# NKANGALA DISTRICT MUNICIPALITY

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## ATMOSPHERIC EMISSION LICENCE HOLDER: ESKOM HOLDING SOC LIMITED KUSILE POWER STATION

## ATMOSPHERIC EMISSION LICENCE NO.: 17/04/AEL/MP311/12/01

## ATMOSPHERIC EMISSION LICENCE AS CONTEMPLATED IN SECTION 43 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 2004, (ACT NO. 39 OF 2004)

I, ML Mahlangu, in my capacity as the Acting General Manager: Community Development Services of Nkangala District Municipality (hereinafter referred to as "the Licensing Authority ", in terms of Section 36(1) of the National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004, hereinafter referred to as the "Act"), and as provided for in Section 40 (1) (a) of the Act, hereby grant the authorisation of the above-mentioned Atmospheric Emission Licence subject to Section 43 of the Act to the conditions specified herein.

This Atmospheric Emission Licence is issued to **Eskom Holding SOC Limited Kusile Power Station** in terms of Section 42 of the Act as amended, in respect of 21 Listed Activity **Subcategory 1.1; 2.4 and 5.1.** The Atmospheric Emission Licence is issued on the basis of information provided in the company's application dated **06 February 2024** and information that became available during processing of the application, as well as the site visit conducted on **21 February 2024**.

The Atmospheric Emission Licence is valid for five (05) years, until **09 April 2029**. his Atmospheric Emission Licence is a renewal initiated by the facility according to Section 47 (1) of the Act and is issued subject to the conditions and requirements set out below which form part of the Atmospheric Emission Licence, and which are binding on **Eskom Holding SOC Limited Kusile Power Station**, (hereinafter referred to as "the Licence Holder").

**Air Quality Officer**
Signature: _____ **Date:** 09.04.2024

## 1. ATMOSPHERIC EMISSION LICENCE ADMINISTRATION

| | |
|---|---|
| Name of the Licensing Authority | Nkangala District Municipality |
| Atmospheric Emission Licence Number | **17/04/AEL/MP311/12/01** |
| 1st Atmospheric Emission Licence Issue Date | 06 March 2019 |
| 2nd Atmospheric Emission Licence Issue Date (variation) | 30 January 2023 |
| 3rd Atmospheric Emission Licence Issue Date (variation) | 13 June 2023 |
| 4th Atmospheric Emission Licence Issue Date (variation) Appeal Decision | 15 January 2024 |
| 5th Atmospheric Emission Licence Issue Date (renewal) | 09 April 2024 |
| Atmospheric Emission Licence Type | Atmospheric Emission Licence |
| Atmospheric Emission Licence Review Date | As advised by Licensing Authority |
| Atmospheric Emission Licence Renewal Date | (Submit renewal application six months before expiry date) 09 October 2028 |

## 2. ATMOSPHERIC EMISSION LICENCE HOLDER DETAILS

| | |
|---|---|
| Enterprise Name | Eskom Holding SOC limited |
| Trading As | Kusile Power Station |
| Type of Enterprise | State Owned Company |
| Enterprise Registration Number (Registration Numbers if Joint Venture) | 2002/015527/06 |
| Registered Address | Megawatt Park<br>Maxwell Drive<br>Sunninghill<br>Sandton |
| Postal Address | PO Box 1091<br>Johannesburg<br>2000 |
| Telephone Number (General) | 011 800 8111 |
| Fax Number (General) | 011 800 2122 |
| Industry Sector | Power Generation (Electricity Generation) |
| Contact Name (General Manager) | Christopher Nani |

| | |
|---|---|
| Telephone number | 013 680 3250 |
| Cell phone Number | 082 805 3392 |
| Fax Number | N/A |
| E-mail Address | Nanit@eskom.co.za |
| Contact Name (Emission Control Officer) | Lesiba Kgobe |
| Telephone Number | 013 680 3250 |
| Cell Phone Number | 078 903 9211 |
| Fax Number | N/A |
| Email Address | Kgobels@eskom.co.za |
| After Hours Contact Details | 082 805 3392 |

## 3. SITUATION AND EXTENT OF THE PLANT

### 3.1. Location and extent of the plant

| | |
|---|---|
| Physical Address of the Plant | Kusile Power Station<br>4.5 West of R545 Kendal/Balmoral Road, Haartebeesfontein Farm, Witbank, Emalahleni Local Municipality |
| Description of Site (Erf) | Farm Haartebeesfontein 537 – Portion 4, Remainder Portion 1, Portion 7 and Farm Klipfontein Portion 3, Portion 26 and Portion 58 |
| Coordinates of Approximate Centre of Operations | North-south: 25° 55' 01"S<br>East-west: 28° 55' 00"E |
| Extent (km²) | 13:55 |
| Elevation Above Mean Sea Level (m) | 1,500 |
| Province | Mpumalanga |
| Metropolitan/District Municipality | Nkangala District Municipality |
| Local Municipality | Emalahleni Local Municipality |
| Designated Priority Area | Highveld Priority Area |

## 3.2. Description of surrounding land use (within 5km radius)

Agriculture, particularly crop farming, is the main land use in the vicinity of Kusile Power Station. Kendal poultry Farm is situated 5 km south-east of Kusile. Phola residential area is situated 14 km south-east of Kusile. Clewer is situated 20 km east of Kusile and Witbank (eMalahleni) is situated 27 km east of Kusile. There are numerous coal mines in the vicinity of Kusile.

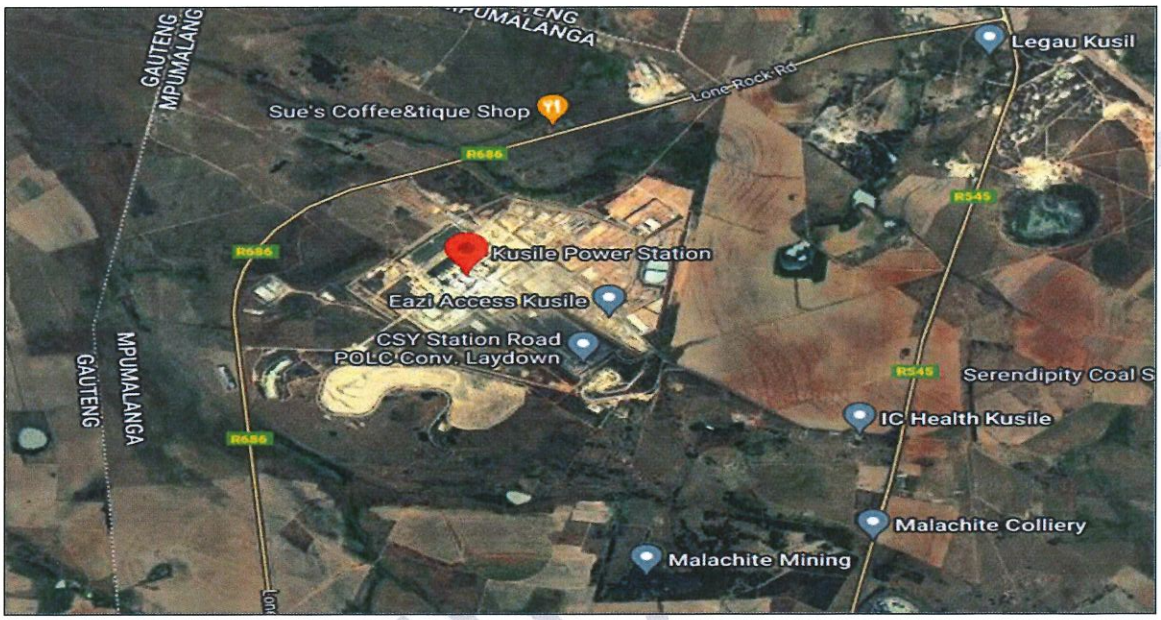


*Figure 1: Locality Map of Eskom Holding SOC Limited - Kusile Power Station*

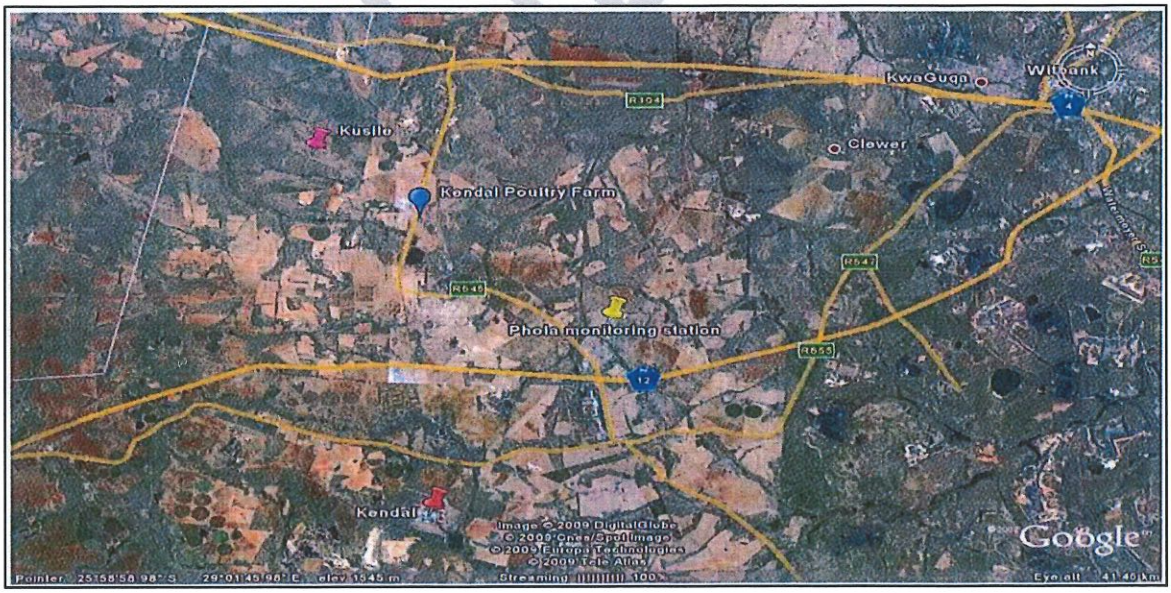


*Figure 2: Locality of Map of Ambient Air Quality Monitoring Stations for Kendal Poultry and Phola.*

## 4. GENERAL CONDITIONS

### 4.1. Process and ownership changes

(a) The holder of the atmospheric emission licence must ensure that all unit processes and apparatus used for the purpose of undertaking the listed activity in question, and all appliances and mitigation measures for preventing or reducing atmospheric emissions, are at all times properly maintained and operated.

(b) No building, plant or site of works related to the listed activity or activities used by the licence holder shall be extended, altered, or added to the listed activity without an environmental authorisation from the competent authority. The investigation, assessment, and communication of potential impact of such an activity must follow the assessment procedure as prescribed in the Environmental Impact Assessment Regulations published in terms of Section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended.

(c) Any changes in processes or production increases, by the licence holder, will require prior approval by the licensing authority.

(d) Any changes to the type and quantities of input materials and products, or to production equipment and treatment facilities will require prior written approval by the licensing authority.

(e) The licence holder must, in writing, inform the licensing authority of any change of ownership of the enterprise. The licensing authority must be informed within thirty (30) working days after the change of ownership.

(f) The licence holder must immediately on cessation or decommissioning of the listed activity inform in writing the licensing authority.

### 4.2. General duty of care

(a) The holder of the Licence must, when undertaking the listed activity, adhere to the duty of care obligations as set out in section 28 of the NEMA.

(b) The Licence holder must undertake the necessary measures to minimize or contain the atmospheric emissions. The measures are set out in section 28(3) of the NEMA as amended.

(c) Failure to comply with the above condition is a breach of the duty of care, and the Licence holder will be subject to the sanctions set out in section 28 of the NEMA as amended.

### 4.3. Sampling and/or analysis requirements

(a) Measurement, calculation and/or sampling and analysis shall be carried out in accordance with any nationally or internationally acceptable standard. A different method may be acceptable to the licensing

authority as long as it has been consulted and agreed to the satisfactory documentation necessary in confirming the equivalent test reliability, quality and equivalence of analyses.

(b) The licence holder is responsible for quality assurance of methods and performance. Where the holder of the licence uses internal or external laboratories for sampling or analysis, accredited laboratories and personnel shall be used. The certified copy of accreditation of the internal or external laboratory must be submitted to the license authority annually including its external audits certification.

(c) The licence holder must provide the licensing authority on request with raw data obtained during sampling and /or analysis including methodology used to reach to the final results submitted to the Licensing Authority.

### 4.4. General requirements for licence holder

(a) The licence holder is responsible for ensuring compliance with the conditions of this licence by any person acting on his, her or its behalf including but not limited to an employee, agent, sub-contractor or person rendering a service to the holder of the licence.

(b) The licence does not relieve the licence holder to comply with any other statutory requirements that may be applicable to the carrying on of the listed activity.

(c) A copy of the licence must be kept at the premises where the listed activity is undertaken. The licence must be made available to the Environmental Management Inspector representing the licensing authority who requests to see it.

(d) The licence holder must inform, in writing, the licensing authority of any change to its details including the name of the contact person, postal address and/or telephonic details within fourteen (14) working days after such change has been effected.

### Special Conditions

(e)The licence holder must attend and participate quarterly in the Highveld Priority Area Implementation Task Team and Air Quality Stakeholder Forum Meetings for the implementation of the Highveld Priority Air Quality Management Plan.

(f) The licence holder must annually report atmospheric emissions on the National Atmospheric Emission Inventory System (NAEIS) https://saaelip.environment.gov.za for the preceding year in terms of GNR 283 in Government Gazette 38633 of 02 April 2015.

### 4.5. Statutory obligations

The licence holder must comply with the obligations as set out in Chapter 5 of NEMAQA (Act no. 39 of 2004) as amended.

## 5. NATURE OF PROCESS

### 5.1. Process Description

The first unit of Eskom Kusile Power Station came into commercial operation in August 2017 and subsequent units were scheduled to be commissioned at 9 to 12 month intervals. The Station comprises six nominally rated 800 MW units or boiler-turbine-generator sets. The total station capacity is 4 800 MW gross output.

Each pulverized coal boiler has five mills allocated to it and nominally, four are required for the boiler to reach full load. All the mills are vertical spindle mills and each mill is fed from its own dedicated coal storage bunker. The bunkers are supplied by three (3) incline conveyors coming from the coal yard silos which are fed by conveyors from the open coal stockyard. The coal stockyard is located on the Station site. Coal is supplied to the stockyard by trucks until the overland conveyor from the mine is in place.

From the mills, which grind the coal into fine particles known as pulverized fuel (PF), PF is fed into the boilers via PF burners. To bring the boiler up to maximum operation, the boiler temperature has to be high enough to facilitate efficient combustion of PF. Correct boiler temperatures are achieved by starting-up the boiler using heavy fuel oil, which is in turn ignited by propane fired igniters. The boiler is brought up to high temperature using oil burners before PF is injected into the boiler. The oil burners also provide initial ignition of the pulverized coal, and flame stabilization for the coal during low firing rates. During start-up and at low loads, due to the fact that fuel oil is being burnt, exit emissions will greatly exceed those produced under normal operating conditions i.e. when only PF is burnt.

Within the boiler, demineralised water is heated to form super-heated steam which is sent to the turbines to turn the turbine blades. The turbine blades are attached to a shaft which rotates the generator to generate electricity. The cooled steam from the turbine exhaust is sent to the air-cooled condenser (ACC). In the air-cooled condenser, low pressure steam from the steam turbine exhaust is fed through a series of large diameter ducts to multiple banks of finned tubes in a large "A-frame" array. Axial fans blow ambient cooling

air over the finned tubes. A heat exchange takes place and the steam condenses back into demineralised water or condensate, which is sent back to the boiler.

Once PF has been combusted in the boilers, two types of ash result: fly ash, which stays buoyant in the exit flue gas stream and coarse ash (or bottom ash) which is too heavy to remain airborne and falls into the hopper at the bottom of the boiler.

Once in the boiler hoppers, coarse ash is quenched using water in a submerged scraper conveyor and sent via belt conveyors to a radial stacker. Fly ash, or particulate matter (PM), is captured using Pulse Jet Fabric Filter (PJFF) plant abatement technologies. The captured ash is pneumatically conveyed from the PJFF hoppers to fly ash silos where the ash is conditioned and deposited onto the same belt conveyors carrying the coarse ash to the radial stacker.

Due to the catastrophic chimney failure, units 1 to 3 require three temporary stacks (unit 1 associated stack 07, unit 2 associated with stack 08 and unit 3 associated with stack 09) will required to enable all 3 units to be brought back online to support the South African grid in the fastest possible timeframe. The possibility of demolishing the permanent chimney and rebuilding has not been ruled out. This option will only be eliminated once the 151m level within the chimney can be secured to the 181m level. The current design and placement of the temporary chimneys excludes the use of the existing flue gas desulphurization (FGD) plant. This is due to the proximity of the absorber to the permanent chimneys, should demolishing be required the surrounding infrastructure will be compromised. This operating condition will only be applicable for a limited duration, until the permanent stacks are remediated.

Once the permanent stack has been remediated and under normal operating conditions, Sulphur Dioxide ($SO_2$) is scrubbed out of the flue gas downstream of the Pulse Jet Fabric Filter (PJFF) plant using a limestone based, wet, forced oxidation flue gas desulphurization (FGD) plant, before the flue gas exits the stacks at a height of 220m above ground level.

The temporary stacks for unit 1 to 3 have been fully completed and commissioned. Unit 3 returned to service (operation) on the 30th of September 2023. Unit 1 returned to service (operation) on the 16th of October 2023.

Unit 2 returned to service on the 28th of November 2023. Unit 5 is still being synchronised with the grid and has been taken to optimization. The planned commercial date of operation for Unit 5 is in August 2024.

A complete limestone handling system is provided to receive, store, and deliver limestone to the FGD reagent preparation plant. The reagent preparation plant pulverizes the limestone and prepares a slurry for use in the FGD. The FGD waste by-product (gypsum) is dewatered using vacuum belts and thereafter conveyed via belt conveyors and comingled with the coarse ash and the conditioned fly ash. The content of the gypsum is ≥ 95% $CaSO_4$ by weight. The FGD plant is able to accommodate a density of 1170 kg/m$^2$ of gypsum and when the density reaches 1200 kg/m$^2$, the FGD plant is "bled", i.e. the release gypsum from the FGD absorbers. The coming waste product is delivered to a radial stacker via overland conveyors, or to an emergency ash dump, should the overland conveyors or radial stacker be out of service. Water from the FGD plant is taken to a dewatering plant where a filter press process takes place.

The combined waste product is deposited on the ground by the radial stacker in a dedicated open top concrete structure, and loaded onto trucks using front-end loaders. The trucks will deliver the waste product to the ash/gypsum co-disposal.

During commissioning, it is expected that not all pollution abatement equipment will be operational. The station will run on a continuous basis, but load will be higher during times of high electricity demand. However, it should be noted that for the first six to twelve months the station will operate in a load following mode in order to facilitate the commissioning and optimization of the each unit, however it is to be expected that multiple light up opportunities will be taken to address any commissioning noted defects. The planned timeframes for outages to enable operation/commercialisation of permanent stacks after the repair of the FGD will be communicated with Authorities.

## 5.2. Facility Wide Listed Activities with Regulatory Applicability

| Category | Subcategory | Description of the Listed Activity |
|---|---|---|
| Category 1: Combustion Installations | Subcategory 1.1: Solid Fuel Combustion Installation | Solid fuels combustion installations used primarily for steam raising or electricity generation. |

| | | |
|---|---|---|
| Category 2: Petroleum Industry, the production of gaseous and liquid fuels as well as petrochemicals from crude oil, coal, gas or biomass | Subcategory 2.4: storage and Handling of Petroleum Products | Petroleum products storage tanks and product transfer facilities. |
| Category 5: Mineral Processing, Storage and Handling | Subcategory 5.1: Storage and Handling of Ore and Coal | Storage and handling of ore and coal not situated on the premises of a mine or works as defined in the Mines Health and Safety Act 29/1996. |

### 5.3. Unit Process or Processes

| Unit Process | Process function | Batch or Continuous Process |
|---|---|---|
| Boilers | Pulverized coal boiler unit 1 to 6 | Continuous |
| Coal stockpile | Storage of coal | Continuous |
| Fuel oil storage tanks | Storage and handling of fuel oil | Continuous |
| Coal conveyor | Coal conveyor | Continuous |
| Ash Conveyor | Ash conveyor | Continuous |
| Ash Dump | Ash, gypsum and filter press dump | Continuous |
| Ash Silo | Ash containment | Continuous |
| Limestone Storage area | Limestone storage | Continuous |
| Pulse Jet Fabric Filter Plant | Abatement technology for PM | Continuous |
| Flue Gas Desulphurization Plant | Abatement technology for $SO_2$ | Continuous |
| Gypsum conveyor | Gypsum conveyor | Continuous |

## 5.4. Hours of operations

| Unit Process | Operating Hours | Days of Operation per Year |
|---|---|---|
| Boilers | 24 | 365 |
| Coal stockpile | 24 | 365 |
| Fuel oil storage tanks | 24 | 365 |
| Coal conveyor | 24 | 365 |
| Ash Conveyor | 24 | 365 |
| Ash dump | 24 | 365 |
| Ash Silo | 24 | 365 |
| Limestone storage area | 24 | 365 |
| Pulse Jet Fabric Filter Plant | 24 | 365 |
| Flue Gas Desulphurization Plant | 24 | 365 |
| Gypsum conveyor | 24 | 365 |

## 5.5. Graphical Process Information

The following diagrams depicting the graphical operation for the entire operation at Eskom Kusile Power Station:

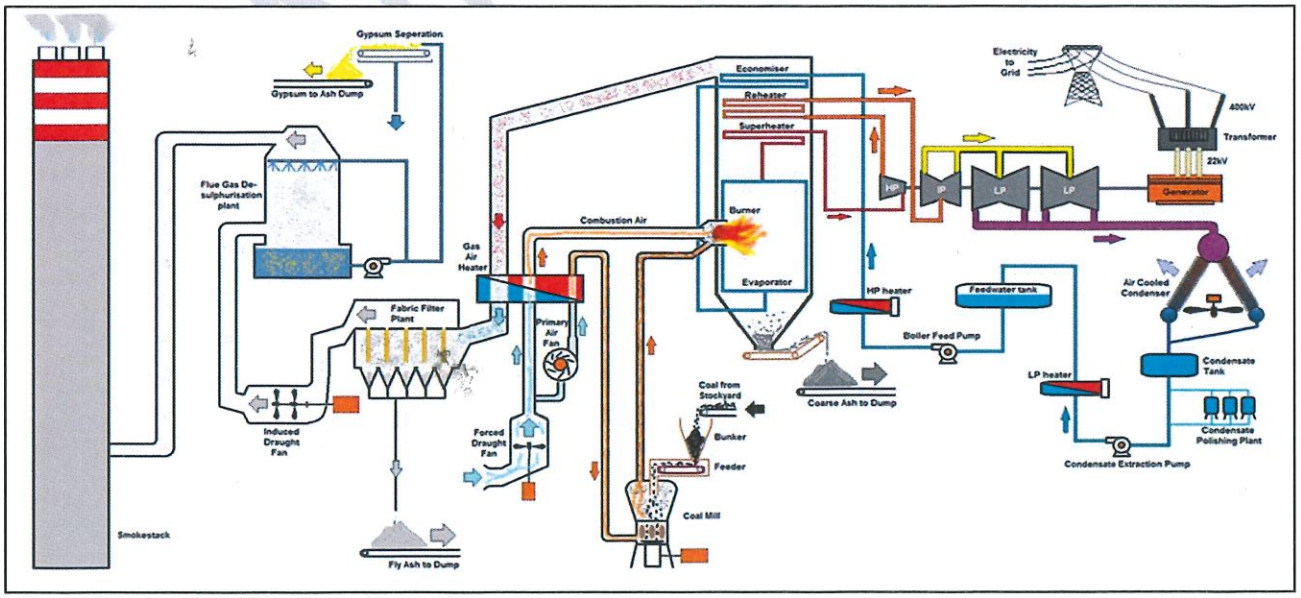


*Figure 2: Graphical Process Flow diagram*

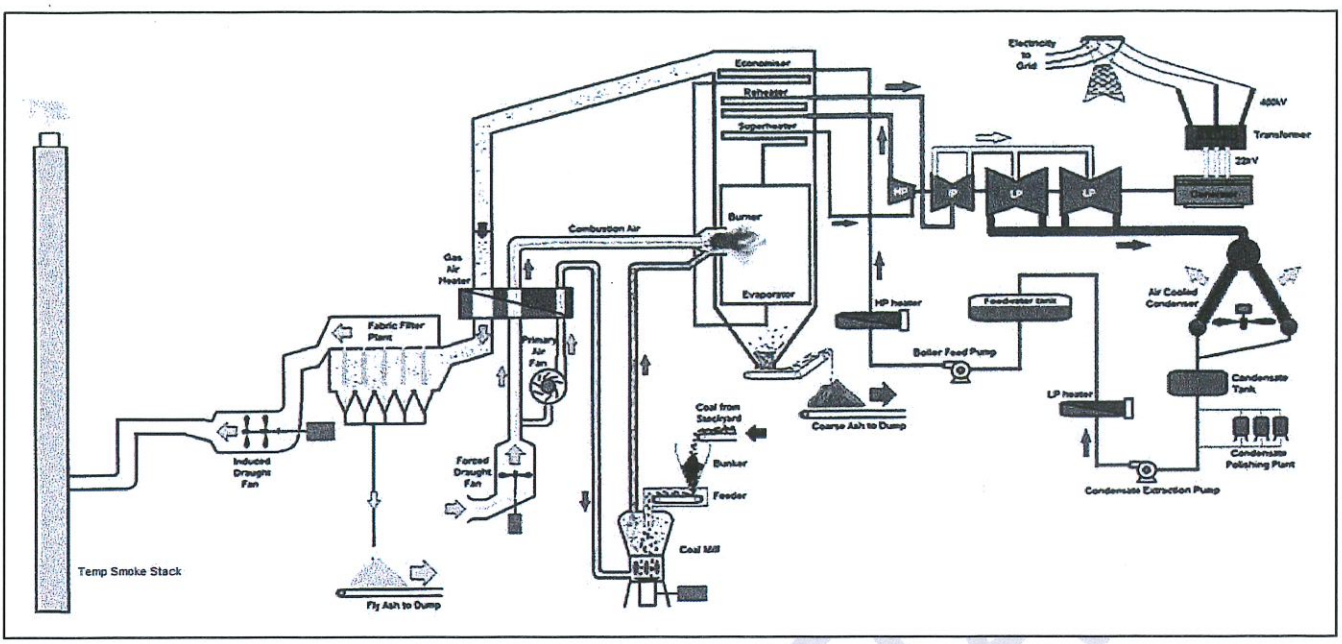


*Figure 3: Graphical process flow diagram during temporal operation (by passing FGD)*

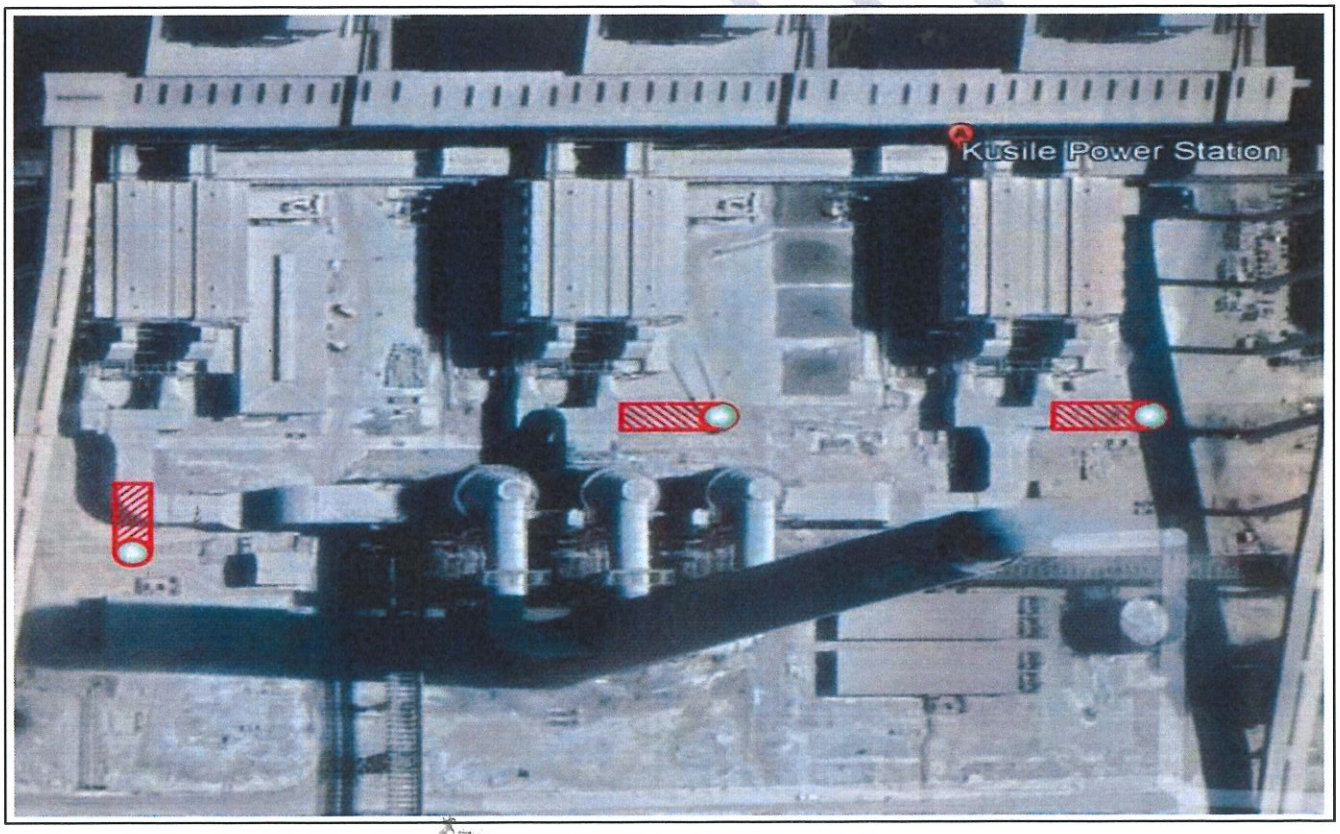


*Figure 4: Location of temporary stacks (SV07, SV08 and SV09)*

## 6. RAW MATERIALS AND PRODUCTS

### 6.1. Raw Materials used

| Raw Material Type | Maximum Permitted Consumption Rate (Quantity) | Units (quantity/period) |
|---|---|---|
| Coal | 1 818 083 | tons/month |
| Fuel oil | 5 533 | tons/month |
| Limestone | 72 017 | tons/month |

### 6.2. Production Rates

| Product Name | Maximum Permitted Production Capacity (Quantity) | Units (quantity/period) |
|---|---|---|
| Electricity | 4 800 / 3 571 | Megawatts / Gigawatt Hours (GWh) per month |

### 6.3. By Product Rates

| Product Name | Actual Production Capacity | Units (quantity/period) |
|---|---|---|
| Ash | 796 300 | tons/month |
| Gypsum | 155 100 | tons/month |

### 6.4. Materials used in energy sources

| Materials for Energy Source | Maximum Permitted Consumption Rate | Designed Consumption Rate | Actual Consumption Rate | Sulphur % | Ash % |
|---|---|---|---|---|---|
| Coal | 1 818 083 | 1 818 083 | 1 818 083 | 1.3 | 38 |
| Fuel oil | 5 533 | 5 533 | 5 533 | 3.5 | 0.1 |

## 6.5 Emission Units

### 6.5.1. Emission Unit - Stack Parameters (Point Source)

| EU Code | Stack Name | Latitude (decimal degrees) South | Longitude (decimal degrees) East | Height of Release Above Ground (m) | Height Above Nearby Building (m) | Diameter at Stack Tip / Vent Exit (m) | Actual Gas Exit Temperature (°C) | Actual Gas Volumetric Flow ($m^3/s$) | Actual Gas Exit Velocity (m/s) | Emission Hours | Type of Emission (Continuous / Batch) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EU001 | SV01 | -25.91913768 S | 28.91670951 E | 220 | 100 | 8.9 | 48 | 1115.86 | 17.94 | 24 | Continuous |
| EU002 | SV02 | -25.91913768 S | 28.91670951 E | 220 | 100 | 8.9 | 48 | 1115.86 | 17.94 | 24 | Continuous |
| EU0021 | SV03 | -25.91913768 S | 28.91670951 E | 220 | 100 | 8.9 | 48 | 1115.86 | 17.94 | 24 | Continuous |
| EU0022 | SV04 | -25.91719534 S | 28.91900556 E | 220 | 100 | 8.9 | 48 | 1115.86 | 17.94 | 24 | Continuous |
| EU0024 | SV05 | -25.91719534 S | 28.91900556 E | 220 | 100 | 8.9 | 48 | 1115.86 | 17.94 | 24 | Continuous |
| EU0025 | SV06 | -25.91719534 S | 28.91900556 E | 220 | 100 | 8.9 | 48 | 1115.86 | 17.94 | 24 | Continuous |
| EU001 | SV07 (Temporary Stack) | -25.92002675 S | 28.91642315 E | 116 | 0 | 7 | 141 | 1 613.89 | 41.93 | 24 | Continuous |
| EU002 | SV08 (Temporary Stack) | -25.91038238 S | 28.91719491 E | 116 | 0 | 7 | 141 | 1 613.89 | 41.9 | 24 | Continuous |
| EU0021 | SV09 (Temporary Stack) | -25.91880249 S | 28.91781662 E | 116 | 0 | 7 | 141 | 1 613.89 | 41.9 | 24 | Continuous |

### 6.5.2. Emission Unit - Area/Line Source

| EU Code | Source Name | Source Description | Latitude | Longitude | Height of release Above Ground (m) | Length of Area (m) | Width of Area (m) | Emission Hours | Type of Emissions |
|---|---|---|---|---|---|---|---|---|---|
| EU0027 | Coal stockpiles | **Emission Unit Type**: Storage of coal<br><br>**Description**: Storage and Material handling area | -25 9199 | 28.9176 | 220 | 1000 | 500 | 24 | Continuous |
| EU0027 | Coal conveyor | **Emission Unit Type:** Coal conveyor transfer points<br><br>**Description:** Fugitive dust | 28° 55'18" E | 25° 55'18" S | 30 | 2150 | 10 | 24 | Continuous |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | emissions from the conveyor | | | | | | | |
| EU0026 | Ash conveyor | **Emission Unit Type:** Conveyor transfer points<br><br>**Description**: Fugitive dust emissions from the Conveyors that contain ash | -25.789444 | 29.500555 | N/A | N/A | N/A | 24 | Continuous |
| EU0028 | Ash dump | **Emission Unit Type**: Ash dump<br><br>**Description**: Fugitive emissions arising from ash transportation and storage | -25. 9611 | 28.9131 | 130 | 3350 | 2825 | 24 | Continuous |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| EU0029 | Fuel oil tanks | **Emission Unit Type:** Fuel oil tanks vents<br><br>**Description:** VOCs | Tank 1 -25.921064 Tank 2 -25.920605 | Tank 1 -28.915701 Tank 2 28.91596 | 18.21 | N/A | N/A | 24 | Continuous |
| EU0032 | Limestone storage pile | **Emission Unit Type:** storage and handling of limestone<br><br>**Description:** Fugitive emissions from receiving of limestone | -25. 9248 | 28.9144 | 18 | 40 | 320 | 24 | Continuous |
| EU0032 | Limestone Storage Silo | **Emission Unit Type:** Limestone storage silo | -25.9248 | 28.9144 | 18 | 40 | 320 | 24 | Continuous |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Description:** Fugitive emissions from storage and handling of limestone | | | | | | | |
| EU0033 | Gypsum | **Emission Unit Type:** Gypsum conveyor transfer points **Description:** Fugitive dust from the conveyors that contain gypsum | 28°54'59" E | 25°55'20" S | 10 | 510 | 10 | 24 | Continuous |

## 7. CONTROL DEVICES, EMISSION UNITS, AND REPORTING GROUPS

### 7.1. Control Devices

| Emission Unit | | | | Control Device | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Associated Source Code | Appliance / Process Equipment Number | Appliance Serial Number | Appliance Type / Description | Control devices Name and Model | Control Devices Manufacture Date | Commission Date | Date of Significant Modification / Upgrade | Device Type | Design Capacity Control Efficiency (%) | Minimum Control Efficiency (%) | Minimum Utilisation (%) |
| CD Unit 1 - 6<br>Flues 1 - 6 | CD001 | CD-S1 | Pulse Jet Fabric Filter Plant | PD-X-14-66-8250 | 2016 | 07/31/2016 | N/A | Filter, Fabric | 100 | 99 | 100 |
| CD Unit 4 - 6<br>Flues 4 - 6 | CD001 | CD-S2 | Flue Gas Desulfurization Plant | DDHTK | 2018 | 07/31/2018 | N/A | Flue Gas Desulfurization | 90 | 80 | 100 |

### 7.2. Reporting / Emission Unit – Maximum Emission Rates (Under Normal Working Conditions)

| RG/EU Code | Listed Activity | Pollutant Name | Maximum Release Rate ($mg/Nm^3$) | Date to be Achieved By | Average Period (Drop-down: Instantaneous, Hourly, Daily, Monthly, Annually) | Duration of Emissions (Hours) |
|---|---|---|---|---|---|---|
| EU001<br>(SV07 – Temporary Stack) | Subcategory 1.1 | PM | 50 | Immediately | Daily | 24 hours |
| | | $SO_2$ | 1000 | 31 March 2025 | Daily | 24 hours |
| | | | 3500 | Immediately | Daily | 24 hours |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | $NO_x$ | 750 | immediately | Daily | 24 hours |
| EU002<br><br>(SV08 – Temporary Stack) | Subcategory 1.1 | PM | 50 | Immediately | Daily | 24 hours |
| | | $SO_2$ | 1000 | 31 March 2025 | Daily | 24 hours |
| | | | 3500 | Immediately | Daily | 24 hours |
| | | $NO_x$ | 750 | Immediately | Daily | 24 hours |
| EU0021<br><br>(SV09 – Temporary Stack) | Subcategory 1.1 | PM | 50 | Immediately | Daily | 24 hours |
| | | $SO_2$ | 1000 | 31 March 2025 | Daily | 24 hours |
| | | | 3500 | Immediately | Daily | 24 hours |
| | | $NO_x$ | 750 | Immediately | Daily | 24 hours |
| EU0022 | Subcategory 1.1 | PM | 50 | Immediately | Daily | 24 hours |
| | | $SO_2$ | 1000 | Immediately | Daily | 24 hours |
| | | $NO_x$ | 750 | Immediately | Daily | 24 hours |
| EU0024 | Subcategory 1.1 | PM | 50 | Immediately | Daily | 24 hours |
| | | $SO_2$ | 1000 | Immediately | Daily | 24 hours |
| | | $NO_X$ | 750 | Immediately | Daily | 24 hours |
| EU0025 | Subcategory 1.1 | PM | 50 | Immediately | Daily | 24 hours |
| | | $SO_2$ | 1000 | Immediately | Daily | 24 hours |
| | | $NO_X$ | 750 | Immediately | Daily | 24 hours |

**Point source – Operating Requirements**

7.2.1. Eskom Kusile Power Station must report all non – compliance with the conditions stipulated in this Atmospheric Emission Licence.

7.2.2. A copy of this AEL shall be retained at a place convenient to be produced in case the authorities would like to view it.

7.2.3. The Licence holder shall notify the Licensing Authority in writing pertaining to any upgrades or building alterations associated with the listed activity, prior taking the action.

7.2.4. The Licence holder must comply with the National Greenhouse Gas Emission Reporting Regulations No. 40762 Government Gazette 03 April 2017.

7.2.5. All units must be fitted with continuous emission monitoring equipment for PM; $SO_2$ and $NO_x$.

7.2.6. Any abnormalities experienced shall be part on the normal monthly reporting and be forwarded to the Licensing Authority.

7.2.7. In the event where there is an equipment failure, malfunction or break down, the responsible person/licence holder shall reduce the load to the extent that non-compliance to the licence conditions are avoided and if it still continues, the operation shall be halted.

7.2.8. The number of hours for which emissions exceeded the limit shall be reported immediately to the Licensing Authority.

7.2.9. Emissions must be measured and reported to Licensing Authority **as per condition 7.4** of the Atmospheric Emission Licence.

7.2.10. The licence holder must at all times prevent any deviation from the normal conditions of operations that may result in emission exceedances from the specified limit values. In case there is potential of such, the loading shall be scaled down or operations shall be halted completely if there is a likelihood that continued operation may result in harm to human health and well-being or otherwise be detrimental to the environment.

7.2.11. The licence holder shall be liable to prevent and mitigate against the risk of harm to human health and the environment and shall put in place measures necessary to prevent and/ or mitigate against such risks.

7.2.12. Where continuous emission monitoring is required for a listed activity-

(a) The averaging period for the purpose of compliance monitoring shall be expressed on a daily average basis or as prescribed in the Atmospheric Emission License.

(b) The emission monitoring system must be maintained to yield a minimum of 80% valid hourly average values during the reporting period.

(c) The emission monitoring system must be maintained and calibrated as per the original equipment manufacture's specifications.

(d) Continuous emission monitoring systems must be calibrated by a SANAS accredited laboratory at least every two (2) years.

7.2.13. The coal specifications shall not be lowered in regards to Service Level Agreements with coal supply contractors and has to undergo pre-qualification, i.e. has to be tested by an accredited laboratory in order to ascertain that it complies with the sulphur and ash content specified in condition 6.4, prior it being used by the facility.

7.2.14. **Special Minimum Emission Standards Postponement Conditions**:

Eskom Kusile Power station must establish and implement the following mitigation measures until the return of the Flue Desulphurisation Gas (FGD):

(a) The License holder must implement all measures, activities and actions stipulated in the mitigation plan.

(b) The Licence holder must take measures to mitigate harm caused by the exposure of $SO_2$ to its employees and surrounding communities. These measures must at minimum include independent health screenings and referral to appropriate public health facilities for treatment where necessary, as stipulated in the exemption letter dated 14 March 2023 issued by the Minister of Forestry, Fisheries, and the Environment.

(c) The Licence holder must submit monthly progress reports on the implementation of the compliance road map and commitments made towards recommencing of the FGD in support of the postponement application for Kusile Power Station to the licensing authority and the National Air Quality Officer.

(d) The Licence holder must conduct ambient air quality monitoring at Balmoral (at or around Laerskool Balmoral), Wilge (at the Chicken Farm Ambient Air Quality Monitoring Station), Phola, Sibongindawo (at or around the primary school) and Ogies (at or around the Ogies Clinic).

(e) Monitoring should focus on pollutants with significant acute health impacts, including $SO_2$, $NO_2$ and $O_3$. Exceedances of the National Ambient Air Quality Standards for the aforementioned air pollutants must be immediately reported to the licensing authorities and the Department of Forestry, Fisheries and the Environment (DFFE). Ambient air quality monitoring data must be transferred on real time basis to the South African Air Quality Information System (SAAQIS).

(f) The license holder must take necessary measures to reduce emissions when concentration reach Disabling/Trigger Levels from the monitoring stations listed in Condition 7.2.13 (e).

(g) The License holder must make temporary stacks' continuous monitoring data accessible in real time, to the licensing authority and National Air Quality Officer for the following parameters:

(i) Stack $SO_2$ concentration ($mg/Nm^3$)

(ii) Stack temperature ($^oC$)

(iii) Stack oxygen content (%)

(iv) Flue gas volumetric flowrate ($Nm^3/hr$)

(v) $SO_2$ mass flowrate (tons/hr)

(i) The Licence holder must implement the Health screening programme to identify people with air pollution related diseases, including asthma, chronic bronchitis, emphazyma; Screening has to consider confidentiality and ethics approval is therefore required. Ethically acceptable screening methodology/tools must be used. The Licence Holder must provide evidence of the health screening to the licensing authority and National Air Quality Officer on a quarterly basis.

(j) Based on the Health Screening programme, the Licence holder must implement the Emergency Response Plan and submit a report, as per condition 7.2.14 (k), to the licensing authority and the National Air quality Officer.

(k) The Emergency Response Plan must include but not limited to:

1. Identification and ensuring the availability of health care facilities such as clinics and hospitals (both public and private) in the receiving area and health facilities must be notified in event of emergencies;
2. Ensure the availability of emergency services and assurance of their adequacy.

3. The License holder's emergence response resources which will be available in case of emergence
4. Emissions management/reduction measures that will be put in place in case of emergency

(l) The Licence holder must report immediately to the licensing authority and DFFE on incidents and responses to $SO_2$ episodes above the agreed trigger levels according to the applicable legislation.

(m) The Licence holder's failure to comply with these conditions may result in the licensing authority revoking or suspending the licence in terms of Section 47A of NEM: AQA.

(n) This license is issued subject to Eskom Kusile Power station in complying with the compliance road map commitments made towards recommencing of the west stack and its FGD.

7.2.16. **Special Appeal decision conditions**:

a) Eskom Kusile Power Station must submit monthly updates to the National Air Quality Officer on the progress of the repairs to the permanent stacks, for the duration of the operation of the temporary stacks. These reports must be made publicly available on Eskom's official website. This is to ensure that the postponement is of a temporary nature and Eskom Kusile Power Station is held to account.

b) Kusile Power Station's Health Screening and Temporary Stack Emissions Monitoring Reports for the increased $SO_2$ emissions and associated health impacts must be made publicly available on monthly basis on Eskom's official website for the duration of the operation of the temporary stacks.

c) Eskom Kusile Power Station must do monitoring of the animal health (poultry and pig) at the properties of Fairacres Products Proprietary Limited, GHB Farms Proprietary Limited and Topigs Norsvin SA Proprietary Limited, for the duration of the operation of the temporary stacks.

7.2.17. In line with the Minister's Appeal Decision as indicated in 7.2.14 above, the facility is required to submit all required monthly reports due to the National Air Quality Officer (and the Licensing Authority) after the end of each monthly reporting period.

**7.3. Reporting Group / Emission Unit – maximum emission rates (under start-up, maintenance and shut-down conditions) there are no abnormal limit, therefore exceedance above maximum release rate shall be reported to the licensing authority.**

| RG/EU Code | Listed Activity | Pollutant Name | Maximum Release Rate (mg/Nm³) | Average Period (Drop-down: Instantaneous, Hourly, Daily, Monthly, Annually) | Maximum Gas Volumetric Flow (m³/hr) | Maximum Gas Exit Velocity (m/s) | Emission Hours | Permitted Duration of Emissions |
|---|---|---|---|---|---|---|---|---|
| All point source code | Subcategory 1.1 | PM | 50 | Daily | N/A | N/A | N/A | Within 48 hours after commission of plant or equipment break-down/maintenance. |
| | | $SO_2$ | 1000 | | | | | |
| | | | 3500 | | | | | |
| | | $NO_X$ | 750 | | | | | |

**The following conditions must be adhered to at a minimum during start-up, maintenance and shutdown conditions:**

7.3.1. The Licence Holder must take all reasonable measures to control atmospheric emissions during start-up, maintenance and shutdown operations.

7.3.2. Normal start-up, break-down/maintenance/upset and shut-down conditions shall not exceed a period of 48 hours. Should normal start-up, breakdown/maintenance and shut down conditions exceed a period of 48 hours, Section 30 of National Environmental Management Act, 107 of 1998 (as amended) shall apply.

7.3.3. In order to put into effect section 42 of the Act, the licence holder shall, on receipt of the Atmospheric Emission Licence, undertake an investigation to measure, monitor and report on point source emissions released during start-up, maintenance, and shut-down conditions.

7.3.4. In order to put into effect the provision of section 42 of the Act, the licensing Authority may from time to time review the conditions set herein and may set maximum emission limits to be adhered to by the licence holder during start-up, maintenance, and shutdown conditions.

7.3.5. The licence holder shall be liable to prevent and mitigate against the risk of harm to human health and the environment and shall put in place measures necessary to prevent and/ or mitigate against such risks.

7.3.6. PM, $SO_2$ and $NO_x$ emissions should be below the limit value within 24 hours of synchronizing with the grid.

7.3.7. Reporting on particulate emissions to commence 24 hours after the unit has synchronized with the grid during start–up.

7.3.8 During start –up, maintenance and shut-down, or in the event where there is an indication of adverse impacts to human health and/ or the environment the licence holder must take appropriate measures to avoid such adverse impacts from occurring and/ or recurring.

7.3..9. Licence holder is operating in the Highveld Priority Area and to put into effect the provision of section 42 of the Act, the Licensing Authority may from time to time review the conditions set herein and may set maximum emission limits to be adhered to by the Licence Holder during start-up, maintenance and shut-down conditions.

7.3.10. The licence holder must report on abatement utilization and efficiency monthly.

7.3.11. Abatement equipment must be maintained to ensure that is operational when the associated boiler is under normal operating conditions. The utilization values stated in Table 7.1 are applicable when the associated boiler is under normal operating conditions.

**7.4. Reporting Group / Emission Unit – emission monitoring and reporting requirements**

| RG/EU Code | Listed Activity | Pollutant | Emission Sampling/ Monitoring Method | Sampling Testing Frequency | Monitoring Duration) | Parameters to be Measured | Parameters to be Reported | Reporting Frequency |
|---|---|---|---|---|---|---|---|---|
| EU001<br>EU002<br>EU0021 | Subcategory 1.1 | PM<br>$SO_2$<br>$NO_x$ | Isokinetic sampling as per Annexure A of GN893 of 22 November 2013 | Every two yearly | As per Annexure A of GN893 of 22 November 2013 3 tests, each test must be | PM, $SO_2$, $NO_x$ | PM, $SO_2$, $NO_x$ | Annual |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| EU0022<br>EU0024 | | | | | minimum, one hour and maximum eight hours | | | |
| EU0025 | Subcategory 1.1 | PM<br>$SO_2$<br>$NO_x$ | Continuous Emissions Monitoring as per Annexure A of GN893 of 22 November 2013 | Continuous Emissions Monitoring | Continuous, min. 80% valid hourly averages. | PM, $SO_2$, $NO_x$ | PM, $SO_2$, $NO_x$ | Monthly |

**7.5. Reporting Group / Emission Unit (Area and/or line source) – management and mitigation measures**

| RG/EU Code | Area and/or Line Source Description | Description of Specific Measures | Timeframe for Achieving Required Control Efficiency | Method of Monitoring Measures Effectiveness | Contingency Measures |
|---|---|---|---|---|---|
| EU0028 | Ash dump | Dust suppression | NEM: AQA 39 of 2004; National Dust Control Regulations | Fall Out Dust Monitoring and report on or before 30th of every month | In line with approved EMP, Dust Management Plan |
| EU0027 | Storage and handling of coal stockpile | Dust suppression | NEM: AQA 39 of 2004; National Dust Control Regulations | Fall Out Dust Monitoring and report on or before 30th of every month | In line with approved EMP, Dust Management Plan |
| EU0029 | Storage and handling of fuel oil | Enclosed tanks and visual Inspection | NEM:AQA 39 of 2004 | NEM:AQA 39 of 2004 | In line with the approved, Leak detection and repair Program. |

| | | | | | |
|---|---|---|---|---|---|
| EU0030 | Ash Storage Silo | Provide maintenance plan of silos within 60 days of issue of the licence | Maintenance Plan | Visual Inspections | In line with the Eskom approved Maintenance plan |
| EU0026 & EU0031 | Ash and Coal Conveyor belts | Conveyors are covered and Visual inspections | NEM: AQA 39 of 2004; National Dust Control Regulations | Fall Out Dust Monitoring and report on or before 30th of every month | In line with approved EMP, Dust Management Plan |
| EU0032 | Limestone storage | Dust suppression | NEM: AQA 39 of 2004; National Dust Control Regulations | Fall Out Dust Monitoring and report on or before 30th of every month | In line with approved EMP, Dust Management Plan |
| EU0033 | Gypsum | Dust suppression | NEM: AQA 39 of 2004; National Dust Control Regulations | Fall Out Dust Monitoring and report on or before 30th of every month | In line with approved EMP, Dust Management Plan |

(a) The following special arrangement shall apply for the storage and handling of raw material, intermediate and final products with a vapour pressure greater than 14 kPa at operating temperature: - Leak detection and repair (LDAR) program approved by licensing authority must be instituted.

(b) The following transitional and special arrangement shall apply for control of TVOC's from storage of raw materials, intermediate and final products with vapour pressure of up to 14kPa at operating temperature, except during loading and offloading. (Alternative control measures that can achieve the same or better results may be used) – (i) storage vessels for liquids must be of the following type:

| | |
|---|---|
| Application | All permanent immobile liquid storage facilities at a single site with a combined storage capacity of greater than 1 000 cubic metres |
| True vapour of contents at product storage temperature | type of tank or vessels |
| Type 1:Up to 14 kPa | Fixed roof tank vented to atmosphere, or as per type 2 and 3 |
| Type 2:Above 14 kPa and up to 91 kPa with a throughput of less than 50 000 m3 per annum | Fixed roof tank with pressure vacuum vents fitted as a minimum to prevent "breathing" losses or as per Type 3 |
| Type 3: Above 14 kPa and up to 91 kPa with a throughput of greater than 50 000 m3 per annum | (a) External floating roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20 m, or<br>(b) Fixed roof tank with internal floating deck/roof fitted with primary seal, or<br>(c) Fixed roof tank with vapour recovery system. |
| Type 4: Above 91 kPa | Pressure vessel |

(i) The roof legs, slotted pipes and/ or dipping well on floating roof tanks (except for domed floating roof tanks or internal floating roof tanks) shall have sleeves fitted to minimize emissions

(ii) Relief valves on pressurised storage should undergo periodic checks for internal leaks. This can be carried out using portable acoustic monitors or if venting to atmosphere with an accessible open end tested with a hydrocarbon analyser as part of the LDAR programme.

(c) The following special arrangement shall apply for the storage and handling of ore and coal not situated on the premises of a mine or works as defined in the Mines Health and Safety Act 29 of 1996:

(d) Three months running average of dust fall not to exceed limit value for adjacent land use according to Dust Control Regulations promulgated in section 32 of the NEM: AQA, 2004, in eight principal wind directions.

## 7.6. Routine reporting and record-keeping

### *Complaints register*

The licence holder must maintain a complaints register at its premises, and such register must be made available for inspections. The complaints register must include the following information on the complainant, namely, the name, physical address, telephone number, date and the time when the complaint was registered. The register should also provide space for noise, dust and offensive odours complaints.

Furthermore, the licence holder is to investigate and, monthly report to the licensing authority in a summarised format on the total number of complaints logged. The complaints must be reported in the following format with each component indicated as may be necessary:

**(a) Source code / name;**

**(b) Root cause analysis;**

**(c) Calculation of impacts / emissions associated with incidents and dispersion modelling of pollutants, where applicable;**

**(d) Measures implemented or to be implemented to prevent recurrence; and**

**(e) Date by which measure will be implemented.**

The licensing authority must also be provided with a copy of the complaints register. The record of a complaint must be kept for at least 05 (five) years after the complaint was made.

### *Annual reporting*

The licence holder must complete and submit to the licensing authority an annual report. The report must include information for the year under review (i.e. annual year-end of the company). The report must be submitted to the licensing authority not later than 60 (sixty) days after the end of each reporting period. The annual report must include, amongst others, the following items:

(a) Pollutant emissions trend;

(b) Compliance audit report(s);

(c) Major upgrades projects (i.e. abatement equipment or process equipment);

(a) Action taken to address complaints received, and

(b) Annual report on implementation of Highveld Priority Areas Air Quality Management Plan, projects and / or offset programs.

The holder of the licence must keep a copy of the annual report for a period of at least 5 (five) years.

***Greenhouse gas Reporting***

Reporting in terms of Section 43 (1) (l) shall be done in accordance with the National Greenhouse Gas Reporting Regulations.

### 7.7. Investigation

**The following investigations are required:**

| Investigation | Purpose | Completion Date |
|---|---|---|
| None | None | None |

## 8. DISPOSAL OF WASTE AND EFFLUENT ARISING FROM ABATEMENT EQUIPMENT CONTROL TECHNOLOGY

**The disposal of any waste and effluent arising from the abatement equipment must comply with the relevant legislation and requirements of the relevant authorities**

| EU Code | Stack Code | Waste / Effluent Type | Hazardous Components Present | Method of Disposal |
|---|---|---|---|---|
| EU001,EU002,EU0021,EU0022,EU0024 and EU0025 | SV01 –SV06 | Ash | Heavy metals | Ash Dump (on-site) |
| EU001,EU002,EU0021,EU0022,EU0024 and EU0025 | SV01 – SV06 | Fabric Filter bags | Synthetic material | Registered Hazardous Waste Site |
| EU0033 | SV01 –SV06 | Gypsum | Heavy metals | Ash Dump (on-site) |

## 9. PENALTIES FOR NON-COMPLIANCE WITH LICENCE AND STATUTORY CONDITIONS AND OR REQUIREMENTS

Failure to comply with any of the licence and relevant statutory conditions and/or requirements is an offence, and license holder, if convicted, will be subjected to those penalties as set out in section 52 of the NEM: AQA.

## 10. APPEAL OF LICENCE

10.1 The Licence Holder must notify every registered interested and affected party, in writing and within ten (10) days, of receiving the Municipal decision.

10.2 The notification referred to in 10.1. must:

10.2.1 Inform the registered interested and affected parties of the appeal procedure provided for in the Municipal Systems Act (Act 32 of 2000);

10.2.2 Advise the interested and affected parties that a copy of the Atmospheric Emission Licence and reasons for the decision will be furnished on request;

10.2.3 An appeal against the decision must be lodged in terms of Section 62 of Municipal Systems Act (Act 32 of 2000), with the Appeal Authority on the following address:

Nkangala District Municipality,
PO Box 437,
Middelburg,
1050

Tel No. 013 249 2000,
Fax No. 013 249 2173

and

10.2.4 Specify the date on which the Atmospheric Emission licence was issued.

**MR ML MAHLANGU**

**ACTING GENERAL MANAGER: COMMUNITY DEVELOPMENT SERVICES**

**NKANGALA DISTRCIT MUNICIPALITY**