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## **12 ENVIRONMENTAL IMPACT STATEMENT**

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According to Regulations 385, promulgated in terms of the NEMA, No 107 of 1998, Section 33 (n), an Environmental Impact Report must contain an environmental impact statement, which contains a summary of the key findings of the EIA, and a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives.

### **12.1 Alternatives Assessed**

The following alternatives were considered and discussed in the Environmental Impact Report:

- Project alternatives;
- Route alternatives;
- Design alternatives; and
- “No-go” alternative.

In summary the three route alternatives and the no-go alternative were assessed and are outlined below:

#### **12.1.1 Alternative Route 1**

Alternative 1 is to construct the two proposed 400 kV power lines, running parallel, approximately 76 km from Zeus Substation to Kendal Power Station. This proposed line will run furthest to the west as illustrated in Figure 4. This alternative is the longest alternative, and will be along an existing power line servitude.

#### **12.1.2 Alternative Route 2**

Alternative 2 is to construct the two proposed 400 kV power lines, running parallel, approximately 70 km from Zeus Substation to Kendal Power Station. The line will follow the same corridor as alternative 1 for the first 60 km's and later divert south before heading east towards the Zeus Substation for 30 kms.

#### **12.1.3 Alternative Route 3 (The Preferred Route)**

Alternative 3 is to construct the two proposed 400 kV power lines, running parallel, approximately 63 km from Zeus Substation to Kendal Power Station. This alternative will lead to a shorter power line length and is the alternative furthest to the east of the area as illustrated in Figure 4. This alternative is currently the preferred alternative.

#### **12.1.4 The No- Go Alternative**

The No-Go alternative was considered. In the case that none of the three alternatives is suitable for the proposed power lines, the recommendation would be that the proposed power line not be constructed and further alternative alignments, or project solutions be generated.

### **12.2 Environmental Aspects addressed in the EIA**

- Topography and Land Use;
- Geology, Soil and Land Capability, and Drainage Features;
- Climate;
- Infrastructure;
- Flora;
- Fauna;
- Electric and Magnetic Fields;
- Cultural and Historical Resources; and
- Socio-Economic Environment.

### **12.3 Summary of Impacts Identified**

#### **12.3.1 Positive Impacts**

##### Increased Electricity Supply Plan

For many years Eskom has operated in an environment of surplus capacity. However, this surplus capacity has now been exhausted with increased consumer demand. Eskom's power system will remain tight over the next five years with an increased likelihood of power interruptions. This trend is set to continue at least until the first new coal-fired base load power station (Medupi Power Station) is commissioned in 2011.

The latest ISEP (October 2005) has identified the need for increased base load electricity supply by the year 2010, while peaking generation is being attended to in the shorter term. The National Energy Regulator of South Africa (NERSA) is the regulatory authority responsible for the electricity supply industry in South Africa. In its National Integrated Resource Plan (NIRP), NERSA has determined that, while various alternative and renewable electricity generation options should be continually investigated, coal should still provide the main fuel source in South Africa. Accordingly, coal-fired power stations will be required for the expansion of generation capacity during the next 20 years.

The proposed Bravo Integration Project is necessary to integrate and connect the Bravo Power Station (which will aid in the delivery of additional electricity supply) into the existing Eskom electricity network.

### **12.3.2 Negative Impacts**

The potential impacts that were identified for the proposed project are outlined in the table below. The table indicates the impacts as they are currently (initial), if the project is undertaken (additional); if mitigation measures as outlined in the EMP are adhered to (residual) and the cumulative impacts..

		Construction phase				Residual	Cumulative
		Initial	Additional				
GEOLOGY	Significance	-	Very Low		Very Low	Very Low	
	Spatial	-	Isolated Sites		Isolated Sites	Isolated Sites	
	Temporal	-	Long Term		Long Term	Long Term	
	Probability	-	Probability		Probability	Probability	
	CLASS	-	Low		Low	Low	
TOPOGRAPHY	Significance	-	-		-	-	
	Spatial	-	-		-	-	
	Temporal	-	-		-	-	
	Probability	-	-		-	-	
	CLASS	-	-		-	-	
			Alt 1	Alt 2	Alt 3	-	-
SOILS & LAND CAPABILITY	Significance	Low	Low	Moderate	Moderate	Low	Low
	Spatial	Study Site	Isolated Site	Isolated Site	Isolated Site	Study Site	Study Site
	Temporal	Long Term	Long Term	Long Term	Long Term	Long Term	Long Term
	Probability	Is occurring	Will occur	Will occur	Will occur	Is occurring	Is occurring
	CLASS	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
VEGETATION	Significance	High	High	High	Moderate	High	High
	Spatial	Study Site	Isolated Site	Isolated Site	Isolated Site	Isolated Site	Study Site
	Temporal	Long Term	Long Term	Long Term	Short Term	Long Term	Long Term
	Probability	Is occurring	Will occur	Will occur	Will occur	Will occur	Is occurring
	CLASS	High	Moderate	Moderate	Low	Moderate	High
FAUNA	Significance	High	High	High	Moderate	High	High
	Spatial	Region	Isolated Site	Isolated Site	Isolated Site	Region	Region
	Temporal	Long Term	Short Term	Short Term	Short Term	Long Term	Long Term
	Probability	Likely	Will occur	Will occur	Will occur	Likely	Likely

	CLASS	Construction phase				Residual	Cumulative
		Initial	Additional		Low		
SURFACE WATER	Significance	Low	Very low		Low	Low	
	Spatial	Study Site	Study Area		Study Site	Study area	
	Temporal	Medium Term	Short Term		Medium Term	Medium Term	
	Probability	Could happen	Could happen		Could happen	Could happen	
	CLASS	Low	Very Low		Low	Low	
CULTURAL HISTORICAL			Alt 1	Alt 2	Alt 3		
	Significance	-	Very Low	-	Very Low	-	Very Low
	Spatial	-	Isolated Sites	-	Isolated Sites	-	Isolated Sites
	Temporal	-	Long Term	-	Long Term	-	Long Term
	Probability	-	Unlikely	-	Unlikely	-	Unlikely
CLASS	No Impact	Very Low	-	Very Low	No Impact	Very Low	
VISUAL	Significance	High	Low		High	High	
	Spatial	Local	Local		Local	Local	
	Temporal	Long Term	Short Term		Long Term	Long Term	
	Probability	Has occurred	Will occur		Has occurred	Has occurred	
	CLASS	High	Moderate		High	High	
SOCIO-ECONOMIC			Alt 1	Alt 2	Alt 3		
	Significance	Moderate	Low	Low	Low	Moderate	Moderate
	Spatial	Study Site	Study Site	Study Site	Study Site	Study Site	Study Site
	Temporal	Long Term	Short Term	Short Term	Short Term	Long Term	Long Term
	Probability	Is occurring	Its going to happen	Its going to happen	Its going to happen	Is occurring	Is occurring
CLASS	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	

		Operational Phase				
		Initial	Additional		Residual	
GEOLOGY	Significance	-	Very Low		Very Low	
	Spatial	-	Isolated Sites		Isolated Sites	
	Temporal	-	Long Term		Long Term	
	Probability	-	Probability		Probability	
	CLASS	-	Low		Low	
TOPOGRAPHY	Significance	-	-		-	
	Spatial	-	-		-	
	Temporal	-	-		-	
	Probability	-	-		-	
	CLASS	-	-		-	
			Alt 1	Alt 2	Alt 3	-
SOILS & LAND CAPABILITY	Significance	Low	Low	Moderate	Moderate	Low
	Spatial	Study Site	Isolated Site	Isolated Site	Isolated Site	Study Site
	Temporal	Long Term	Long Term	Long Term	Long Term	Long Term
	Probability	Is occurring	Will occur	Will occur	Will occur	Is occurring
	CLASS	Moderate	Moderate	Moderate	Moderate	Moderate
VEGETATION	Significance	High	High	High	Moderate	High
	Spatial	Study Site	Isolated Site	Isolated Site	Isolated Site	Isolated Site
	Temporal	Long Term	Long Term	Long Term	Short Term	Long Term
	Probability	Is occurring	Will occur	Will occur	Will occur	Will occur
	CLASS	High	Moderate	Moderate	Low	Moderate
FAUNA	Significance	High	High		High	
	Spatial	Region	Local		Region	
	Temporal	Long Term	Long Term		Long Term	

			Operational Phase		
			Initial	Additional	Residual
		Probability	Likely	Could occur	Unlikely
		CLASS	High	Moderate	Low
SURFACE WATER		Significance	Low	Very low	Low
		Spatial	Study Site	Study Area	Study Site
		Temporal	Medium Term	Short Term	Medium Term
		Probability	Could happen	Could happen	Could happen
		CLASS	Low	Very Low	Low
		Significance	-	-	-
CULTURAL HISTORICAL		Spatial	-	-	-
		Temporal	-	-	-
		Probability	-	-	-
		CLASS	-	-	-
		Significance	High	Low	High
VISUAL		Spatial	Local	Local	Local
		Temporal	Long Term	Short Term	Long Term
		Probability	Has occurred	Will occur	Has occurred
		CLASS	High	Moderate	High
		Significance	-	-	-
SOCIO-ECONOMIC		Spatial	-	-	-
		Temporal	-	-	-
		Probability	-	-	-
		CLASS	No Impact	No Impact	No Impact
		Significance	-	-	-

## **12.4 Summary of Mitigation Measures Proposed**

The following potential impacts were identified as requiring specific mitigation measures (which are included in the EMP):

- Impacts on Initiation and construction activities
- Site Establishment and Demarcation
- Water Management (including Storm water, Water Sources, Wet Areas)
- Hazardous Substance spills
- Delivery of Materials
- Building, Civil's and Structural Steel Work
- Circuit Breakers and Current Transformers
- Access Roads
- Waste Management Fire prevention
- Designated Storage Areas
- Tower Positioning
- Claims from damage
- Erosion, Donga and River Crossings
- Flora Management (including Vegetation Clearing, General, and Herbicides)
- Fauna Management
- Interaction with adjacent landowners
- Noise / Working Hours
- Infrastructure
- Archaeology
- Residential Property

Mitigation measures to address these impacts are included in Chapter 11 above.

## **12.5 EAP Opinion of the Preferred Alternative**

Three alternative routes have been considered. Based on the findings from this Environmental Impact Report, the EAP is of the opinion that Alternative 3 is the preferred alternative to construct the two proposed 400 kV power lines, running parallel, approximately 63 km from Zeus Substation to Kendal Power Station. Alternative 1 is the shortest alternative however it intersects the least sensitive

environments such as wetlands, ridges etc. In conclusion Alternative 3 is the preferred route alternative. This alternative will lead to a shorter power line length and is the alternative furthest to the east of the area..