

Environmental Impact Assessment and Waste Management License Application for the proposed Medupi Power Station Flue Gas Desulphurisation

DEA Ref: 14/12/16/3/3/3/110

UPDATED BACKGROUND INFORMATION DOCUMENT

March 2015

This updated Background Information Document (BID) provides Interested and Affected Parties (I&APs) with information on the Environmental Impact Assessment (EIA), Waste Management License Application (WMLA) and Water Use License Application (WULA) being undertaken by Zitholele Consulting for the proposed Flue Gas Desulphurization retrofitting technology at Medupi Power Station. This document is intended to provide Interested and Affected Parties (I&APs) with:

- A concise overview of the proposed Medupi Power Station Flue Gas Desulfurization (FGD) Retrofit Project;
- Manner in which I&APs can become involved and provide input into the Environmental Authorisation (EA) Process; and
- Status quo of the various EA Processes including the EIA, WMLA and WULA Processes.

This updated BID also provides I&APs with the opportunity to:

- Register as a stakeholder in the public participation process; and
- Submit comment on and/or raise issues of concerns regarding the proposed project.

The purpose of an EIA is to identify and evaluate potential impacts, to recommend measures to avoid or reduce negative impacts and to enhance positive impacts. The licensing of waste management activities through a WMLA is the primary means by which these activities are regulated. The decision-making authority for both the EIA and WML Application is the Department of Environmental Affairs (DEA). The licensing authority for the WULA is the Department of Water and Sanitation (DWS)

Should you register as a stakeholder, you will be included in the stakeholder database and receive further documents for review and comment. **To raise your concerns and to submit comments, complete the enclosed registration sheet, write a letter, call or email the public participation office (contact details provided on the registration sheet included).**

BACKGROUND

Eskom Holdings SOC Ltd (hereinafter Eskom), South Africa's power utility, is tasked with providing electricity in an efficient and sustainable manner. The power utility supplies the majority of South Africa's electricity as well as approximately 45% of the electricity used in Africa.

The activities carried out as part of the electricity generation and distribution processes often generate wastes in various forms (e.g. exhaust flue gases from coal fuelled power stations). The proposed Medupi Power Station Flue Gas Desulphurisation (FDG) Retrofit Project is intended to remove up to 95% of the Sulphur Dioxide (SO₂) from the exhaust flue gases released at the Medupi Power Station.

The proposed Medupi Power Station FGD Project will consist of the retrofit of FGD technology onto six (6) x 800 megawatt (MW) coal fired steam electric generating units. The proposed FGD Project will also entail the installation of a wet limestone open spray tower FGD system to each of the operating units (absorber). It is anticipated that the proposed FGD will be fully operational within 6 years from the date of commercial operation of the first generating unit. The footprint of the proposed FGD infrastructure will fall within the borders of the Limpopo Province, with the Medupi Power Generation Precinct located approximately 15km west of the town of Lephalale.

NEED FOR THE PROPOSED PROJECT

One of the by-products that are generated by the burning of pulverized coal includes flue gases. In order to comply with the provisions of the National Ambient Air Quality Standards published in Government Gazette 32816 (dated 24 December 2009), a significant reduction in SO₂ emissions is required.

Environmental Authorisation has been granted for the proposed Medupi Power Station and associated infrastructures. However, the current project will focus on the FGD retrofit which necessitates additional infrastructure within the Medupi Power Station footprint, and possibly outside of the current footprint.

The proposed FGD will essentially function to abate the gaseous emissions, specifically sulphur dioxide emissions, which are released by the Power Station. Once the FGD has been commissioned, Medupi Power Station will be able to comply with the emission standards.

It is anticipated that the proposed FGD facility (excluding any additional waste disposal facilities) will have a footprint of between 0.5 and 1 hectare, falling within the current Power Station footprint only. The facility will include associated infrastructure components which may consist of:

- Storage/stockpiling, handling and disposal of wastes: gypsum, chemical salts and chemical sludge.
- Storage/stockpiling and handling of limestone.
- Treatment of waste water within a Zero Liquid Discharge (ZLD) system.
- Services including electricity, drainage (incl. dirty water dam) and water supply in the form of power lines, pipelines, and associated infrastructure.
- Access and maintenance roads where applicable.
- Rail siding and associated infrastructure.
- Process and electrical buildings.

All of the abovementioned components, excluding potential waste disposal facilities, will be constructed and operated within the existing Medupi footprint. The Power Station was designed to be "Wet FGD ready" and the FGD infrastructure is accommodated on site.

The waste disposal facility required for the FGD waste streams was initially planned for on-site, however, the required waste disposal facilities are currently under investigation and may be located outside of the Medupi Power Station footprint.

Zitholele Consulting has been appointed by Eskom to carry out the following Environmental Authorisation (EA) Processes for the proposed FGD retrofit project:

- Environmental Impact Assessment (EIA);
- Waste Management License Application (WMLA); and
- Water Use License Application (WULA).

Subsequent to the initiation of the above processes, the project team identified additional assessments that need to be included for consideration within the environmental authorisation application. Therefore, the following will also form part of the project scope of work:

- Assessment of the aspects and impacts associated with the construction of a rail yard at the Medupi Power Station. Limestone is envisioned to be transported by rail to the Medupi Power Station. The rail yard will be located predominantly within the existing Medupi Power Station footprint.
- Investigation of the feasibility of the alternatives to dispose of the FGD wastes at on-site or off-site facility/ies. This includes engagement with both the Department of Environmental Affairs and the Department of Water and Sanitation.

The waste classification of the various waste streams has informed the selection of feasible alternatives. The selection of a preferred disposal method will rely on the outcome of discussions with the DEA Waste Directorate.

- Site selection process for one or more Waste Disposal Facilities at which to dispose the wastes that will be generated by the FGD operation. This will entail the identification of, at most, three (3) site alternatives. Each alternative will be assessed by a range of specialists and they will provide sensitivity mapping of the alternative sites. Specialists will workshop the sensitivity map with the client and with Zitholele Consulting to identify the preferred alternative with impacts of the least significance, which are most likely to respond to mitigation and management.
- Conceptual design of the required Waste Disposal Facilities will need to be carried out by appropriate civil and structural engineers. The conceptual designs will be strongly informed and directed by the specialist team working on this project. The conceptual design will need to meet with the requirements of the DEA Waste Directorate as well as with those of the DWS.

Wet FGD as preferred Technology

The preferred technology, Wet FGD, was assessed and selected as an independent investigation to the Environmental Authorisation Process. At the onset of the EA Process, the consultant was advised by Eskom to utilize Wet FGD for the environmental assessment, without allowing for an assessment of alternatives.

The Wet FGD technology was identified as the preferred technology for Medupi Power Station, by means of a techno-economical study, during the design of the Power Station. This was essential in order to ensure that the Power Station was designed to be "Wet FGD ready". This design allows for the spatial requirements of Wet FGD within the Power Station layout. The design negates any requirement for significant changes to the existing infrastructure to accommodate the Wet FGD retrofit.

As an appendix to the Final Scoping Report, a Technology Selection Study Report has been made available to the public for review. While the EA process does not investigate alternatives to Wet FGD, the process will report on the impacts of the Wet FGD on the receiving environment.

Gypsum disposal versus commercial value

It should be noted that the potential for commercial sale of industrial gypsum from the FGD process has been investigated by Eskom for both the Kusile Power Station and the Medupi Power Station. Market research has indicated that there is a limited opportunity for the reuse of industrial quality gypsum to local users. The quality of the limestone to be used in the Medupi FGD process is unknown, and therefore the gypsum quality has not yet been determined. Limestone sourcing as well as the gypsum market offtake is being investigated by Eskom in parallel and the outcome of this investigation will determine the opportunity for the sale of gypsum. While the marketability of Medupi gypsum may improve over time, the current situation requires that most, if not all, Medupi's gypsum will require disposal. It is in Eskom's best interests to continue exploring alternatives to gypsum disposal. However, at this stage, it is important that the Environmental Authorisation Process consider the worst case scenario when addressing the requirements for the possible disposal of gypsum at an appropriately engineered disposal facility.

NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA)

The proposed FGD facility and associated infrastructure require an Environmental Impact Assessment (EIA) in terms of the NEMA and the amended EIA regulations (Government Notice R.543 to 546, published in June 2010). The Department of Environmental Affairs (DEA) has been identified as the Competent Authority.

As per Government Notice R.543 of June 2010, Chapter 2, Regulation 6, the competent authority must consult with every government organ that administers a law relating to a matter affecting the environment relevant to that application for an environmental authorisation when considering an application.

Therefore, the DWS, the Limpopo Department of Economic Development, Environment and Tourism, Waterberg District Municipality, Roads Agency Limpopo and the Lephalale Local Municipality are commenting authorities in this process.

This process includes Scoping and Environmental Impact Report (S&EIR) Phases, which are applicable to all projects likely to have significant environmental impacts due to their nature or extent, activities associated with potentially high levels of environmental degradation, or activities for which the impacts cannot be easily predicted.

NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA) (CONTINUED)

In terms of Government Notice R.545 of 2010, the following listed activities require that a S&EIR be undertaken and are applicable to this proposed project:

- **Activity 3:** The construction of facilities or infrastructure for the storage, or for the storage and handling, of lime and

limestone as an input into the WWTP and FGD process, respectively. The lime and limestone will be stored at a volume of more than 500 cubic meters at any one time. Storage of waste materials from the FGD process will similarly require authorization under Activity 3.

- **Activity 6:** The construction of facilities or infrastructure for the bulk transportation of waste materials using conveyors with a throughput capacity of more than 50 tons per day.
- **Activity 11:** The construction of a rail yard for purposes of transport of products to the Power Station and waste products from the Power Station.
- **Activity 15:** The physical alteration of undeveloped, vacant, or derelict land for purposes of a rail yard and associated infrastructure.



NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT (NEM:WA)

With the proclamation of the National Environmental Management Waste Act (NEM: WA), No 59 of 2008, all waste related activities previously listed under the National Environmental Management Act (NEMA), No 107 of 1998 have been repealed and are now listed under the NEM:WA.

In terms of Government Notice R.718, **Category B** the following activities require authorisation:

Activity 1: The storage, including temporary storage, of hazardous waste in lagoons. This activity will be triggered should the sludge and/or salts require separate disposal and not be co-disposed of at the Ash Disposal Facility.

Activity 5: The treatment of sludge in lagoons. This activity will only be triggered should the preferred option of co-disposal not be supported by the waste classification assessment.

Activity 7: The disposal of any quantity of gypsum to the existing Ash Disposal Facility.

Activity 10: The construction of facilities for activities listed in this schedule.

In terms of Government Notice R.718, **Category C** the following activities require authorisation:

Activity 2: The storage, including temporary storage, of hazardous waste such as gypsum, salts and sludge from the FGD process prior to disposal on or off-site. The combined storage of hazardous waste will be more than 35m³ at any one time.

As described in the Regulations “a person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct an environmental impact assessment process, as stipulated in the environmental impact assessment regulations made under Section 24(5) of the NEMA as part of a waste management license application”.

Therefore the proposed development requires the submission of a Waste Management License application as well as a Scoping and Environmental Impact Report (S&EIR) to the DEA.

WATER USE LICENSE APPLICATION (WULA)

The preferred technology was identified by the client prior to the initiation of the EA process, through a technology feasibility study. The EA processes therefore address the project with Wet FGD as the preferred technology alternative. The water required for the operation of Wet FGD will be applied for within a Water Use License Application. The client has been engaging with the DWS in this regard. The DWS, as the custodian of the national water resources, has indicated that allocation of water can be supplied to Medupi Power Station FGD from the Mokolo Crocodile Water Augmentation Project (MCWAP) Phase 2.

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

An Environmental Impact Assessment (EIA) is a planning and decision-making tool undertaken in terms of the National Environmental Management Act (NEMA), Act No 107 of 1998, as amended. An EIA is a management tool that helps to identify and mitigate any potential impacts that a new development might generate on the receiving environment. The EIA takes place prior to the construction of the development.

TECHNICAL AND PUBLIC PARTICIPATION PROCESSES

An EIA has two parallel and integrated processes namely, a **technical** and a **public participation** process.

The **technical process** investigates "hard" information: facts based on scientific and technical studies, statistics or technical data. It identifies the potential negative and positive consequences of a proposed project or development at an early stage and recommends ways to enhance positive impacts and to avoid, reduce or mitigate negative impacts.

The EIA regulations require that an Environmental Management Programme (EMPr) be developed. The EMPr provides recommendations on how to operate and implement the project. The provisions of the EMPr, once approved by the competent authority, are legally binding on the developer and its contractors.

Public participation ensures that the EIA process is fair, open and transparent. It also provides stakeholders with sufficient information and gives them opportunity to contribute to the process by reviewing and commenting on the information.

The public participation process is designed to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner to assist them to:

- Raise issues of concern and make suggestions for alternatives and enhanced benefits;
- Contribute local knowledge;
- Verify that their issues have been captured and considered by the technical investigations;
- Comment on the findings of the EIA.

PHASES IN AN EIA

SCOPING PHASE

The **first phase** of an EIA is the Scoping Phase, which is conducted to gain an understanding of the potential environmental issues that are relevant to the project and to determine where further information is required, in the form of specialist studies/investigations.

The Scoping Report and Plan of Study for the EIA are submitted to the Department of Environmental Affairs (DEA) for review and approval of the proposed approach to the detailed investigation required in the next phase.

Key activities involved in the Scoping Phase include:

- Meetings with authorities to agree on process and study requirements;

- Initial public and landowner notification;
- Distribution of a DSR, including CRR for public comment;
- Convening a stakeholder meeting for the Scoping Phase;
- Distribution of the FSR for comments;
- Submission of a Final Scoping Report (FSR), including the Plan of Study for the EIA to the DEA;
- Approval of the FSR and supporting documents by DEA, at which time the project moves into the Impact Assessment Phase.

IMPACT ASSESSMENT PHASE

The **second phase** is the Impact Assessment Phase, which entails undertaking various specialist studies and compiling a Draft EIR.

As part of the assessment, an Environmental Management Programme (EMPr) will be submitted to the Department of Environmental Affairs (DEA) for their approval. By following the EMPr, Eskom and its contractors will ensure compliance to environmental regulations during the planning, construction, operation and decommissioning (if applicable) phases.

The specialist studies that have already been confirmed for the Impact Assessment Phase are:

- Waste Classification;
- Social Impact Assessment;
- Ecological Assessment for the rail yard area;
- Air Quality Assessment.

Additional assessments will be required for purposes of the site selection for potential waste disposal facilities. These studies will be confirmed as soon as the consultant has been appointed for this additional scope of work.

Key activities in the Impact Assessment Phase will include:

- Specialist studies focused on outcomes of the Scoping Phase and issues raised by stakeholders;
- Progress feedback to stakeholders;
- Compilation of a Draft EIR and EMPr indicating the potential positive and negative impacts and measures to enhance positive impacts and to reduce or avoid negative impacts;
- Environmental Impact Statement, highlighting the preferred alternative/s and reasons therefor;
- Distribution of the Draft EIR and EMPr, including Issues and Responses Report, to the public for comment;
- A stakeholder meeting in the project area to present a summary of the findings of the EIR for stakeholder comment;
- Distribution of the Final EIR and EMPr for comment; and
- Submission of the Final EIR and EMPr for DEA decision making.

DECISION-MAKING (ENVIRONMENTAL AUTHORISATION)

A decision on the applications for Environmental Authorisation, Waste Management License and Water Use License will be received from the relevant competent authority. Within legislated timeframes, Zitholele Consulting is responsible for notifying the registered I&APs of each of these decisions. Stakeholders will be notified of the DEA's decision and of the opportunity to, and process for, appeal.

Your comments are important

The purpose of an Environmental Impact Assessment is to provide the decision-making authority with sufficient information on which to base their decision to grant or refuse an Environmental Authorisation and if granted, to define conditions for the development. The contributions made by stakeholders from all sectors of society will ensure informed decision-making.

You are invited to participate freely and to submit any comments or information you feel may be useful to the EIA process. Registered interested and affected parties are entitled to comment, in writing, on all written submissions to the competent authority (Department of Environmental Affairs) and to bring to the attention of the competent authority, any issues which the party believes may be of significance to the consideration of the application.

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