Eskom

The Director-General
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ESKOM'S COMMENTS ON THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT: NOTICE OF INTENTION TO AMEND THE LIST OF ACTIVITIES WHICH RESULT IN ATMOSPHERIC EMISSION

Dear Director-General

The following draft legislation bears reference: National Environmental Management: Air Quality Act (39/2004): Notice of Intention to Amend the List of Activities which Result in Atmospheric Emission which have or may have a Significant Detrimental Effect on the Environment, including Health, Social Conditions, Economic Conditions, Ecological Conditions or Cultural Heritage (Government Gazette No. 41650 No. 516 of 25 May 2018).

Eskom's comments are submitted based on Eskom's mandate as a State Owned Company (SOC), the pending Integrated Resource Plan (IRP) to be published by the Department of Energy, Eskom's contribution to ambient air quality, the lack of the Department of Environmental Affairs' consideration of the potential techno-socio-economic implications of the emission standards and these proposed changes and the aspects set out in the draft 2017 National Framework for Air Quality Management in the Republic of South Africa.

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ESKOM'S COMMENTS ON THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT: NOTICE OF INTENTION TO AMEND THE LIST OF ACTIVITIES WHICH RESULT IN ATMOSPHERIC EMISSION

1) Eskom Holdings SOC Limited (Registration Number 2002/015527/30) is South Africa's primary electricity supplier and is wholly owned by the South African government. Eskom generates and distributes approximately 95% of the electricity used in South Africa and approximately 40% of the electricity used on the African continent, according to figures from Stats SA and the International Energy Agency (IEA).

2) The mandate from the Government of the Republic of South Africa states that Eskom's key role is to assist in lowering the cost of doing business in South Africa, enable economic growth, and provide stability of electricity supply through providing electricity in an efficient and sustainable manner. Furthermore, Eskom will achieve this through an electricity network that includes generation, transmission and distribution while ensuring that this is done within acceptable benchmark standards.

3) As a state-owned entity, Eskom must implement government policy and strategy. This includes, amongst others the National Development Plan (NDP) (this is a 20-year plan) and the Integrated Resource Plan (IRP) which guides SOCs in terms of planned plant life in the future. The IRP (IRP 2010) incorporated a number of government objectives, including affordable electricity and carbon mitigation. Following the promulgation of the IRP, the Department of Energy (DoE) develops plans for the implementation of IRP, starting with Ministerial Determinations (as per Section 34 of the Electricity Regulation Act).

4) *Emissions from some industries often have a measurable impact on air quality. In this regard, industry too has a responsibility not to impinge on everyone's right to air that is not harmful to health and well-being. Furthermore, in terms of section 28 of the NEMA, industries that cause, have caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment* (Page 23 and 24 of 110 of the draft 2017 National Framework for Air Quality Management). In this regard Eskom acknowledges its corporate responsibility and environmental duty of care.

5) Eskom acknowledges that set out in the 2nd South Africa Environment Outlook: a report on the state of the environment (First published in 2016 © Department of Environmental Affairs) http://soer.environment.gov.za/State_of_the_Environment.html: *"Elevated Particulate Matter concentrations still occur in various parts of the country, exceeding the South African annual PM10 ambient air quality standard especially in residential areas.*

National government has set a target that by 2020, air quality in all low-income settlements should be in full compliance with ambient air quality standards. Particulate matter is therefore a national concern due to exceedances of the National Ambient Air Quality Standards (NAAQS), which are designed for the protection of the environment and human health". Eskom's air quality improvement plan has historically been and is still therefore focused on particulate matter.

6) Based on the dissertation for the degree in Master of Engineering (Environmental Engineering) by Marilize Grobler as submitted in partial fulfilment of the requirements for in the Department of Chemical Engineering Faculty of Engineering, Built Environment and Information Technology University Of Pretoria in February 2016 titled "*Evaluating the Costs and Benefits Associated with the Reduction in SO_2 Emissions from Industrial Activities on the Highveld of South Africa,* it is stated that *"the results indicate that, given the information currently available, it is unlikely that the benefit of reducing SO_2 emissions to the required standard outweighs the cost of implementation".* It is acknowledged that the current listing of activities were required to have been informed by appropriate analysis, such as cost-benefit analysis (CBA), but were not in the case of setting that for SO_2 and the electricity sector. Eskom's comments are therefore specifically related to the need to allow for existing plant[1] to only comply with existing plant standards for SO_2 up until their final decommissioning excluding Medupi, which despite meeting the definition of an existing plant will continue to implement a flue gas desulphurisation retrofit project.

7) Based on the thesis submitted for the degree in PhD (Geography and Environmental Management) by Isle Pretorius in November 2015 titled "Impacts and control of coal fired power station emissions in South Africa" the following main conclusions were presented:
    a. *The potential health exposure of population groups to individual power station emissions differ substantially from power station to power station and from pollutant to pollutant.*
    b. *The secondary PM contribution to total annual intake (kg per year) from total fine particulates is more prominent than that of primary PM10*
    c. *It makes more sense both from a cost and a human health standpoint that emissions from power stations be managed on an individual power station basis and not by means of blanket minimum emission standards.*
    d. *The intake and intake fraction methodology proposed in this study can be used to identify individual power stations that contribute to the highest potential human*

[1] "existing plant" unless where specified, shall mean any plant or process that was legally authorized to operate before 01 April 2010 or any plant where an application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), was made before 01 April 2010.

health exposure. These power stations can then be targeted for emission reduction interventions.

8) *The listing of activities therefore must be informed by appropriate analysis, such as cost-benefit analysis (CBA). In targeting industry sectors for which information on emissions and impacts is less available or inconclusive, particularly those comprising small and/or older operations, provision for CBA studies will be made so as to extend the list of activities and associated set of national minimum emission standards in a manner which does not lead to unjustified economic impacts or mass non-compliance* (Page 60 of 110 of the draft 2017 National Framework for Air Quality Management).

9) (Page 61 of 110 of the draft 2017 National Framework for Air Quality Management) ... *the process to establish national emission standards will be based on the application of the Best Practicable Environmental Option (BPEO) principle informed by the Best Available Technology/Technique (BAT) approach. Section 4(2)(b) of NEMA requires that "environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option" (BPEO). The national department has defined BPEO as the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society in the long-term as well as in the short-term (DEAT, 2004).*

10) *Compliance time frames have been informed by industry cycles. Based on international experience, an effective approach would be to set minimum time frames for compliance nationally (taking account of industry cycles), with provision being made for more restricted compliance time frames to be specified by provinces or municipalities for industries within their jurisdictions and/or stricter timetables being negotiated for inclusion in permits* (Page 63 of 110 of the draft 2017 National Framework for Air Quality Management).

Eskom's power stations form the basis of the Department of Energy's Integrated Resource Plan (IRP) and therefore their operation and associated life of plant is directly linked to that set out in the IRP so as to ensure security of electricity supply in South Africa. While it is noted that the current IRP 2010 has been revised, it is still to be published. The revised version of the IRP therefore has direct implications as to the planned decommissioning of Eskom's power stations.

While the proposed amendment of the 2012 National Framework for Air Quality Management in the Republic of South Africa acknowledges the *potential economic implications of emission*

standards, and mindful that emission standard setting in South Africa was not based on comprehensive sector-based CBA (at least not for the initial group of Listed Activities) that again amendment are being proposed without the full knowledge of the economic implications of these changes.

Eskom's comments are therefore an attempt to ensure that these are taken into account. Eskom has determined the financial implications of the current and draft legislation. Eskom's 2014 postponement application proposed a phased and prioritised approach which is estimated to cost the organization R 70 billion in the next 10 years. The DEA accepted this approach but required Flue Gas Desulphurisation at Matimba and Kendal based on their significant impact on ambient air quality and no confirmed decommissioning date, this decision increased the cost over the next 10 years to R 140 billion. This plan would result in a required electricity tariff increase of 3 – 3.5%.

The draft regulations, which allow for a suspension against the new plant minimum emission standards, on condition that the plant is decommissioned prior to 2030 will increase the cost of compliance to R 250 – R300 billion and result in an electricity tariff increase of at least 7%. Further to this there are operational costs of approximately R 5 billion per annum.

Eskom, in order to remain a going concern, is unable to absorb the additional cost without receiving the required electricity tariff increases.

The other resources required to achieve full compliance include:

- **Outages:** 150- to 190-day outages for all units before April 2025. In some years 14% planned maintenance (planned capability loss factor, PCLF) for existing fleet for the emission retrofits alone.
- **Increase in auxiliary power consumption:** Energy output from the coal fleet will be reduced by almost 2 255 GWh per annum. (equivalent to 257MW used 24/7/365)
- **Water:** An additional 67 million cubic metres of water per annum by 2025 (20% increase), at a time when there is projected to be a deficit in the Vaal River catchment.
- **Sorbent**: 6.5 million tons per annum. This will entail the development of new mines, and potentially the import of sorbent (lime/limestone).
- **Increase in CO_2 emissions**: Over a million additional tons of CO_2 may be released due to the wet FGD process. Eskom's relative CO_2 emissions (ton/GWh) deteriorates.

Further, the recently published draft Carbon Tax Bill 2017 if implemented in its current form will require an additional 3% increase in the electricity tariff.

Eskom intends to complete a cost benefit analysis in its current postponement application. However, it is the role of DEA to consider the strategic implications of the latest legislative changes and the negative socio-economic and environmental impact which will matarialise while the intended positive impact on human health will be limited when one considers current ambient air quality and the significant contribution of low level sources compared with emissions from stacks.

Eskom has progressed with its air quality improvement programme, which is a phased and prioritised approach to emissions reduction, considering the remaining life of the power stations within its fleet and the impact on ambient air quality.

This is the status of the **emission reduction projects** being undertaken:

- Between 1993 and 2010, Eskom installed fabric filter plants at Arnot, Duvha (units 1, 2 and 3), Camden, Hendrina, Grootvlei (units 1, 5 and 6) and Majuba power stations.
- The Grootvlei power station retrofit of fabric filter plant (FFP) on Units 2 to 4 was completed in October 2017.
- Commencement with placing units into extended cold reserve at Duvha (unit 3), Komati (unis 1, 2 and 6), Grootvlei (units 4, 5 and 6) and Hendrina (units 1 and 3).
- Installation of low NOx burners at four of the units at Camden power station completed.
- The refurbishment of the electrostatic precipitators on four of the six units at Matla Power Station was completed, resulted in an improving trend in particulate emission performance.
- Lethabo power station is busy with phase one of the particulate emissions reduction solution with the installation of high frequency power supply (HFPS) on all six of its units. To date high frequency transformers have been installed on one unit at Lethabo. Phase two is being developed for the refurbishment of the ESP, upgrading the SO_3 plant and installation of an ammonia injection plant
- Planning for the installation of high frequency transformers to reduce particulates is progressing at Matla and Duvha Power Stations, while Lethabo, Kendal and Matimba are on track for construction from 2021 to 2025. To date high frequency transformers have been installed on one unit at Duvha.
- Development work continues for low NOx burner retrofits or replacement at Tutuka, Majuba and Matla, Detailed designs for Majuba Power Station were completed in October 2017.
- Tutuka and Kriel FFP retrofits are behind schedule due to budget cuts as well as lengthy engineering, project and commercial processes. The PFMA application for the Kriel retrofit project was declined by DPE in February 2018 due to the "lack of policy direction on life

extension of coal-fired power stations and that it would be presumptuous to commence the project in the absence of a revised Integrated Resource Plan from the DPE".

- Medupi and Kusile power stations are being constructed with fabric filter plants and low NOx burners.
- The flue gas desulphurisation (FGD) plant is to be retrofitted to the units at Medupi continues, but these are behind schedule.
- The units at Kusile are being constructed with FGD plant included.

Air Quality Offset programmes: As per our Minimum Emissions Standards (MES) postponement commitments, an air quality offset plan to improve ambient air quality (especially particulate matter levels) in communities close to Eskom's power stations, was approved by DEA and the affected district municipalities in September 2016. The offset plan has a nominal cost in excess of R4 billion over the next nine years.

Air quality offsets will be rolled out in settlements in the KwaZamokuhle, Ezamokuhle, Sharpeville/Vaal and Marapong areas during 2018 and 2019. The focus of the interventions will be on switching households from using coal and waste burning to electricity in combination with LPG. Health assessments are planned in parallel to confirm the improved health status when ambient and indoor air pollution is reduced.

Eskom trusts that the input will be received as value adding to the finalisation of the legislation aimed at ensuring the constitutional rights of all people in South Africa *to an environment that is not harmful to their health or well-being* are met.

Eskom's comments on the National Environmental Management: Air Quality Act (39/2004): Notice of Intention to Amend the List of Activities which Result in Atmospheric Emission which have or may have a Significant Detrimental Effect on the Environment, including Health, Social Conditions, Economic Conditions, Ecological Conditions or Cultural Heritage (Government Gazette No. 41650 No. 516 of 25 May 2018) are set out in Table 1 below.

Yours Faithfully

Jerome Mthembu
INTERIM DIVISIONAL EXECUTIVE: LEGAL AND COMPLIANCE

Date: 25-06-2018

ESKOM'S COMMENTS ON THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT: NOTICE OF INTENTION TO AMEND THE LIST OF ACTIVITIES WHICH RESULT IN ATMOSPHERIC EMISSION

TABLE 1: Eskom's comments on the National Environmental Management: Air Quality Act (39/2004): Notice of Intention to Amend the List of Activities which Result in Atmospheric Emission which have or may have a Significant Detrimental Effect on the Environment, including Health, Social Conditions, Economic Conditions, Ecological Conditions or Cultural Heritage (Government Gazette No. 41650 No. 516 of 25 May 2018)

No	Ref	Current Provision/ Statement	Comment
		Amendment of paragraph 11 of the list	
1	Section 2 (b) on page 40.	*"(11A) An existing facility's application contemplated in paragraph (11) may be made for a once- off postponement of the compliance timeframes with new plant standards.* *(11B) A postponement of compliance timeframes may only be granted for a period not exceeding five years, and no postponement of compliance timeframes will be valid beyond 31 March 2025.* *(11C) An existing facility to be decommissioned by 2030 may apply for a once-off suspension of compliance timeframes with new plant standards for a period not beyond 2030.* *(11D) A once-off suspension application of compliance timeframes with new plant standard contemplated in paragraph (11C) must be accompanied by a clear decommissioning schedule.* *(11E) A once-off suspension application of compliance timeframes with new plant standards contemplated in paragraph (11C) shall not be accepted after 31 March 2019.* *(11F) An existing facility granted a once-off suspension of compliance timeframes with new plant standards shall comply with existing plant standards during the suspension period until the existing plant is decommissioned.* *(11G) No postponement of compliance timeframes with*	[Note: see Eskom's comments on the National Environmental Management: Air Quality Act (39/2004): Notice of Intention to Amend the 2012 National Framework for Air Quality Management in the Republic of South Africa (Government Gazette No. 41650 No. 518 of 25 May 2018).] The provision of "suspension" and proposed revision of the Framework for Air Quality Management, is welcomed in light of the socio-economic implication of emissions standards on existing plant[2], specifically large infrastructure such as power stations. This especially with regard to that of SO_2 abatement Flue Gas Desulphurisation (FGD), which requires significant resources to construct and operate based on current legal requirements as described in the overarching comments above. It is therefore recommended that all existing plant must comply with existing plant standards, but existing plant are not required to comply with new plant standards on condition that a decommissioning schedule is provided. It is also necessary to take into account that decommissioning is not an event but a process that takes place over a number of years. In the case of Eskom's power stations, this can be in the region of four to six years, if not longer. (11B): The validity date for Postponements granted should have alignment to decommissioning date. At present there is a "gap" between the two dates, which can have implications on the various scenarios of facilities that would apply for postponement and those for suspension. In addition, as the postponement (as per 11A) can only be for a "once-off", it should not be limited to 2025. For example, currently the retrofit of Flue Gas Desulphurisation (FGD) on Medupi may not be completed by 31 March 2025, which means in terms of the 11B Eskom may not get a

[2] "existing plant" unless where specified, shall mean any plant or process that was legally authorized to operate before 01 April 2010 or any plant where an application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), was made before 01 April 2010.

No	Ref	Current Provision/ Statement	Comment
		existing plant standard or a suspension of compliance timeframe with existing plant standard shall be granted."	postponement beyond 31 March 2025 – meaning Medupi Units without FGD would not be able to operate beyond 31 March 2025. There is a need for a mechanism to allow for such scenarios where retrofit project extend beyond 31 March 2025. There is therefore a need to accommodate retrofit project timeframes just as provision is made for decommissioning timeframes. It is recommended that such a timeframe should be linked to the facility project retrofit programme. It is therefore recommended that the clause read as follows: *(11B) A postponement of compliance timeframes may only be granted up to 2025, if the air quality improvement schedule for a plant is only due to be completed after this date a maximum of three additional years up to 2028 may be granted.* It is recommended that section (11(C)) should be as follows: *(11C) An existing facility/plant may apply for a once-off suspension of compliance timeframes with new plant standards up until final decommissioning.* It is therefore supported that that section (11(D)) should remain, however, the adjective "*clear*" should be removed so as to read as follows: *(11D) A once off suspension application of compliance timeframes with new plant standard contemplated in paragraph (11C) must be accompanied by a decommissioning schedule.* It is however, noted that provision must be made for changes to decommissioning schedules, as in the case of Eskom this is subject to the IRP and the mandate of the Department of Energy in terms of ensuring security of supply. (11E): It only makes reference to a once-off suspension application not be accepted after 31 March 2019 and does not mention applications for postponement. However, in the framework document (page 63) it refers to both? There is a need for clarity on postponement application cut-off date if needed at all. In terms of the timeframe associated with (11E), there is concern that there will not be sufficient time between when the legislation is enacted

No	Ref	Current Provision/ Statement	Comment
			and 31 March 2019 to have such applications submitted. This is based on the need to compile an atmospheric impact report and the undertaking of public participation. It is therefore recommended that the deadline of 31 March 2019 should be either changed to state "*...shall not be accepted one year after publication promulgation in the Government Gazette" or* 31 March 2019 be the date that one needs to submit only ones intention to submit such a postponement or suspension application and applications to be submitted six months after notifying ones intent. (11F): It is our understanding that in the case of a once off suspension being granted, the facilities current AEL would be amended by the applicable licensing authority to reflect this decision.