

AUGUST 2017

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS AND  
PUBLIC PARTICIPATION PROCESS

DEVELOPMENT OF THE  
RICHARDS BAY COMBINED CYCLE POWER PLANT (CCPP)  
AND ASSOCIATED INFRASTRUCTURE  
ON A SITE NEAR RICHARDS BAY  
KWAZULU-NATAL PROVINCE

BACKGROUND INFORMATION DOCUMENT (BID)

savannah  
environmental



Eskom Holdings SoC Ltd (Eskom) proposes to develop a Combined Cycle Power Plant (CCPP) and associated infrastructures, with a generating capacity of up to 3000MW. The proposed project is to be known as the Richards Bay Combined Cycle Power Plant (CCPP). The Project site is to be located in the Richards Bay Industrial Development Zone (IDZ) Phase 1D, approximately 6km south west of Richards Bay and 4km south west of Alton which falls within the jurisdiction of the City of uMhlatuze Local Municipality and the King Cetshwayo District Municipality, KwaZulu-Natal Province.

The purpose of the project is to reduce transmission losses from generation facilities supplying KwaZulu-Natal, by establishing a generation centre in KwaZulu-Natal. In addition, the project is planned to aid in reducing Eskom's carbon footprint per unit of electricity produced, as power plants using natural gas emit approximately half the carbon of coal-fired power plants while using considerably less water, thus supporting Government's commitment to reduce carbon emissions.

The nature and extent of the proposed 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 Richards Bay CCPP.
- » 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.

### OVERVIEW OF THE PROPOSED PROJECT

#### Location

The Richards Bay CCPP and associated infrastructure is proposed on a project site with an extent of 71 ha, which comprises of 2 properties located within the City of uMhlatuze Local Municipality which falls within the jurisdiction of the King Cetshwayo District Municipality. These properties form part of Phase 1D of the Richards Bay Industrial Development Zone (IDZ). The power plant will be operational for approximately 25 years.

Portion Number:	Farm Name:
Portion 2	Erf 11376
Portion 4	Erf 11376

The preferred project site for the development of the Richards Bay CCPP has been identified through the undertaking of a screening and site selection process, which was supported by specialist input.

#### Richards Bay CCPP and supporting infrastructure

The main infrastructure associated with the Richards Bay CCPP includes the following:

- » Gas turbines for the generation of electricity through the use of natural gas or diesel.
- » Heat recovery steam generators (HRSG) to produce steam.

- » Steam turbines for the generation of additional electricity through the use of steam generated by the HRSG.
- » Condensers for the conversion of steam back to water.
- » Bypass stacks associated with each gas turbine.
- » Exhaust stacks.
- » A water treatment plant for the treatment of potable water and the production of demineralised water.
- » A water pipeline and water tank.
- » Dry-cooled system or Once-Through-Cooling system technology.
- » Closed Fin-fan coolers to cool lubrication oil for the gas and steam turbines.
- » A gas pipeline and a gas pipeline supply conditioning process facility.
- » Diesel off-loading facility and storage tanks.
- » Ancillary infrastructure including access roads, warehousing and buildings, storage facilities, generators and 132kV and 400kV switchyards.
- » A power line<sup>1</sup> to connect the Richards Bay CCPP to the national grid for the evacuation of the generated electricity.

### HOW IS ELECTRICITY PRODUCED AT A COMBINED CYCLE POWER PLANT (CCPP)?

A CCPP uses a gas turbine generator to generate electricity and the waste heat is used to make steam to generate additional electricity via a steam turbine. The CCPP is one of the most efficient power generating facilities to convert either gas or diesel fuel to mechanical power or electricity. In other words gas or diesel is burnt in a gas turbine producing both electrical power via a coupled generator and fairly hot exhaust gases. This hot exhaust gases passes through a water-cooled heat exchanger to produce steam, which can be turned into electric power with a coupled steam turbine and generator.

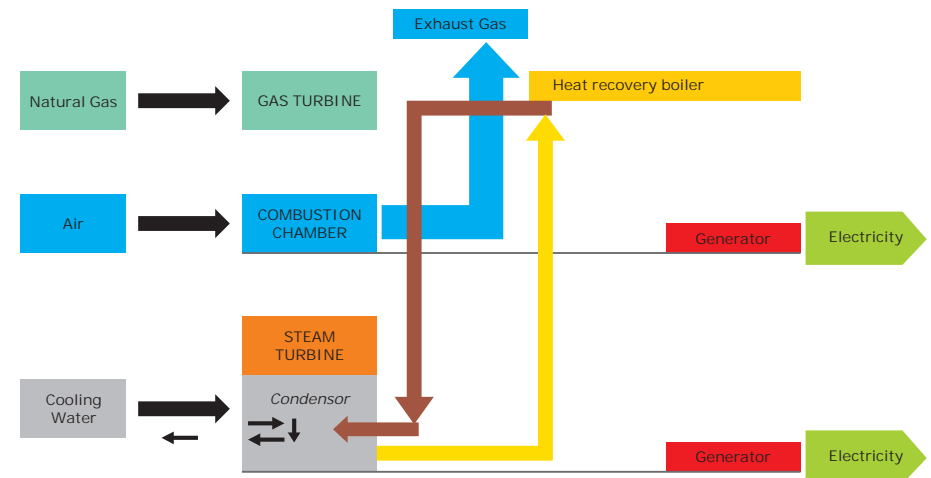


Figure 1: Typical Combined Cycle Gas Turbine

<sup>1</sup> The development of the power line does not form part of this EIA process.

The general process followed by the operation of a CCPP which increases energy efficiency of a power resource and electrical output is described below (refer to Figure 3.5).

1. A gas turbine burns fuel, which will be either natural gas or diesel.
  - » The gas turbine compresses air and mixes it with fuel which is combusted to produce high temperature combustion gases. The high temperature combustion gases pass through a gas turbine resulting in the rotation of the turbine blades.
  - » The rotational movement of the turbine blades at a high speed drives a generator which converts a portion of the energy produced by the rotational blades into electricity.
2. A heat recovery system captures exhaust heat.
  - » The exhaust waste heat generated from the gas turbine enters the Heat Recovery Steam Generator (HRSG).
  - » The HRSG captures exhaust heat from the combustion gases to produce high temperature and pressure steam.
3. Delivery of additional electricity through the operation of a steam turbine.
  - » Steam produced from the HRSG is delivered to the steam turbine that sends its energy to the generator drive shaft, where it is converted into additional electricity making the power plant energy efficient.

The estimated number of gas turbines for the proposed development is between 4 and 8 with an expected capacity of between 278 and 500MW each. There will be between 1 and 2 turbine halls depending on the final layout. Between 3 and 4 steam turbines with an expected capacity of between 150 and 250MW will be developed. Each gas and steam turbine will include its own generator, and as such there will be a total of 12 generators developed.

## WHY UNDERTAKE AN ENVIRONMENTAL IMPACT ASSESSMENT?

### Environmental Authorisation

The development of the Richards Bay CCPP requires Environmental Authorisation (EA) from the National Department of Environmental Affairs (DEA), in consultation with the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) in accordance with the National Environmental Management Act (No. 107 of 1998) (NEMA), and the provisions of the 2014 Environmental Impact Assessment (EIA) Regulations, as amended on 07 April 2017, (GNR 324 to GNR 327).

In order to obtain Environmental Authorisation, Eskom has initiated an EIA (including comprehensive, independent environmental studies) to be undertaken in accordance with the 2014 EIA Regulations, as amended. An EIA is an effective planning and decision-making tool. It allows the environmental consequences of a proposed development to be identified and appropriately managed. It also provides the opportunity for the developer to be forewarned of potential environmental issues, and facilitates dialogue with I&APs.

Eskom has appointed Savannah Environmental, as the independent consultant responsible for the undertaking of an EIA to identify and assess potential environmental impacts; and propose appropriate mitigation measures in an Environmental Management Programme (EMPr). I&APs will be actively involved in the EIA through the public participation process.

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

The following potential environmental impacts have been identified for the project:

- » Impacts on air quality;
- » Impacts on climate change;
- » Impacts on surface and groundwater resources;
- » Impacts on ecology including flora, fauna, avifauna and water features including wetlands and other hydrological features;
- » Impacts on heritage resources (i.e. archaeology and palaeontology);
- » Impacts on the socio-economic environment and traffic;
- » Impacts on soil and land capability;
- » Noise impacts; and
- » Visual impacts.

Specialist studies have been proposed to assess the abovementioned impacts, and will be incorporated into the EIA reporting. The EIA process will be conducted in accordance with the 2014 EIA Regulations, as amended, and will be undertaken in two phases:

1. A desktop Scoping Study - Potential issues associated with the project (and all identified alternatives) will be identified, described, and evaluated from a desktop level and through the consultation of existing information.
2. A detailed Impact Assessment - Potentially significant impacts will be assessed based on detailed investigations and on-site field observations. Mitigation measures and recommendations to minimise potentially significant impacts will be identified and included in the site specific EMPr.

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 encourage you to become involved.

## PUBLIC PARTICIPATION PROCESS

The sharing of information forms the basis of the public participation process, and offers I&APs the opportunity to become involved in the EIA process from the outset. Comments and inputs from I&APs are encouraged during the Scoping and EIA phases to ensure that all potential impacts are considered throughout the EIA process. The public participation process aims to ensure that:

- » Information containing all relevant facts in respect of the application is made available to I&APs for review.

- » I&AP participation is facilitated such that they are provided with reasonable opportunity to comment on the proposed project.
- » Adequate review periods are provided for I&APs to comment on the findings of the Scoping and EIA Reports.

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

- » Identifying I&APs, including adjacent landowners and relevant Organs of State.
- » Placing notices at the affected properties as well as in local newspapers.
- » Compiling and maintaining an I&AP database.
- » Distributing written notification of the commencement of the EIA process, as well as background information.
- » Notifying I&APs of relevant milestones throughout the EIA process.
- » Notifying I&APs of the release of the Scoping and EIA Reports for review.
- » Providing opportunities for I&APs to be formally engaged, allowing for full participation in the EIA process.

### YOUR RESPONSIBILITIES AS AN I&AP

In terms of the 2014 EIA Regulations, as amended, your attention is drawn to your responsibilities as an I&AP:

- » In order to participate in the 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 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 the invitation for your involvement.
2. By returning the reply form to the relevant contact person.
3. By attending meetings to be held during the course of the process.
4. By contacting the consultants with queries or comments.
5. By reviewing and commenting on the Scoping and EIA Reports within the stipulated 30-day review periods.

If you consider yourself an I&AP for this project, we urge you to make use of the opportunities created by the public participation process to provide comment, raise issues and concerns which affect and/or interest you, or request further information. Your input 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 is ensured that your comments, concerns or queries raised regarding the project will be noted.

Direct all comments, queries or responses to:

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To view project documentation, visit

[www.savannahSA.com](http://www.savannahSA.com)





# Richards Bay CCGT Power Plant

## Locality Map

### Legend

- Town
- Distribution Substation
- Eskom Power Line
- Regional road
- Main road
- Secondary Roads
- - - Railway Line
- Perennial River
- Project Site
- Farm Portions

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Scale: 1:70 000  
Projection: LO31 WGS\_1984  
Map Ref.: Richards Bay CCGT Project - Locality Map\_15.05.17

