



APPLICATION FOR SUSPENSION OF THE NEW PLANT MINIMUM EMISSIONS STANDARDS COMPLIANCE TIMEFRAMES FOR THE PORT REX POWER STATION

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LIST OF ACRONYMS

AIR	Atmospheric Impact Report
AEL	Atmospheric Emission License
AQMP	Air Quality Management Plan
DEFF	Department of Environment, Forestry and Fisheries
DOE	Department of Energy
EIA	Environmental Impact Assessment
ERP	Emission Reduction Plan
ESP	Electrostatic Precipitator
FGC	Flue Gas Conditioning
FGD	Flue Gas desulphurisation
GNR	Government Notice No.
HFPS	High Frequency Power Supply
FGD	Flue gas desulphurisation
GNR	Government Notice No.
IRP	Integrated Recourse Plan
IRR	Issues and Response Report
LNB	Low NO _x Burner
LPG	Liquid Petroleum Gas
NAAQS	National Ambient Air Quality Standards
NAQO	National Air Quality Officer
NEMAQA	National Environment Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NERSA	National Electricity Regulator of South Africa
NO	Nitrogen oxide
NO ₂	Nitrogen dioxide
NO _x	Oxides of nitrogen (NO _x = NO + NO ₂)
PM	Particulate Matter
PM ₁₀	Particulate Matter with a diameter of less than 10 µm
PM _{2.5}	Particulate Matter with a diameter of less than 2.5 µm
RTS	Return to Service
SO ₂	Sulphur dioxide
TSP	Total Suspended Particulates
µm	1 µm = 10 ⁻⁶ m
WHO	World Health Organisation

1 INTRODUCTION

Eskom, as South Africa's public electricity utility, generates, transmits and distributes electricity throughout South Africa. The utility also supplies electricity to neighbouring countries including Namibia, Botswana, Zambia, Zimbabwe and Mozambique. Eskom's principal generation technology is pulverised coal with approximately 90% of its current generating capacity lying in coal-fired power stations. Just under 6% of Eskom's totalled installed capacity is contributed from gas turbine generated power stations, predominantly located on the Western and Eastern Cape. These Gas power stations form part of the Peaking electricity generation fleet. Peaking power stations operate during peak periods or during times when demand is higher than that which the base load power stations (that operate continuously) can supply. One such peaking power station is the Port Rex Gas Power Station (hereafter referred to as "Port Rex"), which lies 200m from Buffalo River, in East London in the Eastern Cape Province. The last of Port Rex's generating units was commissioned in the late 1970's.

In terms of Eskom's planning power stations will generally be shutdown (meaning that it no longer produces power) at 50 years. The specific shutdown date depends on circumstances and considerations at that time such as security of supply, social, economic and environmental impacts. Once all the units at a power station are shut down, the required process for the decommissioning of the power station begins. This usually involves dismantling the power station and rehabilitating the site. The timing of the decommissioning depends on factors such as legislative approval, Eskom's financial position and possible repowering of the power station with 'clean'-energy technology. Given the design of Port Rex it is intended to decommission its units by 2026, no later than 2030.

In terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEMAQA), all of Eskom's coal and liquid fuel-fired power stations are required to meet the Minimum Emission Standards (MES) contained in GNR 1207 on 31 October 2018 ("GNR 1207") which was promulgated in terms of Section 21 of the NEMAQA¹. GNR 1207 provides arrangements in respect of inter alia: a once off postponement with the compliance of minimum emissions for new plant for five years from the date of issue, no once off postponement will be valid beyond 31 March 2025; a once off suspension for plants being decommissioned by 31 March 2030; and the National Air Quality Officer may grant an alternate emission limit or emission load if certain conditions are met. The application for any of these requests must be submitted by 31 March 2019. Eskom has however applied and received a condonation for the late submission of a suspension application for Port Rex until November 2019. A postponement of certain limits was granted to Port Rex in 2015 however with the amendment of the MES regulations in October 2018 it is necessary to submit this further application. This document is an update of the November 2019 application with some revised information (in particular an updated Atmospheric Impact Report) as Eskom committed to in the November 2019 application.

Port Rex already achieves the new plant MES limit of 500 mg/Nm³ for Sulphur dioxide (SO₂). Port Rex complies with the existing plant standards for nitrogen oxide (NO_x, 1100 mg/Nm³) and Particulate Matter (PM, 75 mg/Nm³). However, Eskom's Port Rex Power Station will not be able to comply with the 2020 'new plant' MES for nitrogen oxides (NO_x) of 250 mg/Nm³ and particulate matter (50 mg/Nm³), and as such in 2015 Port Rex received postponement to the 2020 new plant limit for NO_x with an approved alternative limit of 600 mg/Nm³ from 2020 to 2025. Eskom is applying to the National Air Quality Officer for a suspension of the 2020 New Plant MES for NO_x and PM, and requesting approval of a continued alternative emission limit of 600 mg/Nm³ for NO_x and an alternative limit of 75 mg/Nm³ for PM, until decommissioning in 2026, no later than 2030. The emission limits are normalised to 15% O₂ on a dry basis.

The purpose of this document is to present an application for the suspension of the requirement to meet the 2025 compliance date (give the existing postponement) and propose an alternative limit for PM and NO_x for Port Rex

¹ GNR 893 amended the "original: MES regulations GNR 893 which were promulgated on 22 November 2013 in terms of Section 21 of the NEMAQA

as required in terms of GNR 1207. The document has been structured to present the application for suspension and the emission limits to which Port Rex could be held and which could then be included in the Atmospheric Emission Licence (AEL). The legal basis for the suspension is then presented, including the requirements that must be met in making such an application. Finally, the reasons for the application for suspension and alternative limits are presented.

Eskom submitted an initial MES application for Port Rex in November 2019 and at that time Eskom undertook to submit an updated AIR and Public Participation report when these are available. As such, an updated AIR completed in April 2020 supports the present application. The public participation report has also been updated to reflect the 2nd round of consultation over July/August 2020. Eskom has also updated the application motivation (this document) to reflect the update AIR and new information since the submission of its initial application in November 2019.

2 PORT REX'S REQUESTED EMISSION LIMITS

The current approved limits listed in Table 1 are as in the NAQO approval to the postponement request received in 2015 (EC/EX-PR/20140227) as well as in Port Rex's AEL (ref: ECBE 000603)². The alternative emission limits that are requested for Port Rex during normal operating conditions based on a suspension of the new plant limits for NO_x and PM are also shown in Table 1:

Table 1: Current and requested alternative emission limits for Port Rex

	Current Limit (from AEL/MES)			Requested Alternative Emission Limits ^{***} 273 K, 101.3 kPa, dry and 15% O ₂		
	Limit value (mg/Nm ³)	Averaging period	Date to be achieved by	Limit value (mg/Nm ³)	Averaging period	Date to be achieved by
Particulate Matter	100	Daily	20/09/2019	75	Daily	<i>By 1 April 2020 until decommissioning **</i>
Sulphur Dioxide	3500	Daily	20/09/2019	500	Daily	<i>By 1 April 2020 until decommissioning**</i>
Nitrogen Oxides	1100	Daily	20/09/2019	600	Daily	<i>By 1 April 2020 until decommissioning **</i>

^{**} the anticipated decommissioning date is 2026, but no later than 2030

^{***}The requested alternate emission limits above are in mg/Nm³ at 273 K, 101.3 kPa, dry and 15% O₂.

In summary, the application submitted for Port Rex is:

- (i) Suspension of the new plant MES PM standard (50 mg/Nm³) from 2020 with approval of alternative limit of 75mg/Nm³, until station decommissioning which will be no later than 2030 (currently anticipated by 2026).
- (ii) Suspension of compliance from the new plant MES NO_x standard (250 mg/Nm³) from 2025 as per the 2015 postponement decision and with approval of alternative limit 600mg/Nm³ from 2020, until station decommissioning which will be no later than 2030 (currently anticipated by 2026).

It is further requested that the proposed alternative limits only apply during normal working conditions, and not during start-up or shut-down periods and the emission limits are represented in mg/Nm³ (273 K, 101.3 kPa, dry and 15% O₂).

² The 2019 AEL does not reflect the 2015 Postponement decision but this is included in this discussion for completeness and correctness.

In terms of the existing license and NAQO approval to the previous postponement requests, Port Rex has to comply with a 600mg/Nm³ NO_x limit until 1 April 2025. It is therefore understood that this previously granted postponement of limits will remain in place until 2025 as a minimum and thereafter until decommissioning based on this request for suspension. Any other variations or amendments to the AEL are also considered to be unaffected by this application.

Based on the remaining life of the Port Rex power station, the techno-economics and cost benefits assessment any additional measures other than what was committed to above and the new plant emission limits requested are not financially viable.

3 LEGAL BASIS FOR DECISION-MAKING

3.1 National Ambient Air Quality Standards

Poor air quality has been recognised as an environmental and health problem in various parts of South Africa. In an effort to address the issue, National government has published the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004). In order to better manage air quality government has published standards for ambient or local air quality, the National Ambient Air Quality Standards (NAAQS). The NAAQS define the permissible amount or concentration of a particular substance in the air and, in cases, the number of times this amount may be exceeded. The NAAQS represents the nationally approved tolerance level of environmental risk in respect of human exposure to air quality.

3.2 Minimum Emission Standards

To further control air quality government identified activities that must obtain Atmospheric Emission Licenses (AEL) to operate and established the Minimum Emission Standards (MES) to limit the emission levels at which these industries may emit from their operations. The logic being that by imposing limits on what an industry may emit (point source limits) this will result in an acceptable air quality at the ambient or local level as defined by the NAAQS.

All the Eskom Power Stations hold a valid Atmospheric Emission Licence for electricity production, the storage and handling of coal, and/or the storage of petroleum products in terms of the listed activities promulgated in the Minimum Emission Standards (GNR 893 dated 22 November 2013, and as amended in GNR 1207 on 31 October 2018) under the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) [NEMAQA]. The AEL specifies permissible stack emission concentrations for NO_x, SO₂ and for PM. The licence specifies a number of compliance conditions as well as conditions for emission monitoring and management of abnormal releases.

In terms of NEMAQA, all of Eskom's coal- and liquid fuel-fired power stations are required to meet the Minimum Emission Standards (MES) contained in GNR 893, and as amended in GNR 1207, promulgated in terms of Section 21 of the NEMAQA. GNR 893 does provide arrangements in respect of the requirement for existing plants to meet the MES and provides that less stringent limits had to be achieved by existing plants by 1 April 2015, and more stringent "new plant" limits need to be achieved by existing plants by 1 April 2020. The MES are listed in the table below.

Table 2: Minimum emission standards for Category 1: Combustion Installations

		Subcategory 1.1: Solid fuel	Sub-category 1.2: Liquid fuel
Description:		Solid fuels combustion installations used primarily for steam raising or electricity generation.	Liquid fuels combustion installations used primarily for steam raising or electricity generation.
Application:		All installations with design capacity equal to or greater than 50 MW heat input per unit, based on the lower calorific value of the fuel used	All installations with design capacity equal to or greater than 50 MW heat input per unit, based on the lower calorific value of the fuel used.
Substance		Plant status	mg/Nm ³ under normal conditions of 10% O ₂ , 273 Kelvin and 101,3 kPa.
Common name	Chemical symbol		
Particulate matter	N/A	Existing	100
		New	50
Sulphur dioxide	SO ₂	Existing	3 500
		New	1 000
Nitrogen oxides	NO _x	Existing	1 100
		New	750

Further, the Amendments to the listed activities and associated minimum emissions standards identified in terms of section 21 of the NEMAQA, GN 1207 31 October 2017, (also in the 2017 National Framework for Air Quality Management in the RSA (GN 1144, 26 October 2018)) provides certainty regarding postponement or suspension of compliance timeframes in the following order:

(11A) An existing plant may apply to the National Air Quality Officer for a once-off postponement with the compliance timeframes for MES for new plant. A once-off postponement with the compliance timeframes for the MES for new plant may not exceed a period of 5 years from the date of issue. No once off postponement will be valid beyond 31 March 2025;

(11B) An existing plant to be decommissioned by 31 March 2030 may apply to the NAQO before 31 March 2019 for a once-off suspension of compliance timeframes with MES for new plant. Such an application must be accompanied by a detailed decommissioning schedule. No such application shall be accepted by the NAQO after 31 March 2019;

(11C) An existing plant that has been granted a once off suspension with the compliance timeframes must comply with MES for existing plant from the date of granting the application and during the period of suspension until decommissioning.

(11D) No postponement of compliance timeframes or a suspension of compliance timeframes shall be granted for compliance with the MES for existing plant.

(12A)

- a) An existing plant may submit an application regarding a new plant standard to the National Air Quality Officer for consideration, if the plant is in compliance with other emission standards but cannot comply with a particular pollutant or pollutants.
- b) An application must demonstrate previous reduction in emissions of the said pollutant or pollutants, measures and direct investments implemented towards compliance with the relevant new plant standards.
- c) The National Air Quality Officer, after consultation with the Licensing Authority, may grant an alternative emission limit or emission load if: - there is material compliance with the national ambient air quality standards in the area for pollutant or pollutants applied for; or - the Atmospheric Impact Report does not show a material increased health risk where there is no ambient air quality standard

3.3 Regulatory Requirements

In terms of Section 14(1) of the NEMAQA, the Minister of Environmental Affairs ("Minister") must designate an officer in the Department of Environmental Affairs (DEA) as the National Air Quality Officer. In this regard, Dr Thuli Khumalo has been designated by the Minister as the current National Air Quality Officer. Section 14(4)(b) of the NEMAQA provides that the National Air Quality Officer may delegate a power or assign a duty to an official in the service of his/her administration. It is our understanding that no such delegation has been made for the area of jurisdiction in which the power station is located. Accordingly, Eskom submits this Application to the National Air Quality Officer (NAQO).

In terms of Paragraph (12)(a) – (c) of GNR 893 of 22 November 2013 (the Regulations) as amended by GNR 1207 of October 2018, the application must include:

1. An air pollution impact assessment compiled in accordance with the regulations prescribing the format of an Atmospheric Impact Report (AIR) (as contemplated in Section 30 of the NEMAQA), by a person registered as a professional engineer or as a professional natural scientist in the appropriate category;
2. A detailed justification and reasons for the Application; and
3. A concluded public participation process undertaken as specified in the National Environmental Management Act and the Environmental Impact Assessment (EIA) Regulations made under section 24(5) of the afore mentioned Act.

In respect of these requirements Eskom have attached –

- Annexure A: a copy of the AIR prepared in respect of Port Rex for this application. The AIR provides, inter alia, an assessment of how ambient air quality is likely to be affected by Port Rex's requested emission limits by utilising, inter alia, atmospheric dispersion modelling.
- Detailed justifications and reasons for the Application (this application, and see Section 4 below)
- Annexure 1: A Health impact focused cost benefit Analysis (Highveld MES applications 2019)
- Annexure 2: Eskom's summary Atmospheric Impact Report
- Annexure 3: The public participation report that was held over July/August 2020

3.4 Changes in Regulatory Framework

In October 2018 the 2017 National Framework for Air Quality Management in the Republic of South Africa and the Amendment to Listed Activities and Associated Minimum Emission Standards Identified in terms of Section 21 of NEMAQA were published.

There was, prior to October 2018, no requirement for Eskom to complete an immediate application for Port Rex as the station had a valid postponement decision until 2025. Eskom was unable to complete a further application by the deadline of March 2019 and as such requested approval for the late submission of an application in March 2019. Approval to submit an application by November 2019 was granted to Eskom in October 2019 by the Minister of Environment, Forestry and Fisheries. Eskom complied with this request and an initial application for suspension of the NO_x and PM limit at Port Rex was submitted in November 2019. At that time Eskom undertook to submit an updated AIR and Public Participation report. – as such an updated AIR completed in April 2020 supports the current application as well as detail on the second round of public participation. Eskom has also updated the application motivation (this document) to reflect the update AIR and new information since the submission of its initial application in November 2019.

3.5 The Need to Amend the Variation Requests

In terms of timing, Eskom is required to submit an AEL variation request parallel to this application. The variation request is prepared based on the assumption that this application is granted by the NAQO. If the NAQO decision is substantially different from that applied for, Eskom reserves its right to amend its variation request. A draft variation request for the Port Rex application aligned to this motivation has been prepared and will also be made available for public comment during the present round of public participation. The variation request will be submitted on the South Africa Atmospheric Emission Licencing & Inventory Portal (SAAELIP) for approval as is required once a decision in respect of the MES application is made.

4 REASONS FOR APPLYING FOR SUSPENSION

As mentioned above, the Application must be accompanied by reasons. Such reasons are set out below and include the fact that Port Rex operates to a very limited extent (very low load factor) and that emissions from the station will not result in non-compliance with National Ambient Air Quality Standards (NAAQS). The financial costs of compliance and the limited remaining life of the plant are also significant considerations.

It is Eskom's view that the benefit of compliance to the MES at Port Rex and across the Eskom fleet does not justify the non-financial and financial costs of compliance. None of these reasons should be seen as exclusive (i.e. it is not one reason alone that prevents compliance) but rather all in combination.

As set out in the Constitution of the Republic of South Africa, there is the need to recognise the interrelationship between the environment and development. There is a need to protect the environment, while simultaneously recognising the need for social and economic development. There is the need therefore to maintain the balance in the attainment of sustainable development.

4.1 Load factor

Port Rex is a peaking station, which is only used infrequently and in emergencies – generally a few hours a day. The load factor is given in the Table 3 below. The load factor represents a ratio of the actual energy produced over a reference period, divided by the nominal energy for the same period (if the load factor is 100% then the energy output was at its maximum). The average load factor for each engine at Port Rex per year from 2016 to 2018 is given in the table.

It can be seen that each engine operated with an average low load factor of 0.04%. This is less than one day a year.

Table 3: Average load factor of each unit at Port Rex from 2016 to 2018

Year	Average load factor of each engine
2016/17	0%
2017/18	0%
2018/19	0.12%
Overall average	0.04%

4.2 Remaining Power Station Life and cost of compliance

In order to meet the MES new plant NOx limits it would be necessary to:

- Modify the combustion system to allow water injection - estimated to cost between R15 mill to R20mill
- Implement high temperature selective catalytic reduction - estimated to cost between R50mill to R100mill

If compliance to the new plant limit for particulates were to be obtained it would in all likelihood require the conversion of the present diesel-burning plant to gas combustion. This conversion would be very expensive from a capital investment perspective and would increase operational expenses.

The three units at Port Rex were commissioned in 1976. They are thus now almost 43 years old. Port Rex's decommissioning planned date is anticipated to be by 2026, and no later than 2030. Port Rex has a postponement from the PM and NOx new plant limit until 2025.

Given the limited remaining life of the station the financial viability of the modifications required to meet the full MES compliance requirements are not considered appropriate.

4.3 Impact on Ambient Air Quality

Two Air Quality Monitoring Stations (AQMS), operated by Buffalo City, are located within the study domain (viz. East London and Mobile AQMS). Data availability for the pollutants measured at these sites was below 80% for the period 2016 to 2018 at all stations, for all pollutants and this is below the accepted threshold for monitoring data representivity thus no definitive statements on the state of ambient air quality can be made. At the Mobile AQMS and East London AQMS, the maximum data availability was 38% and 56% respectively for the period 2018. Noting the poor data availability, compliance with the National Ambient Air Quality standards is observed for all pollutants assessed, over all averaging periods, at the Mobile AQMS and the East London AQMS for 2018.

Port Rex operates mainly for testing purposes, and seldom generates. The generation load factor (GLF) for the 2019/2020 financial year is 0.03%. Although the operating hours are high (almost 24 hours a day, 365 days a year), these are a result of the frequency control functions and are not resulting in fuel burning. Eskom plans to continue operating Port Rex at a GLF of 0.03%. The simulation results of the station operating (fuel burnt) all units at 100% for 24 hours a day, 365 days per year presents a “worst case” scenario. Four scenarios were simulated in the dispersion modelling completed in support of this application:

- Baseline Emissions
- Current AEL Limits
- New Plant MES
- Alternative Emission Limits

The AIR concluded that should the station continue to operate as it has from April 2014 to March 2020 it will be compliance with National Ambient Air Quality Standards, National Dust Control Regulations and environmental screening criteria. Additional detail on the results of the modelling is provided below.

4.3.1 Nitrogen dioxide

The 2014 modelling predicted ambient NO₂ concentrations (using a dispersion model) were seen to be compliant with the NO₂ NAAQS for current emissions, but potentially non-compliant for Eskom’s requested emission limit, if Port Rex is to run continuously (burning fuel) at this limit.

Based on the latest AIR (2020), simulated hourly NO₂ concentrations were below the NAAQS at all off-site sensitive receptors for Baseline Emissions, New Plant Minimum Emission Standards and Alternative Emission Limits. If the Power Station were to operate consistently (24 hours a day, 365 days a year) at Current AEL limits, the hourly NAAQS would be exceeded at George Randell High School, Sunshine Creche and Play Centre and at Fort Grey TB Hospital. Simulated annual NO₂ concentrations were below NAAQS at all off-site sensitive receptors for all emission scenarios.

The potential non-compliance derives from the fact that Port Rex was modelled as if it operated permanently, whereas in actual fact the station operates for less than 2% of the time. It is also clear from the modelling that the NAAQS hourly limit value is not exceeded every time Port Rex operates even under maximum emissions and, given that Port Rex has operated for less than a day a year and that the NAAQS allows 88 hourly exceedances of the limit value in a year, the risk of non-compliance with the NAAQS is very low indeed, and the associated risk to human health and the environment, negligible.

4.3.2 Particulate Matter

Based on the conservative assumption that all PM is in the PM₁₀ or PM_{2.5} fraction, the simulated daily and annual PM₁₀ and PM_{2.5} concentrations were below the NAAQS at all sensitive receptors for all emission scenarios. It is deemed the associated risk to human health and the environment is negligible.

4.3.3 Sulphur Dioxide

Simulated hourly SO₂ concentrations were below the NAAQS at all off-site sensitive receptors for Baseline Emissions, New Plant Minimum Emission Standards and Alternative Emission Limits. If the Power Station were to operate consistently at Existing Plant Minimum Emission Standards, the hourly and daily NAAQS would be exceeded at the closest sensitive receptors.

The station historically operates for less than 5% GLF so the occurrence of the NAAQS exceedance is considered highly unlikely if previous operational patterns are maintained, which is anticipated until its decommissioned date.

5 ESKOM'S EMISSION REDUCTION PLAN

Eskom has committed to implementing a range of initiatives to reduce the impact of its power station emissions and while this plan is not directly relevant to Port Rex given the location of the station it is described below to provide context to this application and illustrate Eskom's commitment to compliance with the MES.

Eskom considers that it is not practically feasible or beneficial for South Africa (when considering the full implications of compliance and planned decommissioning) to comply fully with the 'new plant' MES by the stipulated timeframes. This is elaborated on in the sections below. As a result, Eskom proposes to adopt a phased and prioritised approach to compliance with the MES. Highest emitting stations will be retrofitted first. Reduction of Particulate Matter (PM) emissions has been prioritised, as PM is considered to be the ambient pollutant of greatest concern in South Africa. Noting that there is compliance to the NAAQS in respect of NO_x across the Highveld and in the Waterberg Eskom is applying not to implement any further pollution abatement technologies in respect of NO_x beyond those already implemented with the exception of completion of the present low NO_x burner projects at Camden. Kusile Power Station is commissioned with Flue Gas Desulphurisation and will continue to achieve the SO₂ new plant limit. Kusile and Medupi are commissioned with abatement technology which can meet PM and NO_x new plant standards. There are several power stations which comply with new plant standards for PM. There are six power stations which will be shut down before 2030, an additional two by 2035 and the remaining existing plants (excluding Majuba, Medupi and Kusile) post 2040.

Emission reduction interventions to achieve compliance with the new plant emission limit are planned for the following stations:

- Particulate Matter emission reduction: Tutuka, Kriel, Matla and Duvha Units 4-6, Kendal and Lethabo; and
- NO_x emission reduction: Camden; and
- SO₂ emission reduction: at Kusile and the evaluation of alternative lower cost technologies for Medupi.

In terms of Eskom's planning power stations will generally be shutdown (meaning that it no longer produces power) at 50 years. The specific shutdown date depends on circumstances and considerations at that time such as security of supply, social, economic and environmental impacts. Once all the units at a power station are shut down, the required process for the decommissioning of the power station begins. This usually involves dismantling the power station and rehabilitating the site. The timing of the decommissioning depends on factors such as legislative approval, Eskom's financial position and possible repowering of the power station with 'clean'-energy technology. To date, fifteen (15) units between Grootvlei, Hendrina and Komati have been shut down prior to the 50 year life and put into extended storage. The shutting down of these power plants reduces the cumulative

emission load and pollution in Mpumalanga. The emissions load will continuously decrease ensuring that health impacts from Eskom's power stations will not increase.

The retrofits listed above are over and above the emission abatement technology which is already installed at Eskom's power stations, which is:

- Electrostatic Precipitators (ESPs) at Matimba, Kendal, Lethabo, Matla, Kriel, Tutuka, Komati 3 of the 6 units at Duvha. In addition SO₃ injection plants have also been installed at those stations with ESPs, except Tutuka, to improve the efficacy of the same;
- Fabric Filter Plants (FFPs) at Majuba, Arnot, Hendrina, Camden, Grootvlei, Medupi, Kusile and 3 units at Duvha;
- Boilers with Low NO_x design at Kendal and Matimba;
- Low NO_x Burners (LNBs) at Medupi, Kusile, Ankerlig, Gourikwa, and some units at Camden; and
- Flue gas desulphurisation (FGD) at Kusile.

Eskom applied and was granted a first round of postponements between 2014 and 2015. Since then Eskom has updated its emission reduction plan to include the enhancement of existing particulate matter abatement technology currently installed at Kendal, Matimba and Lethabo Power Stations.

Implementing the emission reduction plan and installing more efficient emission control technology will reduce Eskom's emissions. The decommissioning of the older stations and an increased use of the newer less emitting Medupi, Kusile and the renewable IPPs, will also result in a substantial decrease in Eskom's and South Africa's emissions over time. For example it is projected that compared to a 2020 baseline that by 2039 Eskom's relative PM emissions will reduce by 68%, SO₂ by 52% and NO_x by 54%.

The retrofit schedule and projected emission reduction above clearly illustrates Eskom has been and remains committed to implementing emission reduction technologies to improve air quality in South Africa.

Given its financial position and being cognisant of the air quality in the country. Eskom is proposing that the above is the 2020 Emission Reduction Plan for Eskom. The changes from the 2019 plan include, in terms of SO₂ a proposal to implement a lower cost technology or no technology at Medupi and no pilot studies at Kendal or Matimba. Further, since the NO_x ambient standards are already in general compliance in Mpumalanga and the Waterberg, Eskom does not intend to proceed with the planned installation of low NO_x burners at any further stations beyond Camden.

Eskom's 2019 atmospheric emission reduction plan was estimated to cost R 46 billion (overnight cost, R 67 billion nominal cost) over the next 10 years. The 2020 emission reduction plan will reduce the cost to R 15 billion (overnight cost, R16 billion nominal costs) over the next 10 years.

The 2020 Eskom Emission Reduction Plan was finalised after the draft documents for this application had been made available for public review. Practically the changes in the plan relate to stations on the Highveld and Waterberg and have no material impact on the local air quality impacted by this application and power station.

6 ESKOM'S APPROACH TO A JUST ENERGY TRANSITION

The changing energy landscape globally and domestically plays an important role in Eskom's plans for medium to long term sustainability. The changing landscape is itself influenced by the growing need to address climate change in a just manner. Given South Africa's vulnerability to climate change and its commitment to the Paris Agreement as well as its commitment to the Sustainable Development Goals, Eskom's approach is to address climate change holistically in a just manner. The International Labour Organisation (ILO) "Guidelines for a just

transition towards environmentally sustainable economies and societies for all” describes the complexity well - “A just transition for all towards an environmentally sustainable economy... needs to be well managed and contribute to the goals of decent work for all, social inclusion and the eradication of poverty.” This narrative underpins Eskom’s holistic approach to a lower carbon future in a just manner. We are therefore cognisant of Eskom’s role in supporting the Just Energy Transition, not only supplying electricity, which is the economic backbone of the country, but also of the impact of our environmental footprint and our social responsibility towards those affected by our operations. The suite of policies, activities and initiatives that contribute to the Eskom Just Transition strategy therefore, are geared towards having a positive impact on our finances, the society we operate in and on the environment. For this reason Eskom is developing a Just Transition Strategy detailing:

- Eskom’s commitment to a lower carbon future
- How the repurposing and renewables plans contribute to meeting this target
- The impact of this approach on all environmental goals – air quality, carbon emissions, water, etc. (no compromise on environmental integrity)
- The impact of this approach on socio-economic factors – including dealing with shutting down of coal plants

The elements of a Just Energy Transition are being integrated into various pieces of work currently underway in the organisation including:

- Based on the 50-year technical life of plant, 6 stations with in excess of 10 000 MW of coal fired capacity is expected to be shut down by 2030. The pace of this transition must consider the capacity of the electricity supply system, elements of the value chain, employees, suppliers and communities surrounding the power station to adapt. Eskom’s strategy is to redeploy and reskill affected employees, support local municipalities and actively pursue economic opportunities for local communities.
- Developing comprehensive and implementable social plans for each power station that will be shutdown.
- Investigating how we can repurpose power plants and/or power plant sites, including through the deployment of renewables repurposing with gas and assessing the use of the sites for other industries
- Given the shutdown of plants the need to develop new revenue and employment pathways plus the desire to reduce its carbon footprint and other pollutants, Eskom aspires to expand its renewables portfolio significantly through large scale grid connected wind and PV plants at selected greenfield sites, power stations and offices.
- Additionally, Eskom will investigate rooftop PV on a commercial basis and adopt energy storage solutions to provide balance to the system.
- Eskom has also extended an Expression of Interest to the public to provide further ideas for repurposing

In looking at these various options and the development of Eskom’s overall Just Transition Roadmap we are also assessing the options for alternative financing, including climate financing. The drive towards a Just transition will result in a reduction in Eskom’s environmental and air quality impacts overtime but given the need to ensure an adequate energy supply for South Africa going forward the process is not a short-term one and it will require that Eskom to remain a financially viable entity.

Historically the South African economy was built on coal as a cheaper energy to power a primary commodity economy. Despite the growth of the services sector, the structural underpinnings of the economy have not changed and are ill suited to this global transition that is underway. In a context where the world’s largest economies and key trading partners are beginning to decarbonise, these global changes and the vulnerability of our economy, exacerbated now by COVID-19, if ignored, threatens to retard economic growth further in South Africa increasing poverty, unemployment and inequality. In this context, the risks related to a just transition to a lower carbon economy are immense but not insurmountable if we address this as a collective (business, government, civil society and labour unions). Therefore, in addition to its own efforts, Eskom is engaged in national efforts through government and business to determine the Just Transition pathway for South Africa.

In addition to the above Eskom is managing its operation in compliance to the legislated national requirements in respect of climate change. Eskom has an approved Greenhouse Gas Pollution Prevention Plan (GN 513 of July 2017) and reports its CO₂ emissions annually in terms of the National Green House Gas reporting requirements (GN 275 of April 2017).

Given the very low load factor at which the station operates (less than one day a year historically) its contribution to Eskom's annual emissions are negligible while the flexible, dispatchable capacity that it represents, allows for additional, non-dispatchable and variable renewable energy sources to be connected to the electricity supply grid, ultimately benefitting the energy transition discussed above.

7 PUBLIC PARTICIPATION

The requirement that the public participation process for this application partially follows the process specified in the NEMA Environmental Impact Assessment (EIA) Regulations for round 1 of PP, however this was done slightly differently for the second round given the restrictions posed by COVID-19. Eskom supports and aligns its public participation process with the requirements as stipulated within the NEMA EIA Regulations.

In the November 2019 application Eskom provided the overall public participation reports completed as part of the March 2019 MES submissions. Those reports detailed initial (Phase1) consultation issues in respect of Port Rex based on consultation held.

Nemai Consulting (Pty) Ltd was appointed by Eskom as the independent Environmental Assessment Practitioner to conduct the Public Participation Process in support of the Suspension Application for Port Rex. The Draft Motivation Report, Draft AIR and variation request was made available for public review and comment for a period of 30 days, in terms of Environmental Impact Assessment (EIA) Regulations of 2014 (as amended 7 April 2017) of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and the requirements of NEM:AQA, as well as the DEFF Covid-19 directive (GNR 650). The Department of Environment, Forestry and Fisheries (DEFF) suspended formal public participation during the National State of Disaster and declared Covid-19 Lock-down from 27 March 2020.

Press advertisements, site notices and email notification of stakeholders had taken place for the 2nd phase of public participation held from 8 July 2020 to the 7 August 2020. Due to the COVID pandemic, it was not possible to hold physical public meetings, but virtual events were available to all stakeholders on request and in line with DEFF guidance in respect of PP during the COVID pandemic – this promoted social distancing during the public participation process, as per the DEFF Covid-19 directive. The supplementary public participation report including second round's comments and responses will be provided to the NAQO. For details pertaining to the public participation process, the reader is referred to Annexure 3 of this Application.

8 EMISSION OFFSETS

Eskom is willing to implement emission offsets in areas where power stations impact significantly on ambient air quality, and where there is non-compliance with ambient air quality standards as a condition of an approved postponement. Eskom is of the view that in many cases household emission offsets are a more effective way of

reducing human exposure to harmful levels of air pollution, than is retrofitting power stations with emission abatement technology. Emission retrofits at power stations also increase the cost of electricity, which may make electricity unaffordable for more people, resulting in an increase in the domestic use of fuels and deterioration in air quality in low income areas.

No specific need for offsets has been identified for Port Rex based on the studies completed to date.

9 CONCLUSIONS

Eskom is committed to ensuring that it manages and operates its power stations in such a manner that risks to the environment and human health are minimised. As set out in the Constitution of the Republic of South Africa, there is the need to recognise the interrelationship between the environment and development. There is a need to protect the environment, while simultaneously recognising the need for social and economic development. There is the need therefore to maintain the balance in the attainment of sustainable development.

Port Rex Power Station already complies with the existing and new plant limits for SO₂, and with the existing plant limit for NO_x and PM. Eskom contends that compliance with the new plant NO_x and PM MES at Port Rex is not warranted because Port Rex's operations do not result in non-compliance with ambient air quality standards. Port Rex is only used in emergency situations (each unit is used on average for less than one day a year). Further, the costs of any retrofit are inappropriate considering that Port Rex will be decommissioned by no later than 2030 (currently planned for 2026).

Eskom has complied with the requirement to submit the initial application by November 2019, and has further supplement this application with an updated AIR (2020), public participation report and an updated motivation (this document) as well as a variation request for the Port Rex AEL.

Eskom believes given the motivation presented above in terms of Port Rex, its decommissioning schedule as well as Eskom's complete emission reduction plan and its implications, that the application for the suspension is appropriate and in line with the relevant Constitutional, regulatory and policy requirements and as such the application should be approved by the NAQO.