ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

PROPOSED RETROFITTING OF THE EXISTING ELECTROSTATIC PRECIPITATORS WITH FABRIC FILTER BAGS AT GROOTVLEI POWER STATION UNITS 2, 3 AND 4, MPUMALANGA

DEA Reference Number: 14/12/16/3/3/1/600

BACKGROUND INFORMATION DOCUMENT

July 2012

WHAT DOES THIS DOCUMENT TELL YOU?

The purpose of this Background Information Document (BID) is to provide Interested and/or Affected Parties (I&APs) with background information about the proposed Grootvlei Fabric Filter Plant Retrofit project and the application process to be undertaken (i.e. Basic Assessment Process), at Units 2, 3 & 4 of Grootvlei Power Station. It further explains how I&APs can become involved in the project, receive information as the Basic Assessment progresses, and raise comments and/or concerns regarding potential impacts of the project on the environment. You are hereby invited to register as an I&AP by completing and submitting the attached registration sheet and any comments you might have.

This BID document will help you to:

- Determine if you are interested in and/or affected by the proposed project;
- Better understand the project in order to be able to provide comment; and
- Understand the environmental authorisation process being undertaken so that you are able to participate effectively.

WHAT DOES THE PROJECT ENTAIL?

On the 31st of March 2010, Notice 248 was published, by the Department of Environmental Affairs (DEA), in terms of the National Environmental Management: Air Quality Act (Act 39 of 2004), providing new Minimum Emission Standards. The new standards require that all existing power stations conform to a standard of 100mg/Nm^3 (Nm^3 = Normalised cubic meter, 101,325kPa, 0°C, normalised to 10% reference O_2, on a dry basis) by 2015.

The purpose of this project is to retrofit the existing particulate emission abatement technology with more effective particulate abatement technology at units 2, 3 and 4 that will allow the Grootvlei Power Station to meet the above mentioned particulate emission standard. The project involves the retrofitting of the existing Electrostatic Precipitators (ESPs) in Units 2, 3 and 4 with Fabric Filter Plants (FFPs) utilising a pulse jet cleaning technology that will fit into the existing ESP casings. The reason for the retrofit is that

the current technology (the ESPs) will not be able to meet the more stringent particulate emission limits, whereas the new (FFP) technology will.

HOW DOES A POWER STATION WORK?

Producing electricity from coal starts when the coal is pulverised in mills into a fine powder before it is blown into boilers. Due to the heat in the boiler, the coal particles combust to generate heat to turn water into steam. The steam is used to turn the blades of a propeller, called a turbine. The turbine turns a coil made of copper wire (the rotor) inside a magnet (the stator), which together make up the generator. The generator produces an electric current, which is sent to the grid for distribution.

The main emission waste from the power generation process is particulate matter (fine ash particles). After the combustion of coal, the particulate matter travels through to the emission abatement technology (which will be FFPs at all units after the retrofit) where the particulate matter is removed before the remaining flue gas is emitted to the atmosphere through the smoke stack.

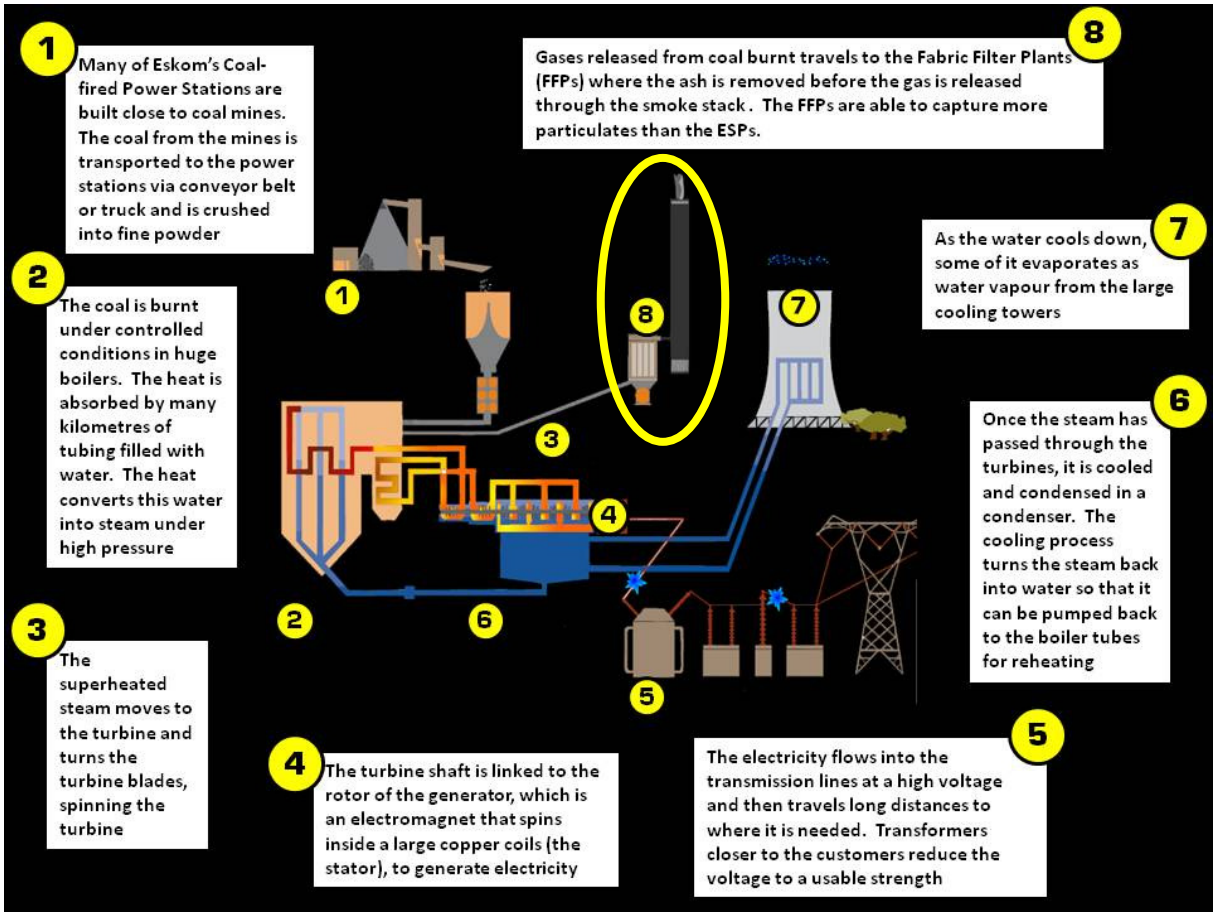


Figure 1: Generic schematic representation of how electricity generation in a coal-fired power station works. This project is linked to the final step of the power generation cycle – step 8

WHAT IS THE DIFFERENCE BETWEEN AN ELECTROSTATIC PRECIPITATOR AND A FABRIC FILTER PLANT?

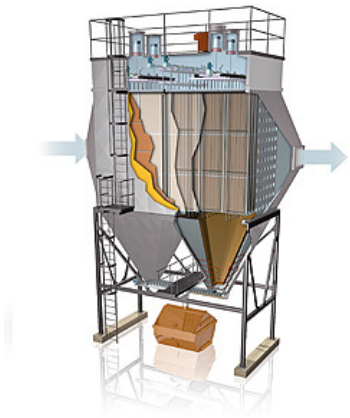
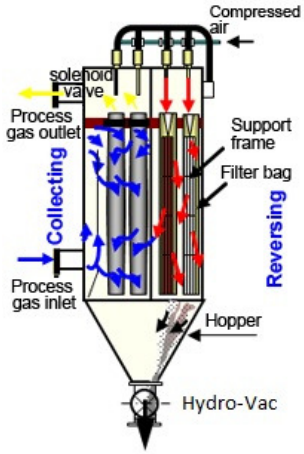
Electrostatic Precipitator	Fabric Filter Plant
	
The dust/ash-laden process gas enters the electrostatic precipitator horizontally and is spread across the entire filter cross-section in a uniform flow profile by a gas distributor. By applying high voltage to the spray electrodes located between the collection plates, an electric field is created that charges the dust/ash particles. Passing through the electric field, the charged particles are transported by electric field strength to the collecting electrodes, where they agglomerate with previously separated dust/ash particles and finally are rapped off by the mechanical rapping system. The rapped off dust/ash particles drop into the filter hopper and are removed via the dust/ash outlet, and disposed of at the ash disposal facility.	A fabric filter consists of several filter bags made of filter cloth sewn into cylindrical shapes and support frames that support the filter cloth. Process gas is filtered on the surface of the filter cloth, and purified gas flows out. The collected dust/ash is removed from the filter cloth through cleaning methods such as the pulse-jet method, whereby high pressure jets of compressed air are pulsed into the filter bags causing the dust/ash collected on the outside of the bags to drop into the filter hopper and are removed via the dust/ash outlet, and disposed of at the ash disposal facility.

Figure 2: Inside a typical fabric filter plant

WHAT ARE THE POTENTIAL ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED PROJECT?

The current scope of the Basic Assessment (BA) process includes:

- The retrofitting of the existing ESP technology with new Fabric Filter Plants on units 2, 3 and 4, within the existing ESP Casings
- The construction of a new compressor house
- A new concrete driveway to the new compressor house
- Upgrading of the existing ID Fans
- The construction of a new fabrication workshop and contractors yard

A number of potential environmental impacts associated with the project are anticipated. As part of the BA process, these potential impacts will be assessed through the following specialist studies:

Specialist Study	Organisation Responsible for the Study
Impacts on Air Quality	Airshed Planning Professionals
Impacts due to Noise	Francois Malherbe Acoustic Consultants
Visual Impact Assessment	MetroGIS

As part of the Basic Assessment process, specialist studies will identify and assess potential issues and impacts. Input from I&APs through the public participation process also provides valuable input in the identification of issues requiring investigation within this BA process.

WHY ARE ENVIRONMENTAL IMPACT ASSESSMENTS (EIAs) NEEDED?

In terms of the Environmental Impact Assessment (EIA) Regulations (2010), Eskom Holdings (SOC) Limited requires authorisation from the National Department of Environmental Affairs (DEA) for the undertaking of the proposed project. In order to obtain an environmental authorisation for this project, comprehensive, independent environmental studies must be undertaken in accordance with the EIA Regulations.

An EIA is a legislative tool that is used to ensure that potential impacts that may occur due to the proposed development are identified before execution and throughout the project, and can therefore either be avoided or mitigated (minimised). In South African legislation the environment includes social, economic and bio-physical aspects and the EIA must assess these equitably.

In terms of the EIA Regulations published in Government Notice R543 of 2 August 2010 in terms of Section 24 (5) of the National Environmental Management Act (Act No. 107 of 1998), certain listed activities as set out in Government Notice 1,GN R544 require environmental authorisation before they can proceed.

This proposed project activates a Listed Activity in accordance to the EIA Regulations. The relevant Listed Activity is reflected in the table below.

Act	Listing Notice	Listed Activity	Description
NEMA	No. R. 544	Activity 28	The expansion or changes to existing facilities for any process or activity where such expansion or changes will result in the need for a permit or license in terms of national or provincial legislation governing the release of emissions or pollution, excluding where the facility, process or activity is included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case that Act will apply ***(i.e. In terms of this project the change in the air quality abatement technology will result in a need to amend Grootvlei Power Stations' Air Quality licence)***

Eskom Holdings (SOC) Limited has appointed Lidwala Consulting Engineers (SA) (Pty) Ltd (Lidwala SA), as the Environmental Assessment Practitioners (EAP), to undertake the Basic Assessment process to identify and assess all potential environmental impacts associated with the proposed project. As part of these environmental process, all I&APs are invited to become actively involved through a public participation process.

This Basic Assessment (BA) process can be divided into 3 distinct phases:

Application and initial notification

During this phase an application for authorisation is made to the National Department of Environmental Affairs (DEA). Once DEA acknowledges the EIA application (within 14 days), an initial notification process takes place whereby the public is informed of the proposed development through *inter alia*, newspaper adverts, notification letters, BIDs and notice boards.

Basic Assessment

The main aims of the Basic Assessment process are to:

- Identify and address the significance of the potential environmental impacts that may occur as a result of the project;
- Identify relevant and effective mitigation and management measures through the process; and
- Obtain specialist input where required in order to assist in the above

Lidwala SA will draft the Basic Assessment report (BAR) in accordance with Regulation 22 of the EIA regulations (Government Notice No. R. 543 of 2010). The BA report will contain the following information, inter alia:

- A description of the proposed activity;

- A description of the site of the activity;
- A description of the baseline environment that may be affected by the proposed activity;
- A list of relevant legislation and guidelines that have been considered in the preparation of the basic assessment report;
- Details of the public participation process, including an overview of the issues, concerns, queries and suggestions raised by I&APs during the PPP;
- A description of the need and desirability of the proposed activity
- A description of any identified alternatives to the proposed activity that are considered feasible and reasonable;
- A description and assessment of the significance of any environmental impacts (including cumulative impacts) that may occur as a result of the activity, including a site sensitivity map to be drafted to identify low, medium, medium-high and high sensitivity areas;
- A list of any mitigation and management measures proposed as well as any additional specialist input; and
- Any additional information as required by the authorities

Environmental Authorisation

The proposed project requires an Environmental Authorisation (EA) in terms of the NEMA, No. 107 of 1998. This authorisation will only be issued in the event that DEA accept the Basic Assessment Report and are able to make an informed decision from the information provided during the Basic Assessment Process. The BA process is represented diagrammatically in **Figure 2.**

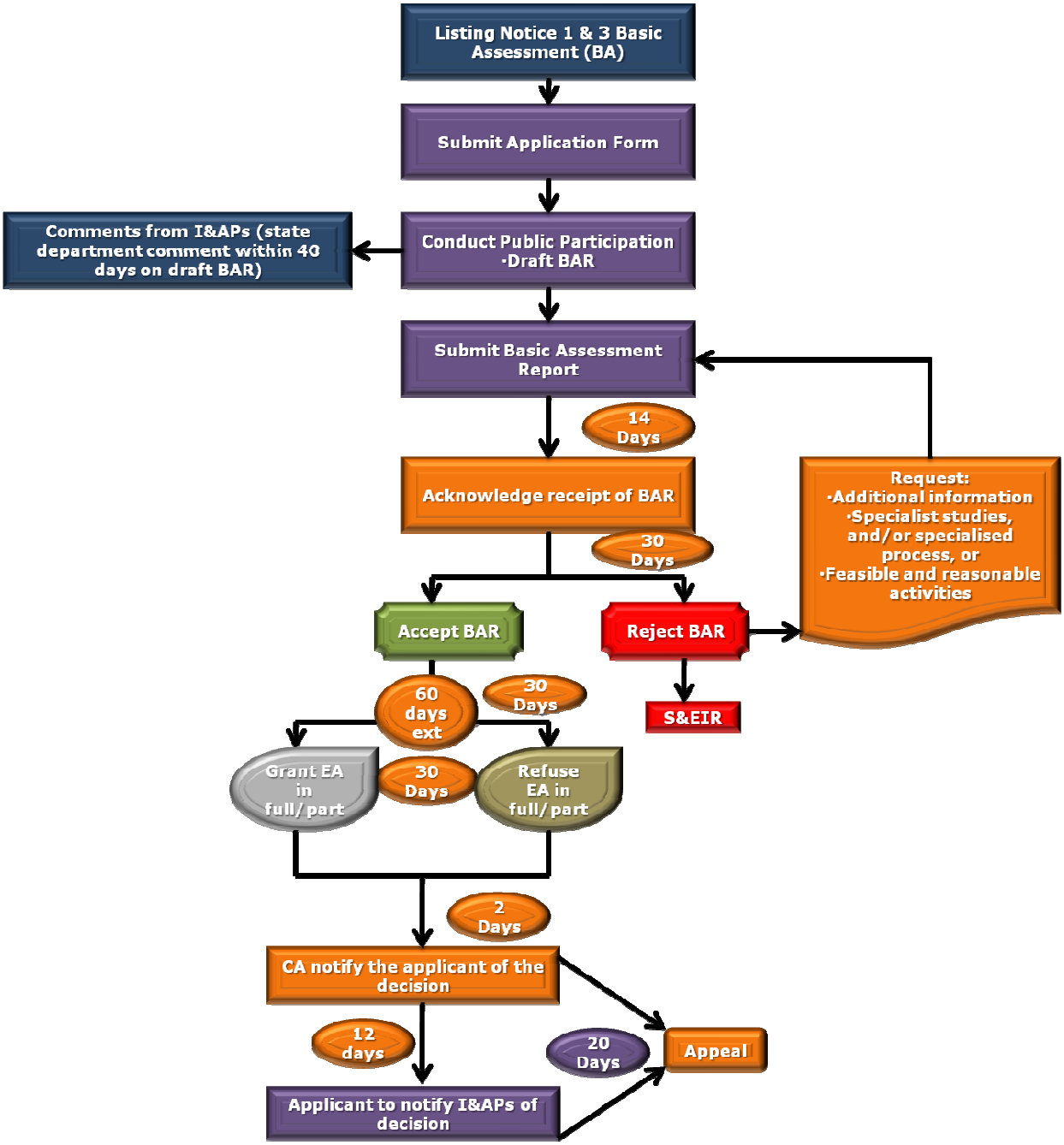


Figure 2: Basic Assessment Process

PUBLIC PARTICIPATION PROCESS

It is important that relevant I&APs are identified and involved in the public participation process from the outset of the proposed project. The inputs received from I&APs form an integral part of the Basic Assessment Process and will also assist the decision-making authority, DEA, with their decision-making. To ensure effective public participation, the process includes the following steps:

STEP 1: Advertise the Basic Assessment Process (local/community newspapers)
STEP 2: Register I&APs and key stakeholders on the database (on-going)

STEP 3: Consultation with, and transfer of information to, I&APs through consultation, which could include Focus Group Meetings and Public meetings, as may be deemed necessary

STEP 4: Record all comments, issues and concerns raised by I&APs within an issues trail report, which will form an integral part of the Basic Assessment Report

STEP 5: Invite I&AP comment and input on the draft Basic Assessment report (30-day comment period)

HOW CAN YOU GET INVOLVED?

1. By responding (by phone, fax or e-mail) to our invitation for your involvement which will be advertised in local newspapers.
2. By mailing, faxing or e-mail the attached comment form to Lidwala SA.
3. By attending the possible meetings that may be held during the course of the project, if deemed necessary. Should you register as an I&AP you will be invited to attend these meetings. The meeting dates will also be advertised in local newspapers.
4. By telephonically contacting Lidwala SA if you have a query, comment or require further project information.
5. By reviewing the draft Basic Assessment Report within the 30-day review periods and sending your comments to Lidwala SA.

If you consider yourself an I&AP for this proposed project, we urge you to make use of the opportunities created by the public participation process to become involved in the process. Your input into this process forms a key part of the environmental studies and we would like to hear from you to obtain your views on the proposed project.

By completing and submitting the accompanying response form, you automatically register yourself as an I&AP for this project, and ensure that your comments, concerns or queries raised regarding the project will be addressed.

Direct all comments, queries and responses to:

Lidwala Consulting Engineers (SA)
PO Box 4221, Northcliff, 2115

ATTENTION:

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