

ENVIRONMENTAL IMPACT
ASSESSMENT PROCESS

JANUARY 2011

PROPOSED ESTABLISHMENT OF A
COAL-FIRED POWER STATION

ON A SITE NORTH-WEST OF PHOLA / OGIES
MPUMALANGA PROVINCE



BACKGROUND INFORMATION
DOCUMENT (BID)

RUUKKI | SA



Ruukki South Africa (Ruukki SA) has embarked on an expansion project aimed at increasing its ferrochrome production by the end of 2013. The expansion plan is based on the addition of two 70 MW DC furnaces to Ruukki SA's current operations. In order to provide electricity to the furnaces (for smelting of ferrochrome) and due to a shortage in electricity supply capacity from Eskom, Ruukki SA plans to build its own coal-fired power station that will supply power for the planned expansion. The site that has been selected for further investigation within a feasibility study occurs on the same property as the decommissioned Wilge Power Station, near Phola and Ogies in Mpumalanga. The nature and extent of this project is explored in more detail in this document.

WHAT DOES THIS DOCUMENT TELL YOU?

This document aims to provide interested and/or affected parties (I&APs), with:

- » Information on the proposed Coal-fired Power Station project.
- » An overview of the Environmental Impact Assessment (EIA) process and environmental studies being undertaken to assess the proposed project.
- » Details of how you can become involved in the EIA process, receive information, or raise issues, which may concern and/or interest you.

WHO IS RUUKKI SA?

Ruukki South Africa (Pty) Ltd is a subsidiary of the Finnish Ruukki Group. The Ruukki Group was established in 1985 and is an international organisation focused on economical and efficient processing of natural resources in the minerals and wood processing industry. The Ruukki Group has now ventured into the South African market, and developed Ruukki SA, which owns a Chrome mine (Stellite mine, near Phokeng in the North West Province) and smelter (Mogale Alloys, near Krugersdorp in Gauteng). Ruukki SA intends to increase its ferrochrome manufacturing footprint over the next four years. Due to a shortage in electricity supply from Eskom, Ruukki SA has decided to build its own coal-fired power station with a generation capacity of between 250 and 300 MW, with the purpose of providing power to their proposed ferrochrome expansion project.

OVERVIEW OF THE PROPOSED PROJECT

The proposed power station is located approximately 11 km north-west of Ogies and 25 km south-west of Witbank in Mpumalanga, next to the old Wilge Power Station which was decommissioned during the late 1990s. The site is proposed on Portion 8 and Portion 16 of the Farm Vlakfontein 569 (refer to the attached locality map which illustrates the location of the proposed power station). No feasible site alternatives have been identified for investigation.

The proposed facility would have a generating capacity of approximately 250 – 300 MW. The main infrastructure that may be required includes (*specification will be decided based on the technology selected*):

- Access roads.
- Coal storage areas and bunkers.
- Coal mill (for grinding the coal into fine material).
- Pipeline of approximately 20 km in length for water supply.
- Coal loading and offloading areas, as well as conveyor belts.
- Power plant production unit/s (boilers / furnaces, turbines, generator and associated equipment, control room).
- Ash dumps (existing ash dumps from Wilge Power station can be used).
- Water infrastructure such as dams, purification works and reservoirs
- A substation.
- An overhead power line to connect into the Eskom grid.
- Office and maintenance area/s.

Technology alternatives include:

- The fuel combustion technology – the power station will make use of either conventional coal fired or circulating fluidised bed boiler technology, depending on the quality of the coal source.
- Cooling technology – the power station will make use of either wet or dry cooling technology.

Technologies to be implemented will be finalised in a Bankable Feasibility Study and will be informed by the outcomes of the EIA process.

HOW IS ELECTRICITY PRODUCED AT A COAL-FIRED POWER STATION?

The majority of South Africa's electricity comes from thermal power stations, which use coal (natural resource) as fuel for electricity production. A power station converts energy into a form which can be used by people, i.e. electricity. The figure below illustrates how electricity is produced at a coal-fired power station.

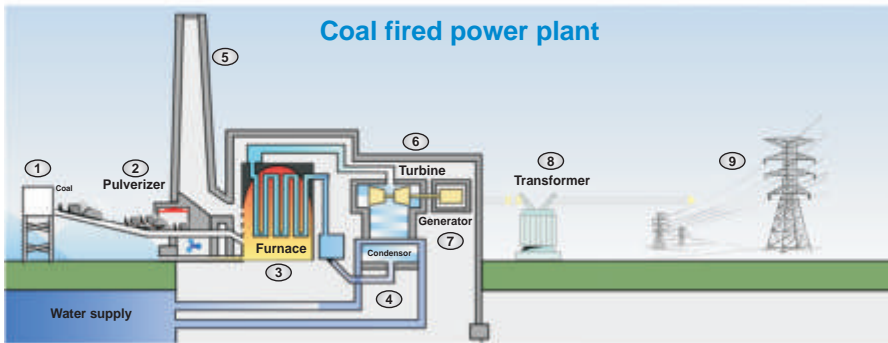


Figure 1: Illustration of a coal-fired power plant

In terms of the figure, the process within the power station can be described as follows (numbers relate to those indicated on the figure)

1. Fuel: Coal is sourced from a mine, and taken to the coal stockyard (by truck in this case), and then to the coal bunkers via conveyor belts.
2. Pulverizer: The coal is then ground into a fine powder so that it can burn with ease.
3. Boiler and Furnace: The powdered coal is blown into the furnace by air, where it ignites. Oil is used to ignite the boiler. An array of tubes forms the boiler walls. Demineralised (pure) water enters the boiler tubes via pipes. The heat which is released from the burning coal is absorbed by the tubes which convert the water into steam.
4. Condensation and Cooling: The spent steam goes into a condenser (brass tubes). The brass tubes are filled with water. The spent steam comes into contact with the cold outer surfaces of the condenser tubes and condensation of the steam to a liquid state (water) occurs. This water is then pumped back to the boiler for reheating. The water cooling method could be wet-cooling, or indirect or direct dry-cooling. Wet-cooling (cooling Towers) is the most efficient cooling method; however dry-cooling is designed to conserve water. Assuming that wet-cooling will be used at the power station, warm water from the condensers is piped to cooling towers. The warm water releases its heat in the upward draught of cold air created by the shape of the cooling towers. The cooled water is re-circulated to the condensers.
5. Smoke Stacks: Gases that are released from combustion in the furnaces, are filtered and then released into the atmosphere through smoke stacks.

6. Turbine: The high pressure steam is piped to turbines. The steam passes through the turbine blades, causing the blades to turn. The movement of the steam through the turbines causes the thermal (heat) energy to be converted to mechanical energy.
7. Generator: The turbine is linked to the rotor of the generator. The rotor is an electromagnet which spins inside large coils of copper to generate electricity (alternating current (AC), which is essentially what is produced by a power station.
8. Transformer: This is an electrical device by which AC current of one voltage is increased or stepped up (normally to 400 kV) and the current flow is reduced.
9. Transmission: The electricity is then fed into the Eskom integrated power grid for distribution and usage.

WHY UNDERTAKE AN ENVIRONMENTAL IMPACT ASSESSMENT?

In terms of sections 24 and 24D of the National Environmental Management Act (Act No 107 of 1998), as read with Government Notices R543 (Regulations 20–25), R544 and R545, environmental Authorisation is required for:

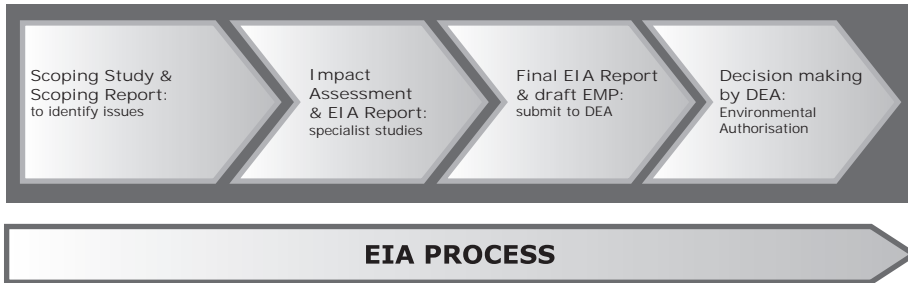
- » *Item 1 of listing Notice 2 (GN545): The construction of facilities or infrastructure, for the generation of electricity where the output is 20 megawatts or more.*
- » *Item 10 of listing Notice 2 (GN545): Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more; Except where such physical alteration takes place for:*
 - (i) *Linear development activities*
 - (ii) *Agriculture or afforestation where activity 16 in this schedule will apply.*
- » *Item 10 of Listing Notice 1 (GN544): the construction of facilities or infrastructure for the transmission and distribution of electricity –*
 - (a) *Outside urban areas or industrial complexes with a capacity of more than 33kv but less than 275kv; or*
 - (b) *Inside urban areas or industrial complexes with a capacity of 275kv or more.*

Therefore, Ruukki SA requires authorisation from the National Department of Environmental Affairs (DEA), in consultation with the Mpumalanga Department of Economic Development, Environment and Tourism for the undertaking of the proposed project. In order to obtain this authorisation, Ruukki SA acknowledges the need for comprehensive, independent environmental studies to be undertaken in accordance with the EIA Regulations. The project has been registered with DEA under Application Reference number 12/12/20/2127.

An EIA is an effective planning and decision-making tool. It allows the environmental consequences resulting from the establishment and operation of a technical facility to be identified and appropriately managed. It provides the opportunity for the developer to be fore-warned of potential environmental issues, and dialogue with affected parties.

Ruukki SA has appointed Savannah Environmental, as independent consultants, to undertake a Scoping and Environmental Impact Assessment to identify and assess all potential environmental impacts associated with the proposed project for the area as identified, and propose appropriate mitigation measures in an Environmental Management Programme (EMP). As part of these environmental studies, I&APs will be actively involved through the public involvement process.

The phases of an EIA are:



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

A number of potential environmental impacts (social and biophysical) associated with the proposed project have been identified. These include:

- » Impacts on air quality.
- » Impacts on groundwater.
- » Impacts on ecology.
- » Impacts on heritage resources.
- » Noise impacts.
- » Impacts on the socio-economic environment.
- » Visual impacts.
- » Traffic / transportation impacts.

These specialist studies will be undertaken in two phases:

1. A desk-top Scoping Study, wherein potential issues associated with all alternatives identified will be evaluated.
2. A detailed assessment of potentially significant impacts identified in the Scoping Phase. A comparative assessment of all identified feasible alternatives will be undertaken. Practical and achievable mitigation measures will be recommended in order to minimise potentially significant impacts identified. These recommendations will be included within a draft Environmental Management Programme (EMP) for this project.

The potential environmental impacts associated with not undertaking the proposed project will also be explored through the EIA process. Specialist studies will be informed by existing information, field observations and input from the public participation process. As an I&AP, your input is considered an important part of this process, and we urge you to become involved.

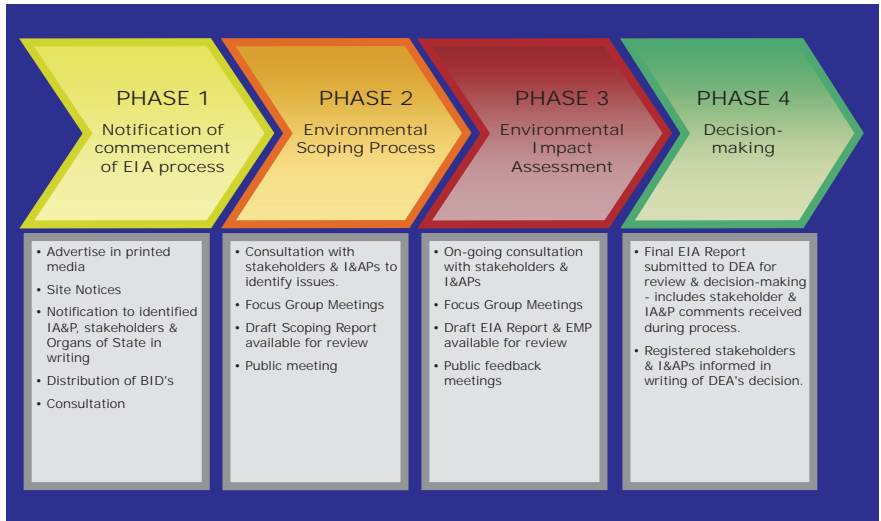
PUBLIC PARTICIPATION PROCESS

The sharing of information forms the basis of the public involvement process and offers you the opportunity to become actively involved in the EIA from the outset. Comments and inputs from I&APs during the EIA process are encouraged in order to ensure that potential impacts are considered within the ambit of the study.

The public involvement process aims to ensure that:

- » Information containing all relevant facts in respect of the application is made available to I&APs for review.
- » Participation by potential I&APs is facilitated in such a manner that I&APs are provided with a reasonable opportunity to comment on the application.
- » Adequate review periods are provided for I&APs to comment on the findings of the draft Scoping and EIA reports.

In order to ensure effective participation, the public involvement process includes the following steps:



YOUR RESPONSIBILITIES AS AN I&AP

In terms of the EIA Regulations, your attention is drawn to your responsibilities as an I&AP:

- » In order to participate in this EIA process, you must register yourself on the project database.
- » You must ensure that any comments regarding the proposed project are submitted within the stipulated timeframes.
- » You are required to disclose any direct business, financial, personal or other interest which you may have in the approval or refusal of the application for the proposed project.

HOW TO BECOME INVOLVED

1. By responding (by phone, fax or e-mail) to our invitation for your involvement which has been advertised in local newspapers.
2. By returning the attached Reply Form to the relevant contact person.
3. By attending the meetings to be held during the course of the project. As a registered I&AP you will automatically be invited to attend these meetings. Dates for public meetings will also be advertised in local and regional newspapers.
4. By contacting the consultants with queries or comments.
5. By reviewing and commenting on the draft Scoping and EIA Reports within the stipulated 30-day review periods.

If you consider yourself an I&AP for this proposed project, we urge you to make use of the opportunities created by the public involvement process to provide comment, or raise those issues and concerns which affect and/or interest you, and about which you would like more information. Your input into this process forms a key element of the EIA process.

By completing and submitting the accompanying Reply Form, you automatically register yourself as an I&AP for this project, and are ensured that your comments, concerns or queries raised regarding the project will be noted.

COMMENTS AND QUERIES

Direct all comments, queries or responses to:

Savannah Environmental
Alicia Govender or Gerhard Cronje
P.O. Box 148, Sunninghill, 2157
Phone: 011 234 6621
Fax: 086 684 0547
Email: alicia@savannahsa.com or gerhard@savannahsa.com

To review project documentation, visit

www.savannahSA.com

