

May 2009  
Impact Assessment Phase

# ENVIRONMENTAL IMPACT ASSESSMENT

*Bravo Integration Project – Bravo 4:  
Construction of two 400 kV Power Lines from  
Kendal Power Station to Zeus Substation*

DEAT REF NO: 12/12/20/1093

**Proponent: Eskom Transmission**

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# FINAL ENVIRONMENTAL IMPACT REPORT

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Project 10637

## PURPOSE OF THIS DOCUMENT

The growing demand for electricity is placing increasing pressure on Eskom's existing power generation and transmission capacity. Eskom is committed to implementing a Sustainable Energy Strategy that complements the policies and strategies of National Government. Eskom aims to improve the reliability of electricity supply to the country, and in particular to provide for the growth in electricity demand in the Gauteng and Mpumalanga provinces. For this reason, Eskom obtained environmental authorisation to construct the new 400 kV Bravo (Kusile) coal-fired Power Station between Bronkhorstspuit and Witbank in 2007. Construction of this power station has already commenced.

Due to this construction, the new Bravo Power Station needs to be integrated with the existing Eskom electricity infrastructure. This proposed project is to construct two new 400 kV overhead power lines from the Kendal power station to the Zeus Substation. Each of these lines is approximately 100 km in length.

Eskom Transmission has appointed Zitholele Consulting (Pty) Ltd, an independent company, to conduct an Environmental Impact Assessment (EIA) to evaluate the potential environmental and social impacts of the proposed project.

The first phase of the EIA (Scoping Phase) has been completed. The second phase of an EIA is the Impact Assessment Phase. In the Scoping Phase public issues, concerns and suggestions were identified and these were used to shape the terms of references for the specialist studies that were conducted. The findings of the specialists are being reported on in this document – the culmination of the second phase (Impact Assessment Phase) of the EIA.

An EIA must show the authorities, the stakeholders and the proponent what the impact of the proposal on a particular alternative will be in environmental, economical and social terms and provide informed findings of the specialist investigations.

In accordance with the EIA Regulations, Interested and Affected Parties (I&APs) must be given the opportunity to verify that all the issues mentioned during the stakeholder engagement process, have been addressed in the Impact Assessment. For that reason, a Draft Environmental Impact Report (DEIR) is compiled and presented to the I&AP' during a public meeting. A DEIR was made available for public review from 23 March to 30 April 2009. After public review, the DEIR was updated and is being submitted to the lead authority, the National Department of Environmental Affairs and Tourism (DEAT) as the Final EIR, for a decision about the project.

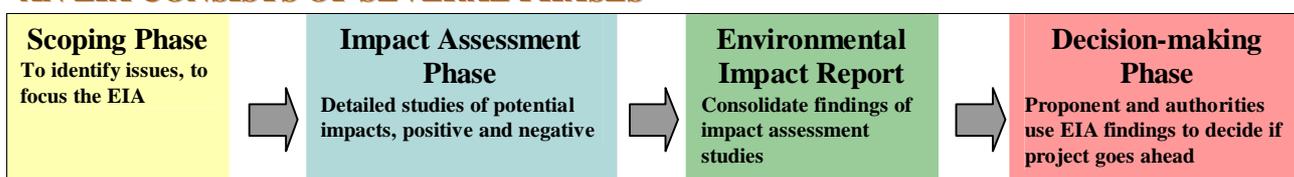
After public review, the Draft EIR will be updated and submitted to the lead authority, the National Department of Environmental Affairs and Tourism (DEAT) for a decision about the project.

### Summary of what the Final Environmental Impact Report Contains

This report contains the following for comment by stakeholders:

- A complete overview of the proposed project;
- An overview of the EIA process followed;
- A complete summary of the Public Participation (PP) Process followed;
- Project alternatives including the "No-go" (no development) option;
- An overview of the baseline receiving environment;
- The assessment by specialists of the potential environmental impacts of the proposed project along with the mitigation measures to reduce the negative impacts and enhance the positive impacts; and
- An Environmental Management Plan (EMP).

### AN EIA CONSISTS OF SEVERAL PHASES



## **EXECUTIVE SUMMARY**

### **OVERVIEW OF THE PROPOSED PROJECT**

On 5 June 2007, Eskom received environmental authorisation (12/12/20/807) from the National Department of Environmental Affairs and Tourism (DEAT) to proceed with the construction of the new Kusile (then Bravo) Power Station, between Bronkhorstspuit and Witbank in Mpumalanga. The EIA for the Bravo Power Station was conducted by a consulting company called Ninham Shand (Pty) Ltd. A copy of the RoD can be accessed from the Eskom website ( [www.Eskom.co.za](http://www.Eskom.co.za)) or [www.deat.gov.za](http://www.deat.gov.za) .

On 29 February 2008 Eskom awarded contracts for its "Bravo Project", a coal-fired power station to be built near Emalahleni in Mpumalanga by 2017. Site clearance for this station has already started. The first unit is planned to be online by 2013. The proposed Bravo Integration Project is necessary to integrate and connect Bravo Power Station (which will aid in the delivery of additional electricity supply) into the existing Eskom electricity network.

### **Bravo Integration Project**

The Bravo Integration project consists of the following five components:

#### **Phase 1: Sol – Camden By-Pass Power Line.**

The intention of Bravo 1 is to build two 400 kV by-pass lines for Zeus substation, the two 400 kV lines from Sol Substation and the two 400 kV power lines from Camden Power Station will be disconnected from Zeus substation and joined to each other to form two Camden- Sol 400 kV power lines. The location of the two by-pass lines is planned to be within approximately 10 km radius of the Zeus substation. The project is located within the Govan Mbeki District Municipality.

#### **Phase 2: Apollo and Kendal loop in and loop out lines**

Eskom propose to construct four new 400 kV overhead power lines, located within the Emalahleni Local Municipality in Mpumalanga, to loop in and out of Bravo Power Station. The existing Kendal-Apollo line will be looped in and out of Bravo to form the Bravo-Apollo and Bravo-Kendal lines. In addition, the existing Duvha-Minerva 400 kV overhead power line will be looped in and out of Bravo Power Station, to form the Bravo-Duvha and Bravo-Minerva lines. The study area in which the alternatives were selected is within the 10 km radius surrounding the new Bravo Power Station and each of the alternative 400 kV power lines will be not exceed 10 km in length.

#### **Phase 3: Construction of a 400 kV power line from Bravo Power Station to Lulamisa Substation**

In order for the Bravo Power Station to be integrated within the existing Eskom infrastructure, Eskom propose to construct a new 400 kV power line from the new Bravo Power Station to the existing Lulamisa substation, near Diepsloot. This line will be approximately 150 km in length. The construction of this proposed 400 kV power line is aimed to ensure sufficient electricity supply to the Diepsloot and

Johannesburg North areas, where currently frequent electricity shortages are experienced. The alternative Bravo power line corridors are located on the eastern Highveld of Southern Africa. The corridors cover an area from Witbank in the east, to Diepsloot in the west.

#### Phase 4: Two new 70 km Kendal –Zeus 400 kV Power Lines

Eskom propose to construct two new 400 kV power lines, one from Bravo to Zeus and the other one from the Kendal Power Station (near Ogies) to the Zeus substation (near Secunda), Mpumalanga. These lines will run parallel to each other and will be approximately 70 km's in length. The three alternative route corridors will be 5 km's wide. These three alternative corridors merge into two corridors approximately 30 km's from the Zeus substation.

#### Phase 5: New 10 km Bravo-Vulcan Power Line

Eskom propose to construct a 400 kV overhead power line, by-passing the existing Duvha substation, to form a new Bravo-Vulcan line near Emahlahleni, Mpumalanga. This by-pass line is planned to be approximately 10 km in length. The area to be investigated for this by-pass line is a 10 km radius surrounding the existing Duvha substation.

Certain limitations do exist for the proposed power line; nevertheless, it does not influence the alternative selection, as this section of the route has only one alternative available. It is however, recommended that a detailed route analysis be undertaken by Eskom, as this report is part of an application for the entire corridor, more detailed work will be required.

#### **Purpose of this Report**

This report constitutes the Final Environmental Impact Report, a key component of the Environmental Authorisation Process for the construction of two new 400 kV power lines, one from Bravo Power Station to Zeus Substation and the other one from the Kendal Power Station (near Ogies) to the Zeus Substation (near Secunda), Mpumalanga.

#### **Environmental Impact Assessment Process**

An Environmental Impact Assessment (EIA) for the proposed Bravo Integration Project –Bravo 4: Construction of two 400 kV Power Lines from Kendal Power Station to Zeus Substation has been undertaken in accordance with the Environmental Impact Assessment (EIA) Regulations promulgated in terms of Section 24 (5) of the National Environmental Management Act (NEMA). This EIA was undertaken in order to identify environmental issues associated with the proposed project, and determine which issues require further investigation.

To ensure effective public participation in this EIA phase, the public participation process was implemented in stages. This process included the identification of, and consultation with all relevant stakeholders, as well as ongoing communication and networking with I&APs throughout the duration of

the project. Issues and concerns raised during this process were compiled in an Issues and Response Report, and included within the Scoping, and this Final Environmental Impact Report.

The Draft Environmental Impact Report was made available for public review. During this review period, public feedback meetings were held to discuss the report. Comments received from the public have been captured within this Final Environmental Impact Report, which is to be presented to the National Departments of Environment Affairs and Tourism for comment, consideration, and authorisation.

### **Conclusion**

This section provides a short sensitivity matrix, which compares the three different alternatives and their associated environmental sensitivities.

<b>Sensitivity</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>
Geology	None	None	None
Climate	None	None	None
Topography	None	None	None
Surface Water	Most river crossings, traverses along several major streams.	Traverses along several major streams and in close proximity	Avoids the bulk of the surface water bodies.
Soils & Land Capability	Clay soils dominate	Clay soils dominate	Agricultural soils dominate
Flora	Traverses through sensitive vegetation	Traverses through sensitive vegetation	Limits interaction with sensitive vegetation.
Fauna	Potential high impact on avifauna	Potential high impact on avifauna	Smallest impact to avifauna
Wetlands	Traverses along wetlands and streams	Traverses along wetlands and streams	Limits interaction with wetlands
Visual	Existing impact	Limited existing impact	New impact
Heritage	Moderate	Moderate	Low
Social	Moderate	Low	Moderate
<b>Total Sensitivities</b>	<b>7</b>	<b>7</b>	<b>3</b>

On the basis of the matrix presented above, it is suggested that the Bravo 4 Alternative 3 be utilised as the preferred alternative for the proposed project, as it has the least sensitive features associated with the alignment.

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