

EXECUTIVE SUMMARY

1. INTRODUCTION

Eskom Holdings Limited (hereinafter referred to as Eskom) has appointed Bohlweki Environmental (Pty) Ltd as independent Environmental Assessment Practitioner (EAP) to conduct the Environmental Impact Assessment (EIA) process for the proposed construction and operation of a pumped storage scheme (a power generation facility) in the Steelpoort area (Limpopo and/or Mpumalanga Provinces), in terms of the EIA regulations (2006), published in Government Notice R385 to R387 of 21 April 2006 in terms of Section 24(5) read with Section 44, of the National Environmental Management Act (1998) (Act No 107 of 1998).

1.1 Need and justification of the project

Eskom has a mandate to satisfy potential customer and economic needs, which implies certain responsibilities. One of the most significant responsibilities is to find and maintain the balance between satisfying the needs of society and remaining within the capabilities of the environment. In order to achieve this, Eskom must continually re-assess its present infrastructure and take into account new developments to ensure that there is a continued supply of electricity, without significantly impacting on the environment.

Eskom is the primary supplier of electricity in South Africa, providing approximately 95% of the electricity consumed. The decision to expand Eskom's electricity generation capacity was based on national policy and informed by on-going strategic planning undertaken by the national Department of Minerals and Energy (DME), the National Energy Regulator of South Africa (NERSA) and Eskom. Eskom applies an Integrated Strategic Electricity Planning (ISEP) process to identify long-term options regarding both the supply and demand sides of electricity provision in South Africa.

The most recently approved ISEP (October 2005) identifies the need for increased peaking supply by about 2006/7 and base load by about 2010. This proposed project involves the construction and operation of a pumped storage scheme (power generation facility) in the Steelpoort area. The function of a pumped storage scheme is to supply power during the time of peak demands and to 'store' surplus power during off-peak periods, which will be utilized later. Electricity supply is thereby "shifted" from off-peak times, when there is generally a surplus of electricity, to peak times, when there is often a shortage of available electricity.

1.2 Overview of the Proposed Project

The proposed PSS in the Steelpoort area will consist of two dams/reservoirs (an upper and lower dam), interconnected by an underground tunnel system (waterways) with pump turbine units (powerhouse complex) with a potential generation capacity of approximately 1520 MW. In addition to this, the scheme will also have access and site roads (temporary and permanent), two construction villages, two 45m high communication masts (one at the upper reservoir and one at the lower reservoir) and other associated infrastructure.

2. DESCRIPTION OF ALTERNATIVES

A key component in the EIA process is the consideration of alternatives. Most guidelines use terms such as 'reasonable', 'practicable', 'feasible' or 'viable' to define the range of alternatives that should be considered. An Environmental Screening Investigation¹ (ESI) has been conducted by BKS Consulting in order to evaluate three possible alternative sites with various options for the proposed PSS in the Steelpoort area. The ESI was validated by Bohlweki. The findings of the ESI have been used to inform the ESS and to highlight areas where more information is required.

The development cycle for a new pumped storage scheme started almost two decades ago when Eskom initiated an extensive programme in the search for possible pumped storage sites throughout the whole of South Africa. In order to identify as many sites as possible, no limitations (such as potential capacity and location from demand centres) were set in this search. This process resulted in the identification of approximately 90 sites. A preliminary site selection process reduced these possible alternatives to seven sites, of which Braamhoek (KwaZulu-Natal), Mutale (Limpopo) and Steelpoort (Mpumalanga) were identified as the most promising sites. Mutale was eliminated and the Steelpoort and Braamhoek projects were initiated.

For this proposed PSS in the Steelpoort area, three alternative sites have been investigated, viz. Site A, Site B and Site C (Figure 1.1 and Appendix A). Several scheme options were furthermore investigated within each of the three main alternative sites. The site alternatives are described in more detail in chapter 3 and are discussed in Chapters 6 and 7, which contain the specialist findings from the ESI and ESS and weigh the site alternatives against each other in terms of a number of environmental (bio-physical and socio-economic) parameters.

¹ BKS Palace Consortium (May 2006). *Site Selection Study*, Main Report; and BKS (Pty) Ltd (May 2006). *Environmental Screening for Site Selection Project Lima*, rev7.

The alternative sites described above were evaluated in terms of social, biophysical, technical and economic criteria during the **ESI** in order to determine the most viable site in terms of their potential impact on the surrounding environment. Subsequent to the ESI, an Environmental Scoping Study (**ESS**) (the findings of which are detailed within this Environmental Screening Report (**ESR**) and which will be followed by the EIA phase of the process) was independently conducted, in which the findings of the ESI were validated and additional studies were conducted. The nomination of a preferred site to be taken through into the EIA phase for detailed investigation is done in this **ESR**.

3. APPROACH TO THE ENVIRONMENTAL SCOPING STUDY AND PUBLIC PARTICIPATION PROCESS

The National Environmental Management Act (NEMA) (No. 107 of 1998) states that the principles of Integrated Environmental Management (IEM) should be adhered to in order to ensure sustainable development. A vital underpinning of the IEM procedure is accountability to the various parties that may be interested in or affected by a proposed development. Public participation is a requirement of the IEM procedure, in terms of the identification of potentially significant environmental impacts during the Scoping Phase. The IEM procedure aims to ensure that the environmental consequences of development proposals are understood and adequately considered during all stages of the project cycle, and that negative aspects are resolved or mitigated and positive aspects enhanced.

Furthermore, Section 28(1) of the Act states that "every person who causes or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring". If such pollution cannot be prevented then appropriate measures must be taken to minimise or rectify such pollution. Eskom therefore has the responsibility to ensure that the proposed activity as well as the EIA process conforms to the principles of NEMA. In developing the EIA process Bohlweki have been cognisant of this need, and accordingly the EIA process undertaken here has been informed by the underlying NEMA principles.

The NEMA EIA regulations (2006), which replace the ECA EIA regulations, were promulgated in April 2006 and came into effect on 3 July 2006. Sections 24 and 24D of NEMA, as per Government Notices R386 and R387 of April 2006, contain a schedule of activities that may have substantial detrimental effects on the environment and which require authorisation from the competent environmental authority.

As the proposed project includes a number of listed activities from Government Notices R386 and R387 of April 2006, a full Environmental Impact Assessment process is being undertaken in a two-phased approach:

- *Phase 1:* Environmental Scoping Study
- *Phase 2:* Environmental Impact Assessment

In order to evaluate issues and assign an order of priority, it was necessary to identify the characteristics of each potential issue/impact and subsequently to assess each potential issue/impact in terms of its nature and extent. A synthesis of the description of the above characteristics of each identified issue assisted in the determination of the potential significance of the issues. The issues rated to be of medium or high significance were highlighted as issues requiring further investigation and assessment within the EIA phase.

The ESS aimed to address the following, taking into account the ESI conducted by BKS as the baseline scenario:

- description of the environment that may be affected;
- identification of potential positive and negative environmental impacts (biophysical, social, economic and cultural), including potential cumulative impacts, as well as a rating of each impact;
- identification of "hotspots" which should be avoided, where possible, due to potentially significant impacts on sensitive environments;
- description of feasible alternatives that were identified;
- evaluation of the potential feasible alternatives and the nomination of a preferred alternative to be investigated within the EIA phase of the project (done through validation of the ESI studies and conducting additional specialist studies – refer to Chapters 3, 6 and 7); and
- recommendations regarding more detailed investigations required within the EIA phase of the project.

A public participation process was undertaken as part of the scoping process, and involved the consultation of individuals and organisations throughout the broader study area representing a broad range of sectors of society. To date, this consultation has included telephonic and one-on-one consultations, Focus Group Meetings and documentation distributed via mail, pamphlets and via the printed media throughout the process. Furthermore, Public Meetings and Key Stakeholder Workshops, as well as additional Focus Group Meetings and one-on-one consultations were undertaken during the public review period of the draft ESR. Issues and concerns raised during the scoping process thus far have been recorded and captured within the Issues Trail (Appendix H).

A number of specialist studies were conducted in order to comprehensively identify both potential positive and negative environmental impacts (social and biophysical) associated with the project as well as to evaluate the extent of such impacts and determine their status. Through the ESS, which followed a two-pronged approach of validating the ESI and conducting certain additional specialist studies, the specialist team identified and considered the potential impacts for the proposed PSS in the Steelpoort area in order to identify a preferred alternative and any impacts of potential significance. Impacts determined to be of potential significance will be assessed for the preferred alternative in the EIA phase of the project. The following specialist studies have been conducted during the ESI and ESS (studies not conducted during the ESI but which were conducted during the ESS, have been *italicized*):

- Biophysical
 - Terrestrial Ecology (including fauna and flora)
 - Riverine Ecology (including wetlands)
 - Water Quality
 - Hydrology
 - Soils and Agricultural Potential
 - *Wetlands*
 - *Groundwater*

- Social
 - Displacement of persons
 - Heritage study
 - Health and safety (including HIV/Aids)
 - Access route (accessibility to site)
 - Visual (deterrent in ecological scenic environment)
 - *Tourism aspects*
 - *Traffic impacts*
 - *Air quality impacts*
 - Infrastructural development (water, electricity, etc.)

4. CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this Scoping Study are the result of desk-top evaluations of impacts identified by specialists and on-site inspections (including broad verification of the findings of the ESI conducted by BKS), and the parallel process of public participation. The net of the public consultation process has been cast widely in order to include, as far as possible, representatives of all stakeholders in the study area.

From the ESS, **Alternative A3 (between the farms Luipershoek 149 JS and Keerom 151 JS)** is nominated as the most feasible site alternative for the

construction of the proposed PSS in the Steelpoort area. Based on the studies conducted within the Environmental Scoping Study, it is anticipated that this site and option combination will have the least negative impact in terms of the combination of aspects (bio-physical and socio-economic) that have been investigated.

Based on the ESS undertaken, it can be concluded that there are **no** fatal flaws associated with the proposed PSS in the Steelpoort area at **Site A3**. A number of potentially significant (positive and negative) environmental impacts have, however, been identified and these are proposed to be evaluated during the detailed EIA phase of the project. Detailed, site-specific mitigation and management measures will be developed during the Environmental Management Plan (EMP) phase of the project in response to the detailed assessment, so as to maximize potential positive impacts and avoid or minimise potential negative impacts to be associated with the proposed project. Should this project receive environmental authorisation, the EMP will guide the project proponent and appointed contractor(s) through the final design, construction, operational and decommissioning phases of the proposed project and all specifications contained in the EMP will need to be adhered to by the applicant as well as any contractors appointed by the applicant.

This final ESR and Plan of Study for EIA are being submitted to the relevant authorities, including the National Department of Environmental Affairs and Tourism (DEAT – the lead authority), the Limpopo Department of Economic Development, Environment and Tourism (L DEDET – commenting authority) and the Mpumalanga Department of Agriculture and Land Affairs (M DALA – commenting authority) for review and acceptance.

Due to the inclusion of the two 45m high Communication Masts into the Final Environmental Scoping Report, the public will be notified of these inclusions by letter sent to all Interested and Affected Parties (IAPs) registered on the project database. The Final Environmental Scoping Report will be made available for public review on the Bohlweki (www.bohlweki.co.za) and Eskom (www.eskom.co.za) websites. Should the I&APs have any further comments on the Final Environmental Scoping Report, these comments should be submitted to N DEAT directly. The contact details for N DEAT are:

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