Eskom

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Date:
22 June 2017

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Ref: ENV18-L139 (3/3)

ESKOM'S COMMENTS ON THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT: NATIONAL FRAMEWORK FOR AIR QUALITY MANAGEMENT

Dear Director-General

The following draft legislation bears reference: 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).

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 Holdings SOC Ltd Reg No 2002/015527/30

ESKOM'S COMMENTS ON THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT: NATIONAL FRAMEWORK FOR AIR QUALITY MANAGEMENT

1) Eskom Holdings SOC Ltd (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 StatsSA 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 Environment al 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 health exposure. These power stations can then be targeted for emission reduction interventions.*

[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.

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 emission (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 National Framework for Air Quality Management in the Republic of South Africa 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 draft National Framework for Air Quality Management in the Republic of South Africa are set out in Table 1 below.

Yours Faithfully

Jerome Mthembu
INTERIM DIVISIONAL EXECUTIVE: LEGAL AND COMPLIANCE

Date: 2018-06-25

ESKOM'S COMMENTS ON THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT: NATIONAL FRAMEWORK FOR AIR QUALITY MANAGEMENT

TABLE 1: 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)

No	Ref	Current Provision/ Statement	Comment
		Legislative and Policy Context	
1	Section 2.4.5 (page 18 of 110)	*Greenhouse Gas Emission Monitoring - Section 43 of the AQA requires an atmospheric emission licence to specify, among others, greenhouse gas emission measurement and reporting requirements (Section 43(1) (l)).*	This is regarded as duplication with the regulations referred to in 2.4.1 National Greenhouse Gas (GHG) Emission Reporting Regulations - The minister has promulgated the National GHG reporting regulations in terms of section 53 (a), (o) and (p) read with section 12 of National Environmental Management: Air Quality Act. The purpose of these Regulations is to introduce a single national reporting system for the transparent reporting of greenhouse gas emissions. There should not be two separate and duplication reporting processes.
		Tools for the Implementation of the National Framework	
2	Section 5.4.3.4 Standard-setting process for listed activities. Postponement / Suspension of Compliance Timeframes (page 63 & 64 of 110).	*Given 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), provision is made for specific industries to apply for possible extensions to compliance time frames for new plant standards. A proponent of a Listed Activity will be allowed to apply for a postponement or suspension of the compliance date and such an application will be considered based on the following conditions being met:* • *An application is accompanied by a completed Atmospheric Impact Report (as contemplated in Section 30 of the AQA); and demonstration that the industry's air emissions are not causing direct adverse impacts on the surrounding environment;* • *The application is accompanied by a concluded public participation process undertaken as specified in the NEMA Environmental Impact Assessment Regulations;* • *The application is submitted to the National Department on or before 31 March 2019;* • *Ambient air quality in the area is in compliance with the applicable National Ambient Air Quality Standards; and*	[Note: see 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)] In the acknowledgement that this section is based on the potential economic implication of emissions standards, however, no such strategic CBA was undertaken. It is again of concern that regulatory changes are being proposed without the knowledge of the economic implications through for example a CBA. Eskom's fleet of power stations that are affected by this must be put into context. It is acknowledged that Eskom's power stations provide electricity to underpin economic and social development on South Africa. By the nature of the electricity industry, the building of power stations is undertaken to ensure demand of the energy is met based on long term planning. The investments made in such power stations are substantial (in the order of ten to hundreds of billions of Rand) with a life expectancy of 50 to 60 years. These facilities are therefore not comparable with all other facilities that are subject to the provisions of the framework. It is therefore deemed not appropriate to only have one provision regarding postponement or suspension of compliance timeframes. The Framework only considers once-off suspension of compliance timeframes with new

No	Ref	Current Provision/ Statement	Comment
		• *Other requirements as may be specified by the National Air Quality Officer.* *It should be noted that the year 2020 marks 10 years since the publication of the 2010 AQA Section 21 notice (Listed activities and minimum emission standards). Therefore, sufficient time has been afforded to industry towards compliance with the initial MES by 2020. In upholding the objectives of the AQA, the Department provides certainty regarding postponement or suspension of compliance timeframes in the following order:* • *Existing facilities may apply for a once-off postponement of compliance timeframes for new plant standards. A postponement if granted will be for a period not exceeding 5 years and no postponement would be valid beyond 31 March 2025;* • *Existing facilities that will be decommissioned by 2030 may apply for a once-off suspension of compliance timeframes with new plant standards for a period not beyond 2030. An application must be accompanied by a clear decommissioning schedule and no such application shall be considered after 31 March 2019;* • *Existing facilities that will be granted a suspension of compliance timeframes shall comply with existing plant standards during the suspension period until they are decommissioned; and* • *No postponement of compliance timeframes or a suspension of compliance timeframes shall be granted for existing plant standards.*	plant standards for a period not beyond 2030 for facilities that will be decommissioned by 2030. This change is welcomed, in light of the socio-economic implication of emissions standards. However, it should not be limited to plants being decommissioned before 2030 because the negative socio-economic and environmental impact remain. In the listed activities (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)) (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 by virtue of the first paragraph ("*... allowed to apply for a postponement or suspension ...*") and the third bullet stating "*The application is submitted to the National Department on or before 31 March 2019*". There is a need for clarity on postponement application cut-off date if needed at all. In terms of the timeframe associated with the third bullet ("*The application is submitted to the National Department on or before 31 March 2019*"), there is concern that there will not be sufficient time between when the legislation is enacted 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. In terms of Eskom's comments provided 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

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			Conditions or Cultural Heritage (Government Gazette No. 41650 No. 516 of 25 May 2018) and to ensure alignment with the comments made, the following propose wording is recommended for the last four bullets of section under "postponement/suspension of compliance timeframes": • *Existing facilities/plant may apply for a once-off postponement of compliance timeframes for new plant standards. A postponement if granted will be for a period not exceeding an air quality improvement schedule;* • *Existing facilities/plant may apply for a once-off suspension of compliance timeframes with new plant standards for a period not beyond final decommissioning. An application must be accompanied by a decommissioning schedule and no such application shall be considered a year after one year after publication promulgation in the Government Gazette;* • *Existing facilities/plant that will be granted a suspension of compliance timeframes shall comply with existing plant standards during the suspension period until they are decommissioned; and* • *No postponement of compliance timeframes or a suspension of compliance timeframes shall be granted for existing plant standards.* It is noted that while there is a real need to improve air quality in South Africa as a result of the human health impact due to poor ambient air quality. The clause: *Ambient air quality in the area is in compliance with the applicable National Ambient Air Quality Standards"* needs to be put into context to the measures that can be taken to improve ambient air quality, the source apportionment to ambient air quality and the socio-economic implications of attainment of the minimum emission standards and decommissioning of plant prior to their end of life plans. If emissions from tall stacks will not reduce the ambient air quality it is not appropriate to make this a limitation for existing plant. However, providing an alternate in the form of an offset is considered an appropriate option in such instances.
Appendix 1: National Air Quality Indicator Stations			
3	5.2.4 South African	*In an effort to improve transparency and promote*	It is currently not clear as to how variations made to area source parameters are to be

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	Atmospheric Emission Licence and Inventory Portal (page 48 and 49 of 110).	*access to information, the SNAEL also affords the public to view non- confidential information of the AEL. All AEL management matters to be undertaken under Chapter 5 of the NEMAQA shall be undertaken through SNAEL with immediate effect. All facilities that had been granted AELs through a manual application process and outside of the SNAEL have up until 31 March 2020 to register their details on the SNAEL and upload such AELs.*	approached and therefore it would be of value if this was set out.
4	5.2.4.3 Atmospheric emission inventory information management (page 49 of 110).	*A National Atmospheric Emission Inventory System Data Management Policy will be developed to specify the protocols for data management and levels of accessibility for all users including stakeholders/general public.*	Such a policy should be drafted in consultation with the data providers, such as Eskom.
5	5.4.4 Regulations Table 18 (lists the regulations that have been promulgated to-date and those that are intended to be promulgated under AQA) (page 67 to 69 of 110)	*NEMA 24(J)a) / Air quality offsets guidelines / Published on 18 March 2016 (Notice 333, Government Gazette No.39833)*	Eskom proposes that a more detailed paragraph/ section be included to ensure Air Quality Offsets are considered a reasonable air quality management tool that can be seen as a tool to positively support air quality. It should also be noted that the successful implementation of Air Quality Offsets is only possible through a combined effort of industry, relevant local municipality buy-in and the buy-in/ support from local national governmental departments where necessary. Specifically there is a need for DEA and the Department of Human Settlements to engage on the unification of standards for construction, house sizes, electrification and energy efficient standards for the housing subsidy market. This is especially relevant in terms of ceilings and insulation.
6	5.4.6.8 Pollution prevention plans (page 72 of 110)	*"The Minister has so far declared GHGs as priority air pollutants"* *"The air quality information requirements for an emission reduction strategy must include a comprehensive site emission inventory."* *"For point sources this will be specified in the AEL."*	In terms of GHG having being declared as "priority pollutants" the sections stated in terms of site emission inventory and "... this will be specified in the AEL" are considered inappropriate for GHGs to be controlled on a site-by-site basis, given that they do not give rise to site-specific health or environmental impacts, nor is there any feasible point source "control" technology. The draft Climate Change Bill will allow for individual companies to receive budgets for all GHG-producing processes within their control and it is this budgeting process that will ensure that South Africa achieves its' nationally-determined contribution. It would place the current security of National electricity supply at risk if the control of GHG emissions from individual power stations were to be

No	Ref	Current Provision/ Statement	Comment
			determined at a provincial and local government level.