



# Centre for Environmental Rights

Advancing Environmental Rights in South Africa

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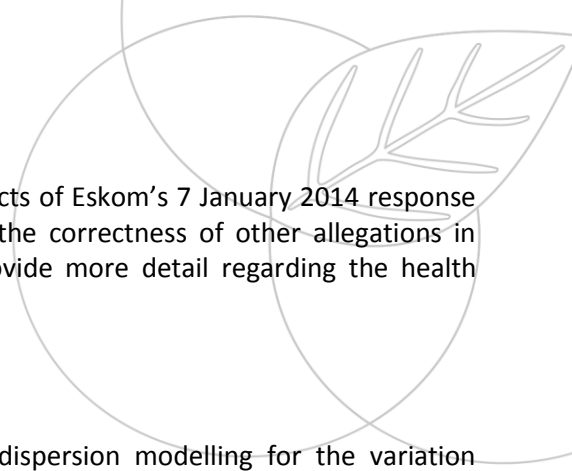
Our ref: CER/33.5/RH/SK  
Date: 16 January 2014

Dear Mr Zimbwa

## **ADDITIONAL SUBMISSIONS REGARDING THE VARIATION OF THE ATMOSPHERIC EMISSION LICENCE FOR ESKOM'S KRIEL POWER STATION**

1. We address you on behalf of groundWork, Earthlife Africa Johannesburg, the Vaal Environmental Justice Alliance, and the following community groups: Middelburg Environmental Justice Network; Greater Middelburg Residents' Association; Guqa Community Service Centre; Southern Africa Green Revolutionary Council; Greater Delmas Civic Movement; Highveld Environmental Justice Network; Wonderfontein Resettlement Forum; Mpumalanga Youth Against Climate Change; Outrageous Courage Youth and Schoongesicht Community Movement. Our clients are interested and affected parties in Eskom's applications for postponement of and/or exemption from the compliance time-frames for the minimum emission standards (MES) published in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (AQA). We refer to and stand by our submissions dated 11 December 2013.

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2. In this letter, we briefly respond, on our clients' behalf, to certain aspects of Eskom's 7 January 2014 response to our submissions ("Eskom's response"). Our clients do not accept the correctness of other allegations in Eskom's response. As foreshadowed in our submissions, we also provide more detail regarding the health impacts should Eskom's application succeed.

### Eskom's response

3. Eskom states that emissions from Matla were also included in its dispersion modelling for the variation application, and that Kendal emissions "*do not contribute significantly to ambient particulate levels in the vicinity of Kriel*". However, it did not submit an atmospheric impact report to support its arguments regarding dispersion modelling or the impact of Kendal (or Komati) power station. Eskom has also failed to advise to what extent (apart from including Matla emissions) it has addressed our clients' concerns with the dispersion modelling approach it followed in relation to applications to postpone compliance with the minimum emission standards. We therefore reiterate the concerns regarding the modelling inaccuracies. In any event, it is not clear that Eskom modelled daily average emission rates of  $450\text{mg}/\text{Nm}^3$ , which occur frequently, as appears from Figure 2 on page 4 of Eskom's response.
4. These frequent daily average values of about  $450\text{mg}/\text{Nm}^3$  occur despite the limit value of  $125\text{mg}/\text{Nm}^3$ . It appears that Kriel is operating with a malfunctioning particulate matter (PM) emission control system. During the period June-December 2011, the average emission values at least appeared to be around the limit value of  $125\text{mg}/\text{Nm}^3$ , even though the daily limit value was exceeded frequently. During the period February 2012 to October 2013, particulate matter emissions increased considerably, averaging about  $250\text{mg}/\text{Nm}^3$ , with frequent peaks of around  $450\text{mg}/\text{Nm}^3$ . It is of concern that this situation - exceedence of the daily average limit value - has apparently been persisting since at least April 2011, without suitable action having been taken to resolve it. Eskom argues that it does not seek "*to increase the total emissions from Kriel but rather for a licence which provides the flexibility required for a power station of this age and current abatement technology*".<sup>1</sup> It is clear that granting Eskom's variation will, in fact, permit the increase of its emissions. It also creates no incentive to ensure that Eskom reduces its emissions to acceptable limits.
5. Our clients submit that the display of the smoothed diurnal variation of  $\text{PM}_{10}$  concentrations monitored at the Kriel monitoring stations, and the accompanying general description of pollutant plume behaviour do not, in any way, demonstrate that Eskom's  $\text{PM}_{10}$  emissions are not a major contributor to ambient PM levels in Kriel Village. Although Eskom's response argues that "*both dispersion modeling and ambient monitoring show that the main contribution to ambient PM levels comes from surface sources*",<sup>2</sup> Eskom has not presented any hour-by-hour (diurnal) modelling results to support this assertion. The interpretation that Figure 1, which apparently represents hourly average values averaged over a two year period, "proves" that Eskom's contribution to ambient PM levels is zero or negligible is rejected. It is also disputed that meteorology and pollution plume behaviour do not vary over a two year period, and that Eskom's substantial stack emissions do not reach the ground.
6. Our clients persist in the argument that Eskom has exaggerated the costs of a fabric filter plant retrofit. Eskom's response to the cost calculation (contained in our submission) uses South African Rand inflation rates until 2017 (rather than until the end of 2013), and then multiplies this amount by a 2013 US Dollar exchange rate relative to the 1995 value. It is submitted that a Rand cost inflated to the end of 2013, which is inflated again by the US \$/SA R exchange rate, double accounts for the difference between US \$/SA R exchange rates and US vs SA inflation rates, and is therefore not an accurate reflection of costs.

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<sup>1</sup> P.4 of Eskom's response.

<sup>2</sup> P.2 of Eskom's response.

## Health impacts

7. It is estimated that the request would allow excess PM<sub>10</sub> emissions of 14,000 tons over this period, compared with full compliance with the emission limit of 125 mg/m<sup>3</sup>. This is based on the assumption that the 350 mg/m<sup>3</sup> limit is in line with the annual average emissions of 15,220 tons, as indicated in Table 20 on page 38 of Eskom's Atmospheric Impact Report made available for the Kriel postponement application (a copy of which is attached as "1"). However, Figure 3 on page 15 of the same document reflects PM emissions of 16,638 tons/annum. And on page 3 of the General Information document (also made available as part of the postponement application – a copy of which is attached as "2"), it is indicated that the average emissions for the period 2010/11-2011/12 are 12836 tons; and for 2012/13, 16638 tons. There are several other inconsistencies in the documents provided by Eskom to support its postponement applications.
8. The maximum average stack emission concentration during the variation period is 377 mg/m<sup>3</sup>; as a result of the maximum rate of 550 mg/m<sup>3</sup> four days per month, and 350 mg/m<sup>3</sup> for the remainder. This compares with 15mg/m<sup>3</sup> required for operating plants in the EU, expressed in South African standards.
9. The installation of appropriate particulate control devices in Kriel power plant would also significantly reduce toxic mercury emissions. Current mercury emissions and removal rates of Eskom fleet were estimated by Scott.<sup>3</sup> Kriel was estimated to have a removal rate of 10% and annual emissions of 2,200 kg of mercury. Installation of the particulate control devices would be expected to increase the removal rate to 50%, reducing annual mercury emissions by 900 kg. The total excess mercury emissions over the 15 month period would be 1,100 kg.
10. It is unacceptable to our clients that Eskom has failed even to report the excess emissions resulting from the variation. The amount of health-harming pollutants discharged into the environment – and not momentary ambient concentrations - is the main determinant of public health impacts of a combustion plant's operation, as each ton of pollutant emitted increases population exposure to health-damaging pollution. A recent review by WHO confirmed once more that there is no evidence of a concentration threshold below which PM exposure would not have serious long-term health impacts; therefore any increases in population exposure increase negative health impacts.<sup>4</sup> The European Environmental Agency estimates that each 1,000 tons of PM<sub>10</sub> emissions from industrial facilities in Europe causes 2 to 12 preliminary deaths and 2 to 10 million Euros of external costs, depending on the location of the emission source.<sup>5</sup>
11. In summary, if Eskom's application succeeds, the amount of emissions will have potentially significant public health and economic impacts that Eskom has simply failed to address in its application.
12. In the circumstances, our clients reiterate their submission that the Kriel variation application should fail.
13. Please let us know should you require further information regarding any aspect of these submissions.
14. We look forward to the response on the application.

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<sup>3</sup> Scott 2011: Reducing Mercury Emissions from Coal Combustion in the Energy Sector in South Africa. Final Project Report. South African Department of Environmental Affairs.

<http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/coal/Report%20FINAL31%20jan%202012.pdf>

<sup>4</sup> World Health Organization 2013: Review of evidence on health aspects of air pollution – REVIHAAP project: final technical report. WHO European Centre for Environment and Health, WHO Regional Office for Europe. [http://www.euro.who.int/\\_data/assets/pdf\\_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf](http://www.euro.who.int/_data/assets/pdf_file/0004/193108/REVIHAAP-Final-technical-report-final-version.pdf)

<sup>5</sup> European Environmental Agency 2011: Revealing the costs of air pollution from industrial facilities in Europe. Technical report No 15/2011. <http://www.eea.europa.eu/publications/cost-of-air-pollution> (calculated from tables A1.3, A1.8 and A3.2).

Yours sincerely

**CENTRE FOR ENVIRONMENTAL RIGHTS**

per:



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