



**MINISTRY: ENVIRONMENTAL AFFAIRS AND TOURISM  
REPUBLIC OF SOUTH AFRICA**

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Mr T Singleton  
Eskom Holdings Limited: Generation Division  
P O Box 1091  
**JOHANNESBURG**  
2000

**Fax no. 011 800 5140**

Dear Mr Singleton

**RE: RECORD OF DECISION FOR PROJECT REFERENCE 12/12/20/807: CONSTRUCTION OF  
THE ESKOM GENERATION PROPOSED 5400MW COAL-FIRED POWER STATION, WITBANK**

The Minister of Environmental Affairs and Tourism, Mr Marthinus van Schalkwyk, has considered the appeals against the Department's decisions to grant authorisation to the applicant for the construction of the proposed 5400mw coal-fired power station, Witbank (Project Bravo).

After evaluating all the appeals and relevant information submitted to him, he has come to a decision as attached hereto.

Sincerely,

**RIAAN AUCAMP  
ACTING: HEAD OF MINISTRY**

17 MAR 2008





MINISTRY FOR ENVIRONMENTAL AFFAIRS AND TOURISM

Ref: 12/12/20/807

**APPEAL DECISION**

**MINISTER OF ENVIRONMENTAL AFFAIRS AND TOURISM**

**APPEALS AGAINST THE ENVIRONMENTAL AUTHORISATION FOR THE  
CONSTRUCTION OF A 5400MW COAL-FIRED POWER STATION IN WITBANK**

**1. INTRODUCTION**

The project in question involves the construction of a 5400MW coal-fired power station and associated infrastructure near Witbank, on approximately 2500ha of land on the Farm Hartbeesfontein 537 JR and the Farm Klipfontein 566 JR.

**2. BACKGROUND**

The development that is the subject of this appeal entails the erection of a 5400MW coal-fired power station and its components and associated infrastructure listed below:

**2.1 Power Station Precinct**

- i) Power station buildings;
- ii) Administrative buildings (control buildings, medical, security etc);
- iii) High voltage yard.

## 2.2 Associated Infrastructure

- i) Coal stock yard;
- ii) Coal and ash conveyors;
- iii) Water supply pipelines (temporary and permanent);
- iv) Water and wastewater treatment facilities;
- v) Ash disposal system;
- vi) Access roads (including haul roads);
- vii) Dams for water storage; and
- viii) Railway siding and/or line for sorbent supply.

2.3 The applicant in this project is Eskom Holdings Ltd, Generation Division (Eskom).

2.4 In terms of the environmental impact assessment (EIA) regulations conducted under the Environment Conservation Act, 1989 (Act 73 of 1989) [ECA]), and which Act still governs this project, the construction of a facility of this nature is subject to EIA and an environmental authorisation.

2.5 The development was authorised by the Director-General and a positive record of decision (ROD) was granted in respect of this development on 5 June 2007. Two appeals, in terms of section 35(3) of the Environment Conservation Act, 1989, were received by my office against the proposed project.

## **3. APPEALS**

### **3.1 The appellants**

After the ROD in this matter was issued, my office received two appeals from Mr J.H. van der Merwe, a local landowner and farmer, and from the Kendal Poultry Farm (Pty) Ltd, represented by its attorneys, J B Hugo & Cronje, respectively.

### 3.2 Grounds of appeal

The grounds of appeal are briefly listed below:

- a) No consultation  
According to Mr Van der Merwe, he was not consulted regarding the project.
- b) Impact of the ash dump  
The same appellant referred to in (a) above submits that the ash dump will be detrimental to the health of his family and his farm animals.
- c) Impact on the appellant's normal way of life and living on the farm  
Mr Van der Merwe avers that the proposed power station will impact on the normal way of life of his family on the farm.
- d) Cumulative environmental impact assessment (EIA) not done  
It is the submission of Kendal Poultry that an assessment was not done with regard to the cumulative impact of the proposed power station and the proposed Anglo Coal Mine.
- e) Adverse air impact.  
Kendal Poultry alleges that there will be adverse air impact on its poultry farm, which will detrimentally affect the health of its chickens.
- f) Socio-economic impacts  
According to Kendal Poultry, there will be potential negative socio-economic impacts. The appellant states that its staff component of 110 persons and their many dependants are deeply affected and concerned as to their future jobs and their health, being in such close proximity to the proposed power station.

## g) Impacts on water quality

Kendal Poultry submits that there will be impacts on the quality of the water from its boreholes, of which a large quantity is used on the poultry farm for various purposes.

## 4. DECISION

## 4.1 INFORMATION CONSIDERED

In reaching my decision, I have considered the following information:

- The project file in this matter, including the ROD granted on 5 June 2007;
- The appeals lodged against this development, the response thereto by Eskom's consultants and one appellant's reply thereto; and
- The department's responses to the grounds of appeal.

## 4.2 DECISION

4.1 I have, in terms of section 35(4) of ECA, decided to dismiss the appeals lodged against the decision to grant the environmental authorisation for the construction of the proposed power station and its associated infrastructure. The reasons for my decision are set out below.

4.2 I have further decided to vary the authorisation issued by the Department and attach the revised authorisation hereto as Annexure B. More specifically, I have added conditions to the following effect:

- (a) The applicant, in consultation with the relevant appellant must, on a quarterly basis, monitor the reproductive health of the poultry on the Appellant's farm and if it is conclusively established that there is a causal connection between

- the emissions from the power station and any deterioration in the health of the chickens, corrective measures must be implemented by the applicant;
- (b) The applicant must establish an ambient air quality monitoring station to monitor the ambient air impact of the power station.

The revised ROD has been supplemented accordingly.

#### 4.3 REASONS FOR THE DECISION

I indicate briefly the reasons for my decision to authorise this development. In doing so, I am satisfied that:

- (a) There was sufficient consultation in this matter and that the legislative requirements in this regard have been satisfied;
- (b) The need and desirability for the project has been adequately demonstrated. The proposed project is part of the applicant's new capacity installation programme and is intended to meet some of the pressing electricity demands of the country;
- (c) The Director-General adequately considered the major anticipated environmental impacts of this development before issuing the environmental authorisation on 5 June 2007;
- (d) The potential impacts on human and animal health from the ash dump can be mitigated to acceptable levels through the conditions set by the authorisation and other measures, but that additional measures must be put in place to ensure adequate monitoring of air quality. I have also taken note in my analysis of the information before me that the proposed power station will be located within the newly proclaimed Highveld Priority Area. It is therefore envisaged that detailed air quality management interventions will be made within the area to generally improve ambient air quality. In addition, I am satisfied that the technology utilized for this development conforms to international best practice standards and will set the standard for similar developments in this country in future;

- (e) The conditions included in the revised ROD are deemed adequate to provide for the mitigation of the identified impacts to acceptable levels;
- (f) The development will result in socio-economic benefits, not only to the Witbank area, but to the country as a whole.
- (g) By implementing the mitigation measures contained in this revised ROD, the principles contained in section 2 of the National Environmental Management Act, 1998 (Act 107 of 1998, NEMA) can be substantially complied with.

I however reserve the right to amplify my reasons for this decision should the need arise.

*Martinus van Schalkwyk*  
MARTINUS VAN SCHALKWYK, MP

MINISTER OF ENVIRONMENTAL AFFAIRS AND TOURISM

DATE: 17 MAR 2008

## RECORD OF DECISION

RECORD OF DECISION FOR PROJECT REFERENCE 12/12/20/807: CONSTRUCTION OF THE  
ESKOM GENERATION PROPOSED 5400MW COAL-FIRED POWER STATION, WITBANK

By virtue of the power vested in me in terms of section 35(4) of the Environment Conservation Act, 1989 (Act 73 of 1989) ("the Act"), read with section 22(3) of the Act, I hereby authorise Eskom Holdings Limited to undertake the activities specified/ detailed below subject to the indicated conditions.

## 1. DESCRIPTION, EXTENT AND LOCATION OF THE ACTIVITY:

The proposed development will include the construction of a 5400MW coal-fired power station and associated infrastructure near Witbank, on approximately 2500ha of the Farm Hartbeestfontein 537 JR and the Farm Klipfontein 566 JR. Site X, as indicated on page 2 of the Final Environmental Impact Report (Ninham Shand Report No. 4284/401281, dated February 2007), was identified as the preferred site for the proposed coal-fired power station. The proposed site falls within the jurisdiction of Delmas Local Municipality within the Mpumalanga Province.

The proposed project will consist of the establishment of the following components:

- Power station precinct:
  - Power station buildings;
  - Administrative buildings (control buildings, medical, security, etc); and
  - High voltage yard.
- Associated infrastructure:
  - Coal stock yard;
  - Coal and ash conveyors;



- o Water supply pipelines (temporary and permanent);
- o Water and wastewater treatment facilities;
- o Ash disposal systems;
- o Access roads (including haul roads);
- o Dams for water storage; and
- o Railway siding and / or line for sorbent supply.

## 2. CONDITIONS

### 2.1 Description of the activity

The authorisation applies in respect of the following activities as listed in Schedule 1, regulation R. 1182 and described in Plan of Study for Scoping dated April 2006:

- Item 1: The construction, erection or upgrading of-
  - (a) facilities for commercial electricity generation with an output of at least 10 megawatts and infrastructure for bulk supply;
  - (c) with regard to any substance which is dangerous or hazardous and is controlled by national legislation-
    - (i) infrastructure, excluding road and rails, for the transportation of any such substance; and
    - (ii) manufacturing, storage, handling, treatment or processing facilities for any such substance;
  - (d) roads, railways, airfields and associated structures;
  - (g) structures associated with communication networks, including masts, towers and reflector dishes;
  - (l) schemes for the abstraction or utilisation of ground or surface water for bulk supply purposes;
  - (n) sewage treatment plants and associated infrastructure;
- Item 2: The change of land use from-
  - (c) agricultural or zoned undetermined use or an equivalent zoning to any other land use.
- Item 8: The disposal of waste as defined in section 20 of the Act, excluding domestic waste, but including the establishment, expansion, upgrading or closure of facilities for all waste, ashes and building rubble.

### 3. SPECIFIC CONDITIONS

#### 3.1 Water quality management

- 3.1.1 All risk reduction recommendations made in the Hydrogeological Assessment, GCS (Pty) Ltd, dated 14 November 2007, must be considered and implemented during the planning and construction of the new power station.
- 3.1.2 The coal stockyard must be established on top of a suitably prepared surface to prevent leaching into the groundwater.
- 3.1.3 The area where the ash dump is to be established must be lined to prevent leaching into the groundwater.
- 3.1.4 Dams with a higher groundwater pollution risk must be sited on appropriate underlying geological strata or these dams must be lined.
- 3.1.5 All polluted water must be recycled until all pollutants are captured as waste for disposal with the ash deposition.
- 3.1.6 Eskom must ensure that the metering procedure of water supplied to the proposed power station must measure to a level of accuracy of 0,5%. Water and salt balances must be carried out once a month to verify performance and identify potential problems.
- 3.1.7 Leak detections and inspections, on site and along pipelines must be implemented.
- 3.1.8 The cooling water sludge from the cold lime softening process must be co-disposed with the ash.
- 3.1.9 The sludge removed from raw water storage dams and reservoirs must be used as fill material for borrow pits or to cover for waste sites.
- 3.1.10 The "dirty" water generated on site and considered for irrigation must be tested to determine its suitability in terms of salinity and sodium absorption ratio (SAR).
- 3.1.11 Eskom must continuously monitor the ground water quality and implement measures to ensure that pollution of the resource does not occur. The monitoring programme for ground water quality and measures to control and prevent pollution of the ground water resource shall be included in the operational EMP.
- 3.1.12 A water use licence must be applied for in terms of Section 32 (g) of the National Water Act to adequately deal with the storage of ash from the ash dump and the disposal of wet waste from the Flue Gas Desulphurisation process.

### **3.2. Management of fauna and flora**

- 3.2.1 A site specific wetland assessment and a rare and endangered species survey must be undertaken during the appropriate season. This must inform the identification of less sensitive areas, for the positioning of corridors for pipelines, roads, railways and coal conveyors. These corridors should be planned in a way that avoids or minimises the impacts on wetlands.
- 3.2.2 All unavoidable construction within wetland areas must be done so as to minimise disturbance of the pedology which would directly affect subterranean hydrology in wetlands systems.
- 3.2.3 A revised layout must be submitted indicating how the proposed corridors for the pipelines, roads, railways and coal conveyors have taken the wetlands into consideration during the planning stage of the proposed alignment of these routes. This revised layout must also indicate where the proposed dams for water storage will be constructed.

### **3.3 Visual impact management**

- 3.3.1 The following design measures must be implemented at the power station to ensure that visual intrusion is kept to the minimum:
- Treat building facades and roofs with a muted, mat paint that is similar to the prevailing colour of the landscape.
  - Avoid very light or dark finishings that will increase colour contrast with the foreground and background.
  - Reduce the use of reflective building materials such as glass to avoid glare and visual discomfort to viewers.
  - Screen planting should be introduced along perimeter roads passing the site, around the coal stockyard and the ash dump to screen views of these project components.
  - Avoid over-illumination of outdoor spaces. Low pressure sodium lights are regarded as highly energy efficient and suitable for security lighting.
- 3.3.2 The existing vegetation cover of the site should be retained through selective clearing. This will ensure that screening takes place during the construction and operational phases of the development.
- 3.3.3 The ash dump's final slope configuration should avoid sharp angles and straight lines. The slope typically consists of benches and rises. The edges that will be created as a result of these changes in slope should be rounded to create an even light distribution over the edge and avoid distinct, straight shadow lines.

### **3.4 Noise impact management**

- 3.4.1 The Gauteng and the National Noise Control Regulations, as well as SANS 10103:2004 must be used as the main guidelines to manage the noise impact of this project.

- 3.4.2 Buildings housing noisy machinery must be insulated in order to minimise the transmission of noise through the walls and roof.
- 3.4.3 Measures to mitigate noise emanating from the cooling fans must be investigated by an acoustics engineer. Proposed mitigation measures, including the potential to shield the cooling fans must be included in the operational EMPs for consideration and approval by the Department.
- 3.5 Social risk management**
- 3.5.1 A Quantitative Risk Assessment must be undertaken in terms of the Major Hazardous Installation (MHI) Regulations (July 2001) prior to construction. This risk assessment must be undertaken once the detailed engineering designs and layouts have been developed. The findings of the assessment must be incorporated into the construction Environmental Management Plan (EMP).
- 3.6 Heritage impact management**
- 3.6.1 All recommendations made and mitigation measures proposed in the Heritage Impact Assessment, National Cultural History Museum, dated October 2006, must be implemented for the nine culturally important identified sites on the property.
- 3.6.2 The South African Heritage Resource Agency (SAHRA) must be informed if any of these identified culturally important sites are going to be impacted upon by the proposed development.
- 3.7 Air quality management**
- 3.7.1 Eskom must install, commission and operate any required SO<sub>2</sub> abatement equipment that may be necessary to ensure compliance with any applicable emission or ambient air quality standards published in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).
- 3.7.2 Particulate abatement measures such as bag filters or electrostatic precipitators must be implemented at the power station to reduce PM<sub>10</sub> emissions.
- 3.7.3 Eskom must initiate a programme of support for initiatives aimed at improving air quality in the Witbank residential area. This programme must be included in the operational EMP.
- 3.7.4 The power station must be operated in compliance with any related Registration Certificate issued in terms of the Atmospheric Pollution Prevention Act, Act 45 of 1965, and any related Atmospheric Emission License issued in terms of the National Environment Management: Air Quality Act, Act 39 of 2004.
- 3.7.5 Low NOx burners must be included in the design of the boilers to reduce the NOx levels.

- 3.7.6 Eskom must indicate the technology to be installed to reduce the emission of mercury into the atmosphere. The percentage and minimum of by how much this reduction will take place must be provided in the construction EMP.
- 3.7.7 Eskom must install an ambient air quality monitoring station to measure the ambient air impact of the power station. The location of the station and the pollutants to be monitored will be determined in consultation with the Department.
- 3.7.8 End of pipe measures need to be specific to address the sulphur dioxide and particulates emissions. These measures must include the following:
  - For sulphur dioxide – FGD unit
  - For particulates – ESP or bag filters
  - For carbon dioxide – carbon capture readiness (the Applicant is required to submit to DEAT a report detailing the preferred technology, for approval, before proceeding with construction)

### **3.8 Traffic impact management**

- 3.8.1 The future proposed alignment of the K29/1 intersects the proposed site. This road alignment must be verified with the Mpumalanga Roads Department before the commencement of the design of access roads to the site.
- 3.8.2 The internal road network utilised for access to the site must be resurfaced, upgraded or reconstructed as required. Special attention must be given to providing adequate drainage and subsurface drainage systems on all roads.

### **3.9 Socio-economic impact management**

- 3.9.1 Community forums and communication channels between the local communities, construction companies / contractors and Eskom must be established and maintained.
- 3.9.2 Assistance must be provided to the inhabitants on site through skills development and job opportunities. Information with regards to this must be included in the environmental compliance report to be undertaken by the Environmental Control Officer (ECO)(refer to 3.2.13.4 below).

### **3.10 Agricultural impact management**

- 3.10.1 Eskom must provide the Department with an action plan related to the surplus land, not occupied by infrastructure related to the power station which could be leased to farmers for agricultural production. This action plan must be included in the operational EMP.
- 3.10.2 In order to establish whether the operation of the power station has adverse impacts on the health and reproduction of the chickens of the Kendal Poultry Farm (hereinafter called Kendal Poultry), situated on Portions 30, 31, 62, 27 and 28 of the farm Klipfontein near Witbank, the ECO appointed in terms of paragraph 3.2.13 below must:

- (1) During the construction period compile baseline information, in consultation with Kendal Poultry, on chicken fatality and reproduction rates on a quarterly basis. This information must indicate the number of fatalities per 1 000 chickens and the number of new chickens per 1 000 hens. This baseline information must represent statistics for a period of at least one year.
- (2) Once the power station has come into operation, resume and continue this quarterly compilation of statistics for at least two years. After expiry of the two year period, Eskom must:
  - (a) Analyse the pre-operation (baseline) data and the post-operation data to establish whether there has been any increase in chicken fatality or decrease in their reproduction rate.
  - (b) Undertake appropriate studies, should there be evidence of such increases and decreases, to establish whether there is a causal relation between the fertility and mortality fluctuations and the emissions emanating from the power station. These studies must be undertaken within six months after completion of the gathering of the post-operational data.

3.10.3 Should these studies confirm that such a causal relation exists, Eskom must, within two months after completion of the studies referred to in (2)(b) , submit to the Department for approval:

- (a) A management plan to mitigate the impacts of the losses (if any), including but not limited to, compensation for such loss.

### **3.11 Environmental Monitoring Committee (EMC)**

- 3.11.1 This development is authorised on condition that the developer establishes an EMC with clear terms of reference as described in 3.2.11.6.
- 3.11.2 Amongst others the EMC shall consist of the following members:
  - (a) A chairperson as described in 3.2.11.3,
  - (b) The ecologist that participated in the EIA process, or any other suitably qualified and experienced ecologist approved for this purpose by the Department,
  - (c) Representatives from the public (at least two people),
  - (d) Environmental Control Officer (ECO) (once appointed in terms of 3.2.13 below),
  - (e) A senior site manager from the main contractor, and
  - (f) An air quality specialist.
- 3.11.3 The EMC must appoint an independent chairperson who has appropriate people and project management skills.
- 3.11.4 The EMC must meet on a bi-monthly basis from the inception of the project.
- 3.11.5 The EMC must report to the Director, Environmental Impact Evaluation of the Department on a bi-monthly basis and the report must include matters as described in 3.2.11.6 below.

- 3.11.6 The purpose of the EMC is to execute the following:
- (a) To monitor and audit compliance with the conditions of this ROD, with environmental legislation and with specific mitigation requirements as stipulated in the environmental impact report and the Environmental Management Plans.
  - (b) To make recommendations to the Director: Environmental Impact Evaluation on issues related to the monitoring and auditing of the project.
  - (c) To decide on the frequency of meetings, should a need arise to review the prescribed frequency. This change should be communicated to the Department for acceptance.
- 3.11.7 All costs associated with the EMC shall be borne by the applicant. The terms of reference for the EMC must, in addition to the scope of work as detailed in 3.2.11.6, clearly define roles and responsibilities related to logistical arrangements, administration and financial arrangements associated with the EMC.
- 3.11.8 Upon completion of construction, the roles, responsibilities and constitution of the EMC shall be reconsidered and the EMC shall be re-established with new terms of reference for the operational phase of the development.

### 3.212 Environmental Management Plan (EMP)

- 3.12.1 Eskom must submit a site specific construction EMP to the relevant authorities for acceptance before commencement of any of the activities related to this authorisation. The EMP must include, but shall not be limited to the following aspects:
- Rehabilitation of all areas disturbed during the construction phase of the project excluding those areas where permanent structures are erected.
  - Siting and management of construction camps, sanitation, ablution and housing facilities as well as material storage areas used by the contractor. All work areas must be supplied with proper sanitation facilities.
  - Management and rehabilitation of access roads to individual construction areas that will not become permanent roads upon completion of construction. Any new road constructed for any purpose not authorised as part of this ROD, must comply with the relevant SANS codes and permission for construction must be obtained from the Department as required by Schedule 1, item 1 (d) of R. 1182.
  - Waste avoidance, minimisation and disposal of waste at an appropriate facility.
  - Protection of any heritage sites likely to be impacted on by the development, should such sites be found during any phase of the development of the project.
  - Provisions for harvesting of any medicinal plants that may occur on site prior to site clearance.
  - Protection of indigenous vegetation where such is not affected by the physical footprint of the power station, ancillary infrastructure or associated construction works.
  - Provision for plant search and rescue of protected and endangered species which should be done before commencement of any construction related activity.
  - Management of traffic during the construction phase where the site access roads and other transportation networks intersect.
  - Measurement, monitoring and management of noise and dust pollution levels during the construction phase.

- A fire control management plan for implementation on site.
  - Implementation of site specific erosion, sediment and dust control measures during the construction phase.
  - The implementation, as part of the EMP, of all recommendations and mitigation measures contained in the final environmental impact report dated February 2007.
- 3.12.2 Once accepted by the Department, the revised construction EMP will be seen as a dynamic document. However, any changes to the EMP, must be submitted to the Department for acceptance before such changes could be effected. Such a submission for consideration by the Department must be accompanied by recommendations of the EMC.
- 3.12.3 Compliance with the accepted construction EMP must form part of all tender documentation for all contractors working on the project and must be endorsed contractually.
- 3.12.4 Eskom must submit an EMP for the operational phase of the development to the Department and other relevant provincial and local authorities for acceptance prior to the completion of the construction phase and the inception of the operational phase of the development. The revised operational EMP will be seen as a dynamic document. However, any substantial changes to the operational EMP, which is environmentally defensible, must be submitted to the Department for acceptance before such changes are effected.

### 3.13 Environmental Control Officer (ECO)

- 3.13.1 The developer must appoint a suitably qualified Environmental Control Officer (ECO) who would, on behalf of the EMC, on a daily basis monitor the project compliance with conditions of this ROD, with environmental legislation and with the recommendations of the EMP. The cost of the ECO shall be borne by the applicant.
- 3.13.2 The ECO must be appointed one month before the start of construction and the relevant authorities must be notified of such an appointment for communication purposes.
- 3.13.3 The ECO shall ensure that periodic environmental performance audits are undertaken on the project implementation.
- 3.13.4 The ECO shall submit an environmental compliance report on a two-monthly basis, in writing, to the Director: Environmental Impact Evaluation of the Department, copied to the Mpumalanga Department of Agriculture and Land Administration.
- 3.13.5 The ECO shall maintain the following on site:
- A daily site diary
  - A non-conformance register
  - A public complaint register
  - A register of audits



3.13.6 The ECO shall remain employed until all rehabilitation measures as required, caused by construction damage, are completed and the site is handed over to Eskom by the contractor for operation.

3.13.7 The ECO shall report to and be accountable to the EMC.

### **3.14 Monitoring and auditing**

3.14.1 Records relating to monitoring and auditing must be made available for inspection to any relevant authority in respect of this development.

3.14.2 The Department reserves the right to monitor and audit the development throughout its full life cycle to ensure that it complies with the conditions stipulated in the record of decision and to ensure implementation of all the mitigation measures contained in the final environmental impact report dated February 2007, and of the construction and operational EMPs.

### **3.15 Transportation and handling of hazardous materials.**

3.15.1 During the construction of the power station, an effective monitoring system must be put in place to ensure safety and to detect any leakage or spillage of coolants from all oil containing equipment during their transportation, handling and installation.

3.15.2 The transportation and handling of hazardous substances must comply with all the provisions of the Hazardous Substances Act (Act No.15 of 1973) and its regulations as well as with SABS codes 0228 and 0229.

### **3.16 Rehabilitation after construction**

3.16.1 No exotic plant species may be used for rehabilitation purposes. Only indigenous plants may be used.

3.16.2 Measures aimed at controlling invasive plant species and weeds must be implemented and must form part of the relevant EMP.

3.16.3 No disturbance of the land on the edge of any stream, river or wetland is allowed unless such disturbance complies with relevant legislation and conforms to strict design parameters.

### **3.17 Compliance with other legislation**

3.17.1 Archaeological remains, artificial features and structures older than 60 years are protected in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999). Should any archaeological artefacts be exposed during excavation for the purpose of laying foundations, construction in the vicinity of the finding must be stopped. An archaeologist must be called to the site for inspection. Under no circumstances shall any

artefacts be destroyed or removed from the site. SAHRA must be contacted to this effect. Their recommendations should be included in the construction EMP and be adhered to.

- 3.17.2 All provisions of the Occupational Health and Safety Act, 85 of 1993, and any other applicable legislation must be adhered to by the holder of this authorisation.
- 3.17.3 All provisions of the National Water Act, Act 36 of 1998, must be adhered to by the holder of this authorisation.
- 3.17.4 All provisions of the National Environment Management: Air Quality Act, Act 39 of 2004, must be adhered to by the holder of this authorisation.
- 3.17.5 All provisions of the Atmospheric Pollution Prevention Act, Act 45 of 1965, must be adhered to by the holder of this authorisation.
- 3.17.6 All provisions of the National Environment Management: Biodiversity Act, Act 10 of 2004, must be adhered to by the holder of this authorisation.
- 3.17.7 Should fill material be required for any purpose, the use of borrow pits must comply with the provisions of the Minerals and Petroleum Resources Development Act, 28 of 2002 administered by the Department of Minerals and Energy.
- 3.17.8 A permit shall be obtained from the provincial department of nature conservation for the removal of indigenous protected and endangered plant and animal species.

### **3.18 GENERAL CONDITIONS**

- 3.18.1 This ROD is issued only in terms of section 22 of the Act and does not exempt the holder thereof from compliance with any other legislation.
- 3.18.2 This ROD only refers to the activities as specified and described in the final environmental impact report dated February 2007. Any other activity listed under section 24(2) of the National Environmental Management Act, 1998 (Act 107 of 1998), which is not specified above, is not covered by this ROD.
- 3.18.3 This ROD is subject to the approval of the relevant local authorities in terms of any legislation administered by those authorities.
- 3.18.4 One week's written notice must be given to the Department before commencement of construction activities. Such notice shall make clear reference to the site location details and reference number given above.
- 3.18.5 One week's written notice must be given to the Department before commencement of operational activities. Such notice shall make clear reference to the site location details and reference number given above.

- 3.18.6 The applicant shall be responsible for ensuring compliance with the conditions contained in this ROD by any person acting on its behalf, including but not limited to, an agent, servant, or employee or any person rendering a service to the applicant in respect of the activity, including but not limited to, contractors and consultants.
- 3.18.7 The applicant must notify the Department in writing, within 24 hours, if any condition of this ROD cannot, or is not, adhered to. The notification must be supplemented with reasons for such non-compliance.
- 3.18.8 A copy of this ROD shall be available on site during construction and all staff, contractors and sub-contractors shall be familiar with or be made aware of the contents thereof.
- 3.18.9 Compliance/non-compliance records must be kept and shall be made available on request from the authorities within five days of receipt of the request.
- 3.18.10 Any changes to, or deviations from, the project description set out in this ROD must be approved, in writing, by the Department before such changes or deviations may be effected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations.
- 3.18.11 This Department may review the conditions contained in this ROD from time to time and may, by notice in writing to the applicant, amend, add or remove a condition.
- 3.18.12 In the event of impacts exceeding the significance predicted by the independent consultant in the final environmental impact report dated February 2007, this authorisation may be withdrawn after proper procedures have been followed.
- 3.18.13 In the event of any dispute concerning the significance of a particular impact, the opinion of the Department will prevail.
- 3.18.14 The applicant must notify the Department, in writing, at least ten days prior to the change of ownership, project developer or the alienation of any similar rights for the activity described in this ROD. The applicant must furnish a copy of this document to the new owner, developer or person to whom the rights accrue and inform the new owner, developer or person to whom the rights accrue that the conditions contained herein are binding on them.
- 3.18.15 Where any of the applicant's contact details change, including the name of the responsible person, the physical or postal address and/or telephonic details, the applicant must notify the Department as soon as possible.
- 3.18.16 National, provincial or local government institutions or committees appointed in terms of the conditions of this authorisation or any other public authority shall not be held responsible for any damages or losses suffered by the applicant or his successor in title in any instance where construction or operation subsequent to construction is temporarily or permanently stopped for reasons of non-compliance by the applicant with the conditions of approval as

set out in this document or any other subsequent document emanating from these conditions of approval.

3.18.17 If any condition imposed in terms of this authorisation is not complied with, the authorisation may be withdrawn after 30 days written notice to the applicant in terms of section 22(4) of the Act.

3.18.18 Failure to comply with any of these conditions shall also be regarded as an offence and may be dealt with in terms of sections 29, 30 and 31 of the Act, as well as in terms of any other appropriate legislation.

3.18.19 The applicant shall be responsible for all costs necessary to comply with the above conditions unless otherwise specified.

3.18.20 Any complaint from the public during construction must be attended to as soon as possible to the Satisfaction of the parties concerned. A complaints register must be kept up to date and shall be produced upon request.

3.18.21 Departmental officials shall be allowed access at all reasonable times to the properties earmarked for construction activities for the purpose of assessing and/or monitoring compliance with the conditions contained in this document.

3.18.22 All outdoor advertising associated with this activity, whether on or off the property concerned, must comply with the South African Manual for Outdoor Advertising Control (SAMOAC), which is available from the Department.

#### 4 DURATION OF AUTHORISATION

If the activity authorised by this letter does not commence within four years from the date of signature of this ROD, the authorisation will lapse and the applicant will need to reapply for exemption or authorisation in terms of the above legislation or any amendments thereto or any subsequent new legislation.

#### 5. CONSEQUENCES OF NON-COMPLIANCE

The applicant must comply with the conditions set out in this ROD. Failure to comply with any of the above conditions may result in, *inter alia*, the withdrawal of the authorisation, the issuing of directives to address the non-compliance – including an order to cease the activity – as well as the institution of criminal and/or civil proceedings to enforce compliance.

#### 6. APPLICANT:

Eskom Holdings Limited: Generation Division  
P O Box 1091  
JOHANNESBURG  
2000

Contact person: Ms Deirdre Herbst  
Fax: (011) 800 5140

7. **CONSULTANT:**

Ninham Shand Consulting Services  
P O Box 509  
**GEORGE**  
6630

Contact person: Brett Lawson  
Fax: (044) 874-2165

*Martinus van Schalkwyk*

**MARTHINUS VAN SCHALKWYK**  
**MINISTER OF ENVIRONMENTAL AFFAIRS AND TOURISM**  
**DATE: 17 MAR 2008**



# water & forestry

Department:  
Water Affairs and Forestry  
REPUBLIC OF SOUTH AFRICA

Private Bag X313, Pretoria, 0001, Sedibeng Building, 185 Schoeman Street, Pretoria  
Tel: (012) 336 7500 Fax: (021)323 4472 / (021) 326 2715

## LICENCE IN TERMS OF CHAPTER 4 OF THE NATIONAL WATER ACT, 1998 (ACT NO 36 OF 1998) (THE ACT)

I, **Deborah Gabaakelwe Mochotli**, in my capacity as Chief Director: Water Use in the Department of Water Affairs and Forestry and acting under authority of the powers delegated to me by the Minister of Water Affairs and Forestry (herein after referred to as Department), hereby authorise the following water uses in respect of this licence.

SIGNED

DATE:

10/09/2008

LICENCE NO. 24088274

1. **Water User:** Eskom Holdings Ltd (Bravo Project)  
**Postal Address of applicant:** P O Box 1091  
Johannesburg  
2000

### 2. Water uses

This licence is issued for the following water uses in terms of the National Water Act, 1998 (Act 36 of 1998) (the Act).

- 2.1 Section 21(c) of the Act: Impeding or diverting the flow of water in a watercourse,
- 2.2 Section 21(i) of the Act: Altering the bed, banks, course or characteristics of a watercourse, and
- 2.3 Section 21(j) of the Act: Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.

### 3. Properties on which the use will be exercised and Registered Owners

The above water uses will take place on the following properties:

- a) Portion 6 of Hartbesstfontein 537-JR, Title Deed No. T54424/1987; Jan Visser Trust
- b) Portion 7 of Hartbesstfontein 537-JR, Title Deed No. T111080/2004; Jali Trust

- c) Remainder of Portion 3 of Klipfontein 566-JR, Title Deed No. T26149/2006; SJJM Swanepoel Boerdery CC
- d) Remainder of Portion 7 of Klipfontein 566-JR, Title Deed No. T64473/2006; FS and JC Boerdery
- e) Portion 58 of Klipfontein 566-JR, Title Deed No. T13802/1998; LPJ Louw

**4. Licence and Review Period**

This licence is valid for a period of forty (40) years from the date of issuance and will be reviewed every year for the first two years and thereafter will be reviewed every four years.

**5. Definitions**

Any term, word and expression as defined in the National Water Act, 1998 (Act 36 of 1998) shall bear the same meaning when used in this licence.

"The Chief Director" means the Regional Chief Director: Mpumalanga Region, Department of Water Affairs and Forestry, Private Bag X11259, NELSPRUIT, 1200.

"Report" refers to the all documentations submitted in support of the application as well as all related specialist investigations, all other related documentations/submissions and communication (emails, letters, verbal, etc) related thereto.

**ANNEXURE I  
CONDITIONS FOR ALL WATER USES**

1. The responsibility for complying with the provisions of the licence is vested in the licensee and not any other person or body.
2. The licensee shall immediately inform the Chief Director of any change of name, address, premises and/or legal status.
3. If the property mentioned in Clause 3 above is subdivided, sold or consolidated, the owner(s) of the new property (ies) must enter into a written mutual agreement and notify this Department or the responsible authority after the said transaction took place.
4. If a water user association is established in the area to manage the resource, membership of the licensee to this association is compulsory and rules, regulations and water management stipulations of the association must be adhered to.
5. The licensee shall be responsible for any water use charges or levies imposed from time to time by a responsible authority or Department in terms of the Raw Water Pricing Strategy, Waste Discharge Charges, Water Resource Management Charge of the Department, or any other water charge or levies that might be imposed in terms of the appropriate legislation.



**ANNEXURE II**

**Section 21(c) of the Act: Impeding or diverting the flow of water in a watercourse,  
Section 21(i) of the Act: Altering the bed, banks, course or characteristics of a water  
resource**

- 1.1 This licence only authorise the following Section 21(c) and (i) water uses - an integrated water use licence application for all remaining activities not included in this licence must be submitted so that the cumulative impacts of the development on the water resources and watercourses in the area can be considered appropriately, specifically the development to take place within watercourses including but not limited to the gypsum dam; the ash disposal facility; additional impedings and alterations to the stream channel on which the diversion is to take place (e.g. construction of culverts etc.); and road, rail and conveyor crossings:
  - 1.1.1 Diversion of an unknown first order perennial tributary of the Klipfonteinspruit, within the Wilge River System (Quaternary Drainage Region B20F), comprising a stream channel and hillslope seepage- and valley bottom wetlands as per the report listed under condition 1.2.1.1 and 2;
  - 1.1.2 Construction and operation of a raw water pipeline within watercourses (i.e. various stream channels and wetlands (i.e. depressions, hillslope seepage-, non-channel valley bottom-, and channelled valley bottom wetlands) as set out in the report listed under condition 1.2.1.3, 4 and 5; and
- 1.2 The licensee shall carry out and complete all the activities in relation to these Section 21(c) and (i) water uses according to the following:
  - 1.2.1 Report(s) submitted to the Department or the Responsible Authority, specifically the mitigation measures for impacts on the various watercourses set out in:
    - 1.2.1.1 Specialist Study. Impacts of Dewatering and Stream Diversion on Aquatic Ecosystems, 13 June 2008;
    - 1.2.1.2 Hydrological Stream Diversion Assessment Report, June 2008;
    - 1.2.1.3 Report on Ecological Follow-up Compliance Surveys for the Proposed ESKOM Bravo Power Station Near Kendal, Mpumalanga, March 2008;
    - 1.2.1.4 Environmental Impact Assessment Process: Proposed Coal-Fired Power Station and Associated Infrastructure in the Witbank Area. Final Environmental Impact Report, February 2007; and
    - 1.2.1.5 Draft Construction Environmental Management Plan (EMP), August 2008 (until the final plan has been approved by the Department, refer condition 1.2);
  - 1.2.2 Conditions of this licence; and
  - 1.2.3 Any other written direction issued by the Regional Director in relation to this licence.
- 1.3 A final Construction EMP (including rehabilitation strategies) must be submitted to and approved by the Regional Director before construction commences in respect of the Section 21(c) and (i) water uses set out in condition 1.1. An EMP for the operation and maintenance phases of these water uses must be submitted before completion of the construction phase and an EMP for the decommissioning of any of these water uses one (1) year before commencing with closure to the Regional Director for written approval.
- 1.4 Work method statements, site plan/s and detailed design drawings for the construction of all infrastructure impeding and/or diverting flow of watercourses as well as alterations to

watercourses on the property/ies must be submitted to the Regional Director for written approval and implementation as directed before construction commences and will be regarded as forming part of the conditions of this licence. The foregoing must indicate the regulated activities, marking the limits of disturbance in relation to the impacted watercourses; morphology of the watercourses; site specific impacts; and environmental management, particularly erosion and sediment, controls and measures.

- 1.5 No fundamental alterations of the work method statements, site plan/s and drawings are allowed, unless a modification is requested and granted by the Regional Director in writing.
- 1.6 No site activities shall occur beyond the proposed site location of the erosion and sedimentation controls and marked limits of disturbance as depicted (refer condition 1.4).
- 1.7 Upon completion of the project, an "As-Built" Plan, prepared by a registered professional engineer, will be submitted to the Regional Director showing the watercourses and/or wetland boundaries and layout and structure location/s of all infrastructure impeding and/or diverting flow of watercourses as well as alternations to watercourses on the property/ies.
- 1.8 A copy of the water use licence will be on site at all times.
- 1.9 The conditions of the authorisation shall be brought to the attention of all persons (employees, sub-consultants, contractors etc.) associated with the undertaking of this activity and the applicant shall take such measures that are necessary to bind such persons to the conditions of this licence.
- 1.10 The height, width and length of structures will be limited to the minimum dimension necessary to accomplish the intended function.
- 1.11 A suitably qualified person, appointed by the licensee, and approved, in writing, by the Regional Director, must be responsible for ensuring that the structures are constructed and maintained in line with the design specifications.
- 1.12 The licensee shall have a full time Civil Engineer Supervisor on the site during construction of all infrastructure impeding and/or diverting flow of watercourses as well as alternations to watercourses on the property/ies. The contractor shall have an approved Site Agent on the site during construction.

## **2 STORMWATER MANAGEMENT**

- 2.1 Stormwater shall be diverted from the construction works and roads and shall be managed in such a manner as to disperse runoff and to prevent the concentration of stormwater flow.
- 2.2 Where necessary works must be constructed to attenuate the velocity of the stormwater discharge and to protect the banks of the watercourse.
- 2.3 Stormwater control works must be constructed, operated and maintained in a sustainable manner throughout the project.

- 2.4 Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the watercourse.
- 2.5 Storm water leaving the licensee's premises must in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises.

### **3 WATER QUALITY AND QUANTITY**

- 3.1 Pollution caused by the infrastructure impeding and/or diverting flow of watercourses as well as alternations to watercourses on the property/ies must be prevented through proper maintenance and effective protective measures, or otherwise minimised and remedied.
- 3.2 The in-stream water quality must be analysed on a monthly basis during the construction of the regulated Section 21(c) and (i) water use activities in terms of this licence, at monitoring points both upstream and downstream of the activities for the following variables: pH, dissolved oxygen, total dissolved solids, and temperature. Monitoring shall continue on a monthly basis for three months after the cessation of the construction activities.
- 3.3 A water quality and pollution monitoring and remediation plan for the operation, and decommissioning phases of all the infrastructure impeding and/or diverting flow of watercourses as well as alternations to watercourses on the property/ies must be submitted to the Regional Director, three months before a particular phase commences, for approval and implementation as directed. This plan may, however, be submitted as part of the Integrated Water and Waste Management Plan should it precede operationalisation of the regulated water uses.
- 3.4 Activities that lead to elevated levels of turbidity of any watercourse must be minimised.
- 3.5 The licensee shall ensure that the quantity of the water to downstream water users does not decrease because of the existence, operation, and maintenance of the regulated water uses.

### **4 RIPARIAN HABITAT, MORPHOLOGY AND FLOOD AND FLOW DYNAMICS PROTECTION**

- 4.1 Disturbance and other environmental damage to the watercourses impacted by the infrastructure impeding and/or diverting flow of watercourses as well as alternations to watercourses on the property/ies must be prevented or otherwise minimised and remedied.
- 4.2 Compensation measures for damage to and/or mitigation measures must be recommended and agreed with in writing with the Regional Director if avoidance or minimisation of the impacts of the proposed development is not possible or if mitigation measures fail to adequately protect the in-stream and riparian habitat.
- 4.3 The remaining wetlands on the ESKOM property/ies associated with the Bravo Power station must be rehabilitated to an ecological class agreed with the Chief Director: Resource Directed Measures and must be undertaken in consultation with the Department's Wetlands Task Group;

- 4.4 Loss of fish and other beneficial organisms, wildlife and vegetation must be prevented or minimised.
- 4.5 Critical riparian and in-stream habitat areas, such as habitats of rare and endangered floral and faunal species, must be preserved.
- 4.6 The existing biological productivity of the watercourses must be maintained or improved.
- 4.7 Breeding, nesting and/or feeding habitats of wildlife must not be significantly altered.
- 4.8 Movements and lifestyles of fish and wildlife will not be significantly affected and periods of seasonal fish runs and bird migrations shall not be impeded.
- 4.9 Infrastructure impeding and/or diverting flow of watercourses as well as alternations to watercourses on the property/ies may not restrict river flows by reducing the overall river flow.
- 4.10 All activities within the riparian zone, in particular operation and storage of equipment, must be limited as far as possible.
- 4.11 Any material removed from the in-stream or riparian habitat may not be stored in such a way that will cause damming of water or wash-away, if such activities are not authorised by this licence.
- 4.12 Alien vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be eradicated or controlled, using standard methods approved by the Department.
- 4.13 Soils that have become compacted through the activities of the development must be loosened to an appropriate depth to allow seed germination.
- 4.14 Where appropriate and possible, riparian vegetation, including dead trees, may not be removed from the area. In particular, snags (fallen trees and branches) in the river must be protected (i.e. not collected for firewood or any other purpose) and large individual indigenous riparian trees shall be avoided during construction and shall be clearly marked on site.
- 4.15 All reasonable steps should be made to minimise noise and mechanical vibrations in the vicinity of the watercourses.
- 4.16 The licensee shall determine flood lines (1:50 and 1:100 year) prior to construction to ensure risks are adequately managed. Flood lines shall be clearly indicated on layout plans (refer condition 1.4).
- 4.17 The licensee shall clearly indicate all wetland and watercourse boundaries within the project area on layout plans (refer condition 1.4).
- 4.18 All construction roads in or adjacent to the riparian zone shall be minimised and if required, shall be aligned and managed so as to minimise disturbance of the riparian zone and in-stream habitats.
- 4.19 Spill-over of material into and siltation of the watercourse shall be prevented.

- 4.20 Formation of deposits harmful to aquatic life and/or wetlands habitat must not occur.
- 4.21 The potential for flood damage on adjacent or adjoining properties must not be increased.
- 4.22 The velocity or volume of flood waters both into and out of wetlands and the watercourse will not be adversely altered and the capacity of any wetland or the watercourse to transmit or absorb flood waters must not be significantly reduced.
- 4.23 Flooding upstream or downstream of the location site will not be significantly increased.
- 4.24 Construction camp/s must not be located and construction activities not take place within the 1:100 year flood-line or within a horizontal distance of 100 meters from any watercourse, borehole, or well, whichever is the greatest, unless authorised by this licence and as part of the activities described in the report(s) (referred to in condition 1.1) submitted to the Department.
- 4.25 The licensee must ensure that structures shall not be damaged excessively by floods exceeding the magnitude of floods occurring on average once in every 50 years.
- 4.26 Temporary and permanent structures within the watercourse must be non-erosive, structurally stable and must not induce any flooding or safety hazard and must be inspected regularly for accumulation of debris, blockage, erosion of abutments and overflow areas. Debris must be removed and damages must be repaired and reinforced immediately.
- 4.27 Construction activities shall start up-stream and proceed into a down-stream direction, so that the recovery processes can start immediately, without further disturbance from upstream construction works.
- 4.28 Construction activities must be scheduled to take place during the dry seasons when flows are lowest.
- 4.29 Vehicles and other machinery must be serviced well above the 1:100 year flood line or within a horizontal distance of 100 meters from any watercourse, whichever is the greater, and oils and other potential pollutants must be disposed off at an appropriate licensed site, with the necessary agreement from the owner of such a site.
- 4.30 The following ecological objectives must be met to ensure that the impacted wetlands and watercourses are managed to meet the specifications for the recommended ecological category set in terms of the preliminary Reserve for quaternary catchment B20F:
- 4.30.1 Fish:
- 4.30.1.1.1 To maintain the overall macro-channel structures and mosaic of cobbles and gravels by ensuring a balance (equilibrium) between sediment deposition and sediment conveyance.
- 4.30.1.1.2 To ensure that sand and fine gravel are transported through the system.
- 4.30.1.1.3 To maintain a shear stress sufficient to maintain sediment transport through the system.
- 4.30.1.1.4 To ensure that large floods occur from time to time.
- 4.31 Aquatic invertebrates:

- 4.31.1 To maintain a high diversity of biotopes.
- 4.31.2 To maintain riffle areas for flow-sensitive species, such as stoneflies (Perlidae) and flat-headed mayflies (Afronurus sp.).
- 4.31.3 To maintain marginal vegetation, particularly for flat-headed mayflies (Componeuriella spp.)
- 4.31.4 To maintain SASS4 scores within the range previously measured (except after major floods and during droughts).
- 4.31.5 To ensure that no group consistently dominates the fauna.
- 4.31.6 To periodically flush benthic diatoms and associated organic flocculant, particularly at the beginning of spring.

4.32 Riparian Vegetation:

- 4.32.1 To maintain existing vegetation composition in riparian zones by maintaining the natural variability in flow fluctuations.
- 4.32.2 To stimulate recruitment and maintain a range of size classes of dominant riparian species in perennial channels (Combretum erythrophylum).
- 4.32.3 To discourage encroachment of additional exotic species and terrestrial species in riparian zone.
- 4.32.4 To discourage accumulation of woody debris on terraces by periodic flooding.
- 4.32.5 To maintain existing flood terraces and deposition of sediments on these terraces to ensure optimum growth, spread and recruitment of these species.

4.33 Geomorphology:

- 4.33.1 To maintain the overall macro-channel structures and mosaic of cobbles and gravels by ensuring a balance (equilibrium) between sediment deposition and sediment conveyance.
- 4.33.2 To ensure that sand and fine gravel are transported through the system.
- 4.33.3 To maintain a shear stress sufficient to maintain sediment transport through the system.
- 4.33.4 To ensure that large floods occur from time to time

4.34 Hydrology:

- 4.34.1 To maintain perennial flow and the most important components comprising the natural seasonal variation in flow.

4.35 Direction of pipeline crossings should where possible be perpendicular to the direction of the slope or flow across the wetland. Where it is not feasible, trench breakers must be used at regular intervals down the pipeline excavation to reduce risk of preferential flow path development and associated erosion. Additionally, the preventative measures and actions set out in the table below in respect of the potential impacts associated with the pipeline crossings must be taken.

**Preventative measures and actions to address impacts associated with pipeline crossings**

Potential Impacts	Negative	Preventive Measures/Actions
Bank erosion		<ul style="list-style-type: none"> <li>• Slope/bank stabilization measures to be implemented. Only riparian vegetation in the immediate path of the pipeline is to be removed.</li> </ul>
Sedimentation		<ul style="list-style-type: none"> <li>• Construction to take place during the low flow/winter months in order to minimise the risk of sediment and debris being washed into the streams and rivers.</li> </ul>

Potential Impacts	Negative	Preventive Measures/Actions
		<ul style="list-style-type: none"> <li>• Natural instream hydrology is to be used to determine which months constitute the low flow months.</li> <li>• Pipeline construction is a linear process however, areas in and around the river crossings should not be cleaned, graded and ditched/trenched more than a week before pipe laying. The aim is to prevent erosion and sedimentation and the collection of run-off trench water which has high sediment content.</li> <li>• Backfilling should be implemented immediately after pipe laying to prevent the re-infiltration of water and displacement of sediment.</li> <li>• Stockpiling of soil removed during trench digging must be stored clearly away from the river edge to prevent being washed into the river. It can also be covered to prevent wind and rain erosion.</li> <li>• During the grading phase, where a flat working terrain is created, erosion and siltation measures should be implemented, such as silt fencing, water bars and drainage.</li> <li>• Hay bales or similar structures/silt barriers packed in rows across active flow areas may be used to prevent instream sedimentation. The bales/silt traps must be removed and disposed of after use.</li> </ul>
Removal/damage to riparian vegetation		<ul style="list-style-type: none"> <li>• Construction roads in/adjacent to the riparian zone to be managed and strictly controlled to minimize damage to the riparian zone.</li> <li>• Operation and storage of equipment in the riparian zone to be prevented as far as possible.</li> <li>• Vegetation clearance to be managed in such a way as to minimize the amount of vegetation removed.</li> <li>• Ripping and discing of temporary access and construction roads in the riparian zone should be undertaken in order to assist with natural vegetation re-establishment and the control of bank erosion.</li> <li>• Disturbed riparian zones should be re-vegetated using site-appropriate indigenous vegetation and/or seed mixes.</li> <li>• Alien vegetation must not be allowed to colonize the disturbed riparian (and instream) areas*</li> <li>• No construction camps to be allowed in the riparian zone.</li> <li>• No stockpile areas to be located in the riparian zone.</li> </ul>
Alteration of current flow regime		<ul style="list-style-type: none"> <li>• Any instream structures used for construction purposes are to be temporary and should not, at any time, stop the natural flow in any way.</li> </ul>
Pollution of riparian zone & instream habitat		<ul style="list-style-type: none"> <li>• No pollution to be allowed in any of these areas. The method of river crossings must limit turbidity, sedimentation and chemical changes to the composition of the water.</li> <li>• Disposal/spillage of any construction material into the river should be prevented at all costs. Preventive measures to be provided.</li> <li>• Pipeline crossings should not occur in sensitive riffle habitats.</li> </ul>
Impeding the movement of instream biota		<ul style="list-style-type: none"> <li>• No instream structures should permanently impede the movement of instream biota.</li> </ul>

Potential Negative Impacts	Preventive Measures/Actions
Damage/degradation of the instream habitat	<ul style="list-style-type: none"> <li>• Development activities should start upstream &amp; work downstream, to enhance the ecological recovery process.</li> <li>• Boulders and structures removed or destroyed during pipeline construction to be replaced.</li> <li>• Gravel removed from stream beds during pipeline construction must be replaced with gravel of similar consistency and diameter.</li> <li>• Impacted wetlands should be re-seeded with indigenous plant species, and an active campaign for controlling invasive species should be implemented within the disturbed servitude zone to ensure that this disturbed corridor does not become a conduit for the propagation and spread of invasive exotic plants.</li> </ul>
Bank compaction	<ul style="list-style-type: none"> <li>• The indiscriminate use of machinery within the instream and riparian zones may lead to compaction of soils &amp; vegetation. This must be strictly controlled.</li> </ul>

## 5 REHABILITATION

- 5.1 Rehabilitation of disturbed instream and riparian habitat should commence immediately after construction is completed. The aim of the rehabilitation of the riparian and instream habitat should be to maintain and where possible improve the condition of the aquatic habitat. An aquatic ecologist should oversee this process.
- 5.2 All disturbed areas must be re-vegetated in consultation with an indigenous plant expert, ensuring that during rehabilitation only indigenous shrubs, trees and grasses are used in restoring the biodiversity.
- 5.3 The vegetation of the surrounding catchment should also be managed to prevent erosion and siltation of the watercourses.
- 5.4 The licensee shall take steps necessary to allow movement of aquatic species, including migratory species during the rehabilitation programme.
- 5.5 The structurally unsound dam/s on the unknown first order perennial tributary of the Klipfonteinspruit of which a section is to be diverted must be rehabilitated (refer report listed under 1.2.1.1). A dam safety report and rehabilitation strategy must be submitted to the Regional Director for approval and will be implemented as directed.
- 5.6 The licensee shall embark on a systematic long-term rehabilitation programme to restore natural watercourses to environmentally acceptable and sustainable conditions after construction, which shall include, but not be limited to:
- 5.6.1 The rehabilitation of disturbed and degraded riparian areas to restore and upgrade the riparian habitat integrity to sustain a bio-diverse riparian ecosystem; and
- 5.6.2 Annually assess the habitat to monitor the sustainability of management measures and compliance with these conditions. Action must be taken to rectify any negative impacts.

## 6 MONITORING, AUDITING AND REPORTING



- 6.1 A monitoring programme for the watercourse crossings and diversion to determine the impact, change, deterioration and improvement of the aquatic system associated with these activities as well as compliance to these water use licence conditions must be developed and submitted to the Regional Director for written approval before construction commences and must subsequently be implemented as directed.
- 6.2 During construction, monthly monitoring reports must be submitted to the Regional Director and initially quarterly during the operation and maintenance phases until otherwise agreed with the Regional Director in writing.
- 6.3 An environmental management consultant will be retained by the licensee to implement the conditions of this licence pertaining to all infrastructure impeding and/or diverting flow of watercourses as well as alternations to watercourses on the property/ies.
- 6.4 Quarterly environmental audit and compliance reports prepared by an independent environmental management consultant (which must include a wetland specialist) must be submitted to the Regional Director for approval and directions. The licensee may apply to the Regional Director for approval to discontinue these reports two (2) years after completion of construction of the infrastructure impeding and/or diverting flow of watercourses as well as alternations to watercourses on the property/ies. Such approval must be provided in writing and implemented as directed.
- 6.5 Corrective actions must be taken by the licensee in accordance with the environmental audit and compliance reports (refer condition 6.4).
- 6.6 A Departmental official or representative will be appointed by the Regional Director to represent the Department on the Environmental Management Committee (EMC). In addition to the audit reports (refer condition 6.3) all reports of the EMC must be submitted to the Regional Director in addition to the Department official or representative.
- 6.7 The EMC must in addition to monitoring compliance to the conditions of the environmental authorisation received from the Department of Environment Affairs and Tourism, monitor for the duration of its establishment compliance with the conditions of this water use licence.

## ANNEXURE III

## Section 21 (j) of the Act: Removing of water found underground

1. The licensee is authorised to remove a volume not exceeding fifty four thousand seven hundred and fifty cubic metres (54 750 m<sup>3</sup>) of groundwater from trenches and boreholes on the power station terrace, based on an average quantity of one hundred and fifty cubic metres (150 m<sup>3</sup>) per day.
2. The removed water must be settled in settling tanks and re-injected into boreholes at suitable locations.
3. The fault investigation and the monitoring network design must be completed and submitted to the Chief Director within 6 months from the date of issuance of this licence.
4. The design and location of the trenches, dewatering boreholes and re-injection boreholes must be done in consultation with, and to the satisfaction of the Chief Director before dewatering and re-injection commences.
5. The injection capacity of the re-injection boreholes must be monitored and maintained at acceptable levels. Any changes made to the re-injection boreholes or to the injection method must be approved by the Chief Director.
6. The water may not be chemically treated before re-injection without the Chief Director's prior approval of the treatment method.
7. The quality of the water re-injected shall not exceed the quality as specified in the Table below:

Variable	Average concentration (mg/l)
pH	6.0-9
Electrical Conductivity as EC in mS/m	70
Total dissolved solids as TDS	120
Sulphate as SO <sub>4</sub>	119
Sodium as Na	1.0
Fluoride	1.84
Nitrate (NO <sub>3</sub> as N)	21.5
Chloride (Cl)	24.3
Iron (Fe)	1
Manganese (Mn)	1.0
Total Hardness (CaCO <sub>3</sub> )	198
Aluminium (Al)	1.1

8. The licensee shall provide any water user whose water supply is impacted by the water use with water from alternative sources.
9. The quantity of water removed from underground must be metered and recorded on a daily basis.
10. The groundwater levels shall be monitored every six months (once in the beginning of the

dry season and once in the beginning of the wet season).

11. Self registering flow meters must be installed in the delivery lines at easily accessible positions near the dewatering points.
12. The flow metering devices shall be maintained in a sound state of repair and calibrated by a competent person at intervals of not more than once in two years. Calibration certificates shall be available for inspection by the Chief Director or his/her representative upon request.
13. Calibration certificates in respect of the pumps must be submitted to the Chief Director after installation thereof and thereafter at intervals of two years.
14. The date and time of monitoring in respect of each sample taken shall be recorded together with the results of the analysis.
15. Analysis shall be carried out in accordance with methods prescribed by and obtainable from the South African Bureau of Standards, in terms of the Standards Act, 1982 (Act 30 of 1982).
16. The methods of analysis shall not be changed without prior notification to the licensee and written approval by the Minister or his/her delegated nominee.
17. The licensee shall follow acceptable construction, maintenance and operational practices to ensure the consistent, effective and safe performance of the groundwater removal system.
18. Reasonable measures must be taken to provide for mechanical, electrical or operational failures and malfunctions of the groundwater removal system.
19. The licensee must conduct the detailed aquifer characterisation and groundwater modelling as part of Integrated Water Use Licence Application (IWULA), base flow report, wetland delineation study determining impact of the wetland and mitigatory measures.
20. The licensee must carry out investigation of the interaction between surface and groundwater, the detail investigation of the fault zone contributing to base flow and additional monitoring and observation boreholes over and extended area.

## 21. MONITORING

- 21.1 The licensee shall monitor water resources at specified in-stream compliance monitoring point to determine the impact of the facility and other activities on the water quality by taking samples at the monitoring points described in the below:

### Monitoring points

Location (Borehole Number)	X-coordinate (WGS 84)	Y coordinate (WGS 84)
10490-01	28.92438	-25.9191
10490-04	28.91605	-25.9239
10490-05	28.92013	-25.9258
10490-07	28.91619	-25.9136
10490-08	28.91759	-25.9099

10490-09	28.91664	-25.9274
10490-10	28.896	-25.9274
10490-19	28.90792	-25.9387
10490-21	28.92297	-25.9424
10490-23	28.92903	-25.9253
10490-24	28.93273	-25.9223
10490-25	28.88393	-25.9233
10490-27	28.93232	-25.9128
BH 2	28.90675	-25.9026
BH 6	28.91803	-25.9331
BH 10	28.9236	-25.9471
BH 11	28.93147	-25.9502
BH 24	28.89945	-25.9
BH 25	28.89334	-25.9045
BH 26	28.91675	-25.9079
BH 27	28.94317	-25.9332
BH 30	28.95412	-25.9161
SPRING 1	28.9368	-25.9023
SPRING 2	28.93372	-25.8893
SPRING 6	28.92797	-25.9476
SPRING 11	28.9346	-25.9311
SPRING 12	28.91644	-25.943
SW 1	28.88306	-25.92
SW 2	28.86847	-25.8533
SW 3	28.88915	-25.8881
SW 4	28.89269	-25.8909
SW 5	28.90239	-25.9431

- 21.2 The date, time and monitoring point in respect of each sample taken shall be recorded together with the results of the analysis.
- 21.3 Monitoring points shall not be changed prior to notification to and written approval by the Chief Director.
- 21.4 An Aquatic Scientist approved by the Regional Director must establish a monitoring programme for the following indices: Invertebrate Habitat Assessment System (IHAS) and the latest SASS (South African Scoring System). Sampling must be done once during the summer season and once during the winter season, annually, to reflect the status of the river upstream and downstream of the mining activities.
- 21.5 Toxicity testing to be performed on the dewatering boreholes on a quarterly basis in order to determine the risks to the receiving environment. The data gathered in the investigation must be reported annually during March of each year to the Chief Director. If any toxicity levels as specified is exceeded, the licensee must institute an investigation to determine the cause of toxicity.
- 21.6 Toxicity testing must be conducted quarterly on the wastewater stream from the dewatering storage dam when returned back to the mine for use as process water.
- 21.7 The licensee shall participate in any initiative such as Direct Estimation of Ecological Effect Potential (DEEEP) to determine the toxicity of complex tailings waste discharges. Both acute and chronic toxicity must be addressed and at least three taxonomic groups must be present when toxicity tests are performed.
- 21.8 Analysis shall be carried out in accordance with methods prescribed by and obtainable from the South African Bureau of Standards (SABS), in terms of the Standards Act, 1982 (Act 30 of 1982).
- 21.9 The methods of analysis shall not be changed without prior notification to and written approval by the Minister.

## 22. REPORTING

- 22.1 The licensee must compile, submit and update the water balance annually and calculate the loads of waste emanating from the activities. The licensee shall determine the contribution of their activities to the mass balance for the water resource and must furthermore co-operate with other water users in the catchments to determine the mass balance for the water resource reserve compliance point.
- 22.2 The licensee shall submit the results of analysis for the monitoring requirements to the Chief Director on a biannually basis under Reference number 16/2/7/B200/B16.

## 23. AUDITING

- 23.1 The licensee shall conduct an annual internal audit on compliance with the conditions of this licence. A report on the audit shall be submitted to the Chief Director within one month of finalisation of the report, and shall be made available to an external auditor should the need arise.
- 23.2 The licensee shall appoint an independent external auditor to conduct an annual audit on compliance with the conditions of this licence. The first audit must be conducted within 3

(three) months of the date this license was issued and a report on the audit shall be submitted to the Chief Director within one month of finalisation of the report.

#### 24. STORM WATER MANAGEMENT

- 24.1 Stormwater leaving the licensee's premises shall in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises.
- 24.2 Increase runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the stream.
- 24.3 Storm-water shall be diverted from the Bravo complex site and roads and shall be managed in such a manner as to disperse runoff and concentrating the storm-water flow.
- 24.4 Where necessary works must be constructed to attenuate the velocity of any storm-water discharge and to protect the banks of the affected watercourses.
- 24.5 Storm-water control works must be constructed, operated and maintained in a sustainable manner throughout the impacted area.
- 24.6 Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm-water does not lead to bank instability and excessive levels of silt entering the streams.
- 24.7 All storm-water that would naturally run across the pollution areas shall be diverted via channels and trapezoidal drains designed to contain the 1:50 year flood.
- 24.8 The polluted storm water system shall be designed and implemented to provide suitable routing and pumping capacity for contaminated storm water from the individual facilities to the respective storm water dams in accordance with the design specifications as contained in the integrated water and Waste Management plan to be submitted to the Chief Director for approval.
- 24.9 The polluted storm water captured in the storm water control dams shall be pumped to the process water treatment plant for reuse and recycling.

#### 25. INTEGRATED WATER AND WASTE MANAGEMENT

- 25.1 The licensee must prepare an *Integrated Water and Waste Management Plan (IWWMP)*, which must together with the *Rehabilitation Strategy and Implementation Programme (RSIP)*, be submitted to the Chief Director for approval within one (1) year from the date of issuance of this licence.
- 25.2 The IWWMP and RSIP shall thereafter be updated and submitted to the Chief Director for approval, annually.
- 25.3 The licensee must, at least 180 days prior to the intended closure of any facility, or any portion thereof, notify the Chief Director of such intention and submit any final amendments to the IWWMP and RSIP as well as a final *Closure Plan*, for approval.

- 25.4 The licensee shall make full financial provision for all investigations, designs, construction, operation and maintenance for a water treatment plant should it become a requirement as a long-term water management strategy.

**END OF LICENCE**

Mr Patrick Ntabeni  
Acting Regional Director: Mpumalanga Regional Office  
Department of Water and Forestry  
Private Bag X11259  
NELSPRUIT  
1200

Date:  
19 September 2008

Enquiries: Mr M Matimolane  
Tel +27 11 800 4722

Our Ref. 706264

Dear Mr Ntabeni

**KUSILE POWER STATION - REQUEST FOR AN AMMENDMENT TO LICENSE NO. 2408827**

Thank you for accommodating our request for the meeting held on the 18 September 2008.

As discussed at the above-mentioned meeting, we request DWAF to re-consider some of the license conditions detailed below:

- Annexure II, condition 4.28 requires that construction must be scheduled in the dry season when flows are lowest. Eskom needs to initiate construction of the Coal Stock Yard terrace immediately, therefore some of the construction will need to take place in the wet season.
- Annexure II, condition 5.5 requires rehabilitation of the unsound dams in the tributary of the Klipfonteinspruit. As indicated in the Method Statement for the Stream Diversion, the first dam will be completely removed as it is currently located on the Coal Stock Yard site. The dam downstream of the diversion will be dismantled and a culvert will be put in its position.
- Annexure III, condition 1 specifies the maximum volume to be dewatered as 54 750 m<sup>3</sup> per annum. As discussed at the meeting, these dewatering volumes will be insufficient. Eskom will submit a preliminary dewatering design report to DWAF that will detail the findings of groundwater modelling. It is estimated that about 1 728 m<sup>3</sup> per day of groundwater will need to be dewatered.
- Annexure III, condition 2 specifies that all the water removed shall be re-injected. It should be noted that the groundwater to be intercepted in Coal Stock Yard trenches shall not be re-injected, but shall instead be discharged to stream. This water currently daylights into the dams and the stream on site (as discussed in the method statement), therefore Eskom aims to maintain the current status quo. Groundwater intercepted in the station terrace trenches shall be collected and then re-injected.

**Primary Energy**

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**Directors:** RM Godsell (Chairman) PJ Maroga (Chief Executive) LCZ Cele SD Dube LG Josefsson (Swedish)  
HB Lee (Korean) WE Lucas-Bull PM Makwana E Marshall J Mirenge (Rwandan) JRD Modise AJ Morgan  
U Nene B Nqwababa\* (\*Executive Director) **Company Secretary:** M Adam  
Eskom Holdings Limited Reg No 2002/015527/06

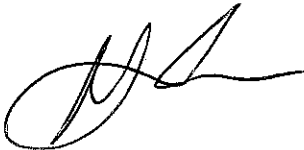




- Annexure III, condition 7 specifies the quality of water to be re-injected. When comparing the baseline groundwater quality available to the quality limits specified, it must be noted that the maximum baseline values exceed the limit provided. Eskom therefore requests that DWAF revisit these quality limits.
- Annexure III, condition 21.5 and 21.7 requires toxicity testing of dewatering boreholes and on the dewatering storage dam. Normally toxicity testing is conducted on effluent. This is clean groundwater, and Eskom therefore requests that DWAF reconsider this condition. Monitoring the quality of groundwater will alert Eskom to a deterioration in quality.
- Annexure III, condition 21.7 requires that Eskom participate in "any initiative such as the Direct Estimation of Ecological Effect Potential (DEEEP) to determine toxicity of complex tailings waste discharges". It should be noted that Kusile will not have a tailings dam, and no waste shall be discharged from the ash and gypsum residue facilities.

It would be appreciated if this request can be processed as a matter of urgency.

Yours sincerely



*PP* Nandha Govender  
**WATER PROCUREMENT MANAGER: PRIMARY ENERGY DIVISION**

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