Stakeholder Reference Group Report shows significant exceedances of PM₁₀, PM_{2.5} and O₃ NAAQS from May 2016 to April 2017 at 3 of the 5 DEA HPA monitoring stations



The AQMP set specific objectives committing the DEA, the Mpumalanga and Gauteng provinces, and the affected municipalities (in Gauteng: Ekurhuleni Metropolitan Municipality, Sedibeng District Municipality, and Lesedi Local Municipality (in the Sedibeng District); and in Mpumalanga, Gert Sibande District Municipality, Govan Mbeki, Dipaleseng, Lekwa, Msukaligwa, and Pixley ka Seme Local Municipalities (in the Gert Sibande District), Nkangala District Municipality, Victor Khanye, eMalahleni, and Steve Tshwete Local Municipalities (in the Nkangala District)) to start tackling the air quality problems.

The AQMP should be reviewed after five years. The DEA's own review of the AQMP, published for comment in February 2017, makes clear that, despite some ten years since the HPA's declaration, air quality remains poor, with numerous exceedances of the NAAQS (in broad terms, standards set under the Air Quality Act that ambient air must meet in order for people to breathe that air without damaging their health).

The Centre for Environmental Rights (CER), groundWork, and the Highveld Environmental Justice Network (HEJN) have been supportive, active, and vocal participants in the various HPA processes for many years, with a particular focus on the Nkangala District Municipality (NDM) (home to towns including

eMalahleni, Middelburg, Delmas, and Hendrina), which hosts significant industrial, electricity generation, mining, and manufacturing activity. Frustrated with the lack of progress and the ongoing and devastating health impacts related to this failure, the CER has, with support from groundWork and HEJN, conducted its own analysis to determine whether the declaration of the HPA and the promulgation of the AQMP have improved air quality within the HPA to protect health; and if not, why not?

This evaluation focuses on the following issues as the main challenges in reducing high levels of pollution in the HPA:

- capacity and responsibility for air quality management;
- dust control measures;
- measures to reduce domestic fuel burning air pollution; and
- steps taken by industry to reduce pollution, and emissions of greenhouse gases (GHGs).

We used information from various sources, including annual reports of the National Air Quality Officer; reports presented by government at HPA meetings; experts' reports; the DEA's own review of the AQMP; emission data available to us; submissions made by the DEA in Parliament; and our own participations



and observations. Furthermore, given the important responsibilities for local government in regulating air quality under the Constitution, and our experience and perceptions of municipalities' difficulties in fulfilling these, a questionnaire was developed to assess the views of the NDM and the eMalahleni Local Municipality on these main issues - including whether air quality has improved since the declaration of the HPA - and to evaluate the extent to which these two municipalities require assistance in meeting these obligations.

Our conclusions are that **air quality in the HPA remains poor and out of compliance with health-based NAAQS, despite a decade having passed since the HPA was declared.** Not unexpectedly, the DEA's own review published in February 2017 (in spite of severe limitations in the methodology) confirms that aggregate emissions have not decreased significantly - if at all - over this period, and a credible method of monitoring, tracking, and reporting air pollutant emissions in the HPA has not been developed.

Tiny toxic particles

Tiny toxic particles of air pollution are inescapable when present in the air we breathe. The association between air pollution and deaths has been established internationally by the World Health Organisation (WHO). Air pollution is not made up of one thing only, but rather a cocktail of toxic gases (like SO_2 , O_3 and NO_2) and combustion particles. These tiny particles are made of up of a complex mixture of carcinogens, sulphates, nitrates, and toxic metals like arsenic, lead, and mercury. To fully understand the miniscule size of these particles, it helps to compare them to a human hair, which is about 70 micrometers in diameter - a $\text{PM}_{2.5}$ particle is 30 times smaller. The size of the particles is important because it has a big impact on its toxicity. Small particles, like the $\text{PM}_{2.5}$ depicted in the diagram, penetrate deeply into the lungs before they are taken up by the blood and transported around the body to our organs. This starts a process of systemic inflammation all around our bodies, which interferes with how our organs function normally.

Brain

Air pollution causes reduced blood supply to our bodies' tissues, including our brains. This causes a shortage of the oxygen and nutrients needed to stay healthy.

Heart

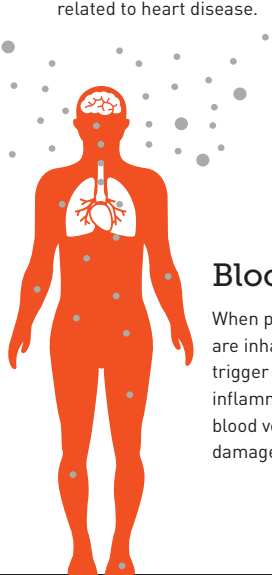
Air pollution causes our hearts to suffocate, by interfering with the heart's normal blood flow and function. Health studies have shown that, with an increase in air pollution, there is an associated sharp increase in the number of deaths related to heart disease.

Lungs

The International Agency for Research on Cancer (IARC) has classified outdoor air pollution as a cancer-causing agent (carcinogen). The IARC evaluation showed that an increased risk of lung cancer can be associated with increasing levels of exposure to outdoor air pollution and particulate matter.

Blood

When pollutants are inhaled, they trigger an increase in inflammation in our blood vessels, which damages these cells.



The health impacts of $\text{PM}_{2.5}$

Beach Sand

90 μm (microns) in diameter

Human Hair

50-70 μm (microns) in diameter



PM_{10}

<10 μm (microns) in diameter
Dust pollen, mould.



$\text{PM}_{2.5}$

<2.5 μm (microns) in diameter
Combustion particles, organic compounds, metals



KEY FINDINGS OF OUR REPORT ARE:

1. Air quality in the HPA has not improved in the past ten years, despite the declaration of the HPA and the development of the AQMP.

This is clear from government's own reports – including its HPA review – and from expert analysis of data. It is likely that the continued non-compliance with NAAQS is, in large part, due to the failure of key major industrial facilities to reduce their emissions either adequately, or at all.

2. Without adequately-functioning, accredited monitoring stations, we do not know whether the air quality is actually far worse than it appears.

The HPA ambient air quality monitoring network has deteriorated since its declaration – the 2012 HPA AQMP listed 23 monitoring sites with available data; the DEA's draft review of the AQMP (published in 2017) listed just nine monitoring stations with available data. Only five of the nine stations publish timeous monthly reports, available on the South African Air Quality Information System (SAAQIS) website.

3. It is difficult to assess directly whether key industries have reduced emissions, given that neither government nor industries make key data and documents publicly available for review.

Some of the information is available in industries' annual emission reports and/or from the National Atmospheric Emissions Inventory System (NAEIS) and SAAQIS, but this information is not complete or updated, nor is it very easily accessible to the public. The accuracy of the available information is unknown. Such information as is available has to be evaluated and interpreted by air quality experts, which is often not practical or affordable for affected people.

4. Negligible measures have been taken for the past ten years to reduce dust emissions, particularly from mining activities – one of the major contributors to poor air quality in the HPA.

These measures include by-laws, and undertaking some compliance inspections when there are complaints about dust. The existing National Dust Control Regulations, 2013 have proved inadequate. The Department of Mineral Resources, which is responsible for regulating the environmental impacts of mines, including on air quality, is absent from the HPA process.



Kriel power station. Eskom's power stations provide electricity to the entire country, but the majority are situated on the Highveld. This means that residents of the Highveld disproportionately bear the burden of pollution on their health. Image: © James Oatway

This report concludes that the HPA has, to date, dismally failed in its purpose: to improve air quality so that it at least meets the NAAQS. This means that people of the HPA are having their Constitutional rights to an environment not harmful to health and wellbeing violated. The significant air pollution means that HPA residents are dying prematurely, and suffering from respiratory and cardiac illnesses that inhibit their prosperity and wellbeing.

5. Limited steps have been taken to reduce air pollution in dense, low-income settlements.

The draft Strategy to address Air Pollution in Dense Low-income Settlements, that was eventually published for public comment in July 2016, does not contain adequate, measurable, and progressive plans to address the complex challenges of indoor air pollution. The draft Strategy also fails to make adequate provision for the participation of community-based and non-governmental organisations in its design, implementation, review, and updating. There has been no indication of when a final Strategy will be adopted and implemented.

6. Neither NDM nor the local municipalities within the NDM have enough money or dedicated, appropriately-trained and skilled staff to implement the HPA AQMP and to enforce the Air Quality Act.

Municipalities only have a few of the right people to do air quality management work. These officials have too many responsibilities, and are over-stretched to the extent that they are unable to devote adequate time to air quality management compliance and enforcement. NDM has only three officials designated to do compliance monitoring and enforcement, and these municipal officials have undertaken few compliance inspections of polluting facilities. Various HPA municipalities do not have designated Air Quality Officers or Air Quality Management Plans.

7. To our knowledge, the support provided by DEA for local authorities is not only inadequate, but the National Air Quality Officer's controversial decision in early 2015 to grant postponements from compliance with the minimum emission standards under the Air Quality Act to the biggest polluters in the HPA – Eskom and Sasol – has made it significantly more difficult for air pollution in the HPA to be reduced.

At the very least, HPA facilities should comply with the minimum emission standards, but ideally, local authorities should impose emission limits in atmospheric emission licences that are even stricter than the minimum emission standards.

WHAT NEEDS TO CHANGE?

People living in the HPA, and organisations that have been active and vocal participants in the HPA structures, are angry and frustrated by government's failure to protect health by reducing air pollution in priority areas. Pollution is not being adequately monitored or reduced, and polluters are not being held accountable.

The following steps must be taken urgently by various authorities to demonstrate that improving air quality in the HPA is, in fact, a priority for government. We regard the below measures as the minimum required in order for the DEA to meet its Constitutional obligations under section 24 (the environmental right) and for all authorities to meet their obligations under the Air Quality Act.

Given the continued non-compliance with NAAQS in the HPA, immediate steps must be taken to reduce emissions of pollutants:

- All facilities in the HPA must be required to comply with at least with the minimum emission standards. Therefore, having heard representations from the facilities and affected communities, the National Air Quality Officer should use her powers under the Air Quality Act to consider withdrawing the postponements of compliance with minimum emission standards granted to Eskom and Sasol.
- No further postponements of compliance with minimum emission standards or other licence variations that permit exceedances of licence emission standards should be allowed.
- Licensing authorities must suspend the issuing of all new atmospheric emission licences in the HPA, until there is consistent compliance with all NAAQS. Approval and licensing of any expansion plans of existing industries must be contingent on a simultaneous substantial reduction in emissions.
- When facilities reach their scheduled end-of-life (particularly certain Eskom coal-fired power stations), atmospheric emission licences must be withdrawn, and decommissioning and rehabilitation enforced.
- The National Dust Control Regulations must be amended to ensure adequate monitoring, measurement, and reduction of the significant dust emissions in the HPA, particularly from mining sources.

In recognition of the crucial importance of air quality compliance in the HPA, a comprehensive compliance monitoring and enforcement programme must be put in place by DEA and local authorities to ensure that violations of atmospheric emission licences are detected, and enforcement action taken against those who violate licence conditions. Such enforcement action must include suspension of particular

licences for facilities until such time as emissions comply with licence conditions.

The institutions charged with ensuring improved air quality in the HPA must be strengthened and appropriately resourced:

- The DEA, the Mpumalanga and Gauteng provincial governments, and municipalities must demonstrate accountability for the proper management of priority areas, recognising that they have an ongoing responsibility for implementing and enforcing approved priority area AQMPs.
- National government, provincial government, and local authorities in the HPA must allocate adequate financial and human resources to fulfill air quality management functions, including the right tools, training, and equipment to enable the reduction of emissions and improvement of the ambient air quality in NDM, eMalahleni, and HPA as a whole.
- To bolster resources for compliance monitoring and enforcement, the DEA must give serious consideration to requiring all existing facilities in priority areas to pay a substantial annual licensing fee, rather than simply a once-off application fee.
- Municipalities must take urgent steps to ensure the appointment and training of suitable Air Quality Officers, Environmental Management Inspectors, the development of air quality management plans, and the incorporation of those plans into Integrated Development Plans.
- The Departments of Mineral Resources and Health – and other relevant departments, when appropriate – must participate in the HPA process to ensure that air pollution from mining is reduced, and human health impacts are addressed adequately.

To build trust in the integrity of the management of the HPA, and enable meaningful and informed participation by all stakeholders, there must be **far greater transparency about regulation, monitoring, and compliance in the HPA:**

- Atmospheric emission licences for all facilities in the HPA with significant polluting emissions must require real-time emissions monitoring, and that real-time emissions data be publicly available online and on request.
- The air quality monitoring station network must urgently be improved upon and adequately managed and maintained, so as to produce verified, reliable HPA air quality data, that are readily and publicly available.
- The DEA and all licensing authorities within the HPA must make all atmospheric emission licences and annual emission reports submitted to them publicly available, and all licence-holders must be required to make these documents available on their websites and on request.