

1. INTRODUCTION

Eskom Holdings Limited (Eskom) is responsible for the provision of reliable and affordable power to South Africa. Electricity cannot be stored and must be used as it is generated. Therefore, electricity must be generated in accordance with supply-demand requirements. Eskom's core business is in the generation, transmission (transport), trading and retail of electricity. In terms of the Energy Policy of South Africa "energy is the life-blood of development". Eskom currently generates approximately 95% of the electricity used in South Africa. Therefore, the reliable provision of electricity by Eskom is critical for industrial development and related employment and sustainable development in South Africa.

1.1. The Need and Justification for the Proposed Project

The South African Energy Policy, published in December 1998 by the Department of Minerals and Energy (DME) identifies five key objectives, namely:

- Increasing access to affordable energy services;
- Improving energy sector governance;
- Stimulating economic development;
- Managing energy-related environmental impacts; and
- Securing supply through diversity.

In order to meet these objectives and the developmental and socio-economic objectives in South Africa, the country needs to optimally use the available energy resources. Eskom is required to respond to the growing electricity demand of approximately 3% per annum. This growing demand is placing increasing pressure on Eskom's existing power generation capacity. The South African Government, through the Department of Minerals and Energy (DME), the National Electricity Regulator (NER) and Eskom are required to address what can be done to meet these electricity needs both in the short- and long-term.

The Department of Minerals and Energy performs Integrated Energy Planning (IEP) to identify future energy demand and supply requirements. The National Electricity Regulator performs National Integrated Resource Planning (NIRP) to identify the future electricity demand and supply requirements. Similarly, Eskom continually assesses the projected electricity demand and supply through a process called the Integrated Strategic Electricity Plan (ISEP). Through these assessment and planning processes, the most likely future electricity demand based on long-term Southern African economic scenarios is forecasted, and provides the framework for Eskom and South Africa to investigate a wide range of supply and demand-side technologies and options.

The outcome of these processes indicates that South Africa will require an additional 5 000 MW of electricity within the next 5 years, with this consisting of both base load capacity¹ and peaking electricity generating capacity², depending on the electricity demand growth rate. Eskom's ISEP provides strategic projections of supply-side and demand-side options to be implemented in order to meet these long-term load forecasts. It provides the framework for Eskom to investigate a wide range of new supply-side and demand-side technologies, with a view to optimising investments and returns.

The most attractive supply-side option identified remains the Return-to-Service of the three mothballed Simunye Power Stations, i.e. Camden, Komati and Grootvlei. These stations are currently being returned to service. In order to ensure that potential future electricity demands are met, Eskom is investigating a variety of options including conventional pulverised fuel power plants, pumped storage schemes, gas-fired power plants, nuclear plants (PBMR), greenfield fluidised bed combustion technologies, renewable energy technologies (mainly wind and solar projects), and import options within the Southern African Power Pool (SAPP). As older Eskom power plant will reach the end of its design life by 2025, the use of all available technologies will need to be exploited in order to supply the country's growing electricity demand.

The outcomes of the IEP, NIRP and ISEP planning processes described above identified that South Africa will be dependant on coal as a primary energy source for electricity generation for many years into the future. With the current production levels, coal reserves are estimated at 200 years (Chamber of Mines, 2002; cited in Eskom Research Report, 2002). The NER drew the following conclusion in their National Integrated Resource Plan (NIRP) (reference NER NIRP2 available from the NER website www.ner.org.za):

"Options for diversification are insufficient to meet all of the forecast demand for electricity over the next 20-year planning horizon. Coal-fired options are still required for expansion during this period."

The need to construct a new coal-fired power station in order to assist Eskom in adequately providing for the growing electricity demand was identified through Eskom's ISEP process. Through screening and feasibility studies undertaken by Eskom for various Eskom facilities, the construction of a new coal-fired power station in the Lephalale (previously Ellisras) area was identified as a feasible option.

¹ "Base load electricity generating capacity" refers to power station technology designed specifically to generate electricity continuously for all hours of the day and night.

² "Peaking electricity generating capacity" refers to power station technology designed specifically to generate electricity during periods of very high demand for electricity, normally on weekday mornings around 07:00 to 09:00 and weekday evenings around 18:00 to 20:00.

1.2. Overview of the Proposed Project

The project involves the proposed establishment of a new coal-fired power station in the Lephalale area of the Limpopo Province. The power station is proposed to operate at an installed capacity of approximately 4 800 MW (2 100 MW initially, with potential expansion to 4 800 MW in the long-term). The exact output will depend on the generating technology utilised, the specification of the equipment installed, and the ambient operating conditions. The potential impacts associated with the maximum output of 4 800 MW have been evaluated within the environmental studies.

The footprint of the proposed new coal-fired power station is still to be determined through final engineering and design, but is estimated to be ~ 700 ha for the power plant and associated plant (terrace), and an additional ~ 500 ha to 1 000 ha for ancillary services, including ashing facilities (should additional space be required).

It is envisaged that the proposed power station will utilise a range of technologies pertaining to cooling, combustion and pollution abatement. The findings of the environmental studies being undertaken will provide a synopsis of opportunities and limitations for considerations in the determination of the most appropriate technology options to be implemented.

Due to the limited water availability in the Lephalale area, the power station will utilise dry-cooling technology. Dry-cooled technology reduces the total amount of water consumed at power stations when compared to conventional wet-cooling systems. According to design specification, the dry-cooled station would utilise approximately <0,2 litres of water per unit sent out.

1.3 Environmental Study Requirements

In terms of the Environmental Impact Assessment (EIA) Regulations published in terms of the Environment Conservation Act (No 73 of 1989), Eskom Holdings Limited requires authorisation from the National Department of Environmental Affairs and Tourism (DEAT) in consultation with the Limpopo Department of Economic Development, Environment and Tourism (L DEDET) for the undertaking of the proposed project. In order to obtain authorisation for this project, comprehensive, independent environmental studies must be undertaken in accordance with the EIA Regulations.

Eskom has appointed Bohlweki Environmental (as independent consultants) to undertake environmental studies together with a team of specialists to identify and assess all potential environmental impacts associated with the proposed project. In order to obtain authorisation for all aspects of this project,

comprehensive, independent environmental studies are required to be undertaken in accordance with the EIA Regulations.

The environmental studies will follow a two-phased approach in accordance with the EIA Regulations published in terms of the Environment Conservation Act (No 73 of 1989) i.e.:

- Phase 1: Environmental Scoping Study
- Phase 2: Environmental Impact Assessment (EIA)

This Environmental Scoping Study identifies and evaluates potential environmental impacts associated with all aspects of the proposed project. In terms of the EIA Regulations, *feasible* alternatives have been evaluated within the Scoping Study (refer to Chapter 2 and Chapters 6 to 16). Recommendations regarding a feasible preferred site for the development, as well as further studies required within the EIA phase of the project have been made (refer to Chapter 17).