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**Verifications and Walkthrough report for the Construction of Eskom  
132kV Powerline from Ngwedi substation to Styldrift substation and  
Construction of a 132kV powerline from Ngwedi substation to  
Bakubung substation, North West Province.**

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## **1. PURPOSE**

The purpose of the report is to implement avoidance and mitigation measures to reduce the impact of the development of the two powerlines and associated infrastructure within the proposed sites. Due to urgent need of supply to the two mines; Bakubung Platinum Mine and Styldrift Mine areas within North West Province, Eskom SOC Limited North West Operating Offices intends to construct two powerlines, both distributing electricity from the Ngwedi substation to both Bakubung mine and Styldrift mine substations.

The proposed Ngwedi-Styldrift powerline was assessed on the 20<sup>th</sup> June 2016 and the proposed Ngwedi-Bakubung powerline was assessed on the 28<sup>th</sup> June 2016. Both assessments were done during daylight to determine and verify potential impacts on the environment during construction. Although this report identifies sensitive areas, species of potential concerns on site, it is important to note that a pre-construction walk-through of the site was conducted to refine the list of species identified during EIR by the appointed EAP, as well as to locate such species prior to construction.

## **2. Legal Framework**

### **National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004)**

In terms of the Biodiversity Act, the developer has a responsibility for:

- ✓ The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (not just by listed activity as specified in the EIA regulations).
- ✓ Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all development within the area are in line with ecological sustainable development and protection of biodiversity.
- ✓ Limit further loss of biodiversity and conserve endangered ecosystems.

Chapter 4 of the Act relates to threatened or protected ecosystems or species. According to Section 57 of the Act, Restricted activities involving listed threatened or protected species



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- ✓ A person may not carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7.
  - ✓ Such activities include any that are of a nature that may negatively impact on the survival of a listed threatened or protected species.

### **National Forests Act (Act 84 of 1998)**

Regulations published for the National Forests Act (Act 84 of 1998) as amended, provide a list of protected tree species for South Africa. According to this act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister.

### **Responsible persons**

This refers to the project proponent "Eskom". Eskom will be responsible for the following:

- ✓ Ensuring that the requirements set out in the project Environmental Management Plan are adhered to and implemented;
- ✓ Allocate the responsibilities assigned to the Environmental Control Officer (ECO) to an independent suitably qualified individual prior to the start of construction activities on site; and
- ✓ Provide all principal contractors working on the project with a copy of the project Environmental Management Plan as part of tender contract documentation to allow the contractors to cost for its requirements within their respective construction contracts.

### **The engineer**

The engineer of the proposed development will be responsible for the overall implementation of the project management plan during construction phase of the project. To effectively implement the EMPlan, the engineer must be aware of the findings, mitigation measures and conclusions of the Final EIA report, the requirements of the EA, the EMPr, and this management plan.



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### **Environmental Control Officer (ECO)**

The ECO is responsible for monitoring and verifying the implementation of the PROJECT Environmental management plan during the construction phases of the project. To effectively implement the management plan, the ECO must be aware of the findings, mitigation measures and conclusions of the Final EIA Report, the EA, and the management plan.

### **The contractor**

The contractor, being any directly appointed company or individual undertaking the implementation of works, will be responsible for complying with the project Environmental Management Plan at all times during the construction phase.

## **3. MITIGATION MEASURES**

The powerline construction will pose highly relative impacts during construction. Distribution and location of infrastructure within the development site are very flexible and as a result there are at some points minimal of avoidance options possible.

Therefore, within the establishment during construction, the primary remaining mitigation option for vegetation within the project will be rehabilitation activities by contractor of disturbed land. In some cases, the large footprint will be cleared prior to construction to accommodate pylons and powerline foundations and to also accommodate stringing of the conductors, in which case vegetation will be disturbed/cleared.

However, in some situations the vegetation between the proposed access routes can be left intact and smaller species can remain undisturbed in those areas. However, even in the latter case the impact of the construction activities is very high and larger species and those vulnerable to trampling should be rehabilitated during or after construction.

## **4. RESCUE AND PROTECTION MANAGEMENT PLAN**

The investigation has been determined during the site verifications and walkthroughs and been noted that several different habitats and diverse range of biota will be affected by the proposed developments. The significance of impacts has been evaluated and mitigation measures to be made.

No species of potential concerns were identified and that can lead to translocations, Search and rescue activities.



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### **Pre-construction activities (Planning stage)**

- The proponent must be committed to a conservation approach during the planning the construction activities,
- Sensitive habitat (such as rivers, dams and perineal & non-perennial stream) must be avoided or least sensitive crossings must be used as mitigation measures (this has been followed during pegging of the line by the surveyor)
- Ready access within the site must be utilised to avoid further land degradation
- Riparian vegetation and river crossings must be avoided altogether where possible by by-passing. If not achieved, it can only be disturbed where absolutely necessary and prominent trees must be avoided (no riverine species will be cleared without the presence of the ECO).
- Creation of minimal opening, large enough for the lines to cross without interference will be required and be created within such areas.

### **During construction**

- ECO has been appointed to monitor vegetation clearance on site. Any deviations from the plans that may be required should first be checked by the appointed ECO.
- Any listed species observed within the actual development footprint that were missed during the walkthrough and verifications should be if possible translocated to a safe site.
- Many species are also sought after for traditional medicine, the ECO should ensure that all staff attends environmental induction training in which the legal and conservation aspects of harvesting plants from the wild are discussed.
- The ECO should monitor construction activities in sensitive habitats such as near rivers and wetlands carefully to ensure that impacts to these areas are minimized.
- No unauthorised personnel to be allowed on-site.
- No fires on-site.

### **During operations**

- Access to the site should be strictly controlled and all personnel entering or leaving the site should be required to sign and out with the security officers.



- The collection of plants or of their parts should be strictly forbidden and warning signs should be placed at the entrance to site.

## **5. IDENTIFICATION OF LISTED SPECIES**

No species of conservation concerns has been identified on site.

Species of conservation concern are identified according to the Red List of South African Plants SANBI (2014). All species known from the area are listed below (table 1). At a provincial level, protected species are listed under a National Forest Act (Act No: 84 of 1998). National Environmental Management Biodiversity Act (Act 10 of 2004) (NEMBA). Species listed under the National Red Data List of Plants as well as those protected under the provincial legislation must be specified on permit applications required for site clearance.

## **6. RED DATA ANALYSIS AND FLORAL ASSESSMENT**

Baseline SANBI PRECIS (National Herbarium Pretoria (PRE) Computerised Information System) was compared to relevant literature detailing Protected and Red Data plant species lists in order to compile a list of Red Data plant species that may potentially occur within the study area. No Red Data or Orange species has been identified during the site walkthrough and verifications of the powerline. The status is determined in table 1: below



**Table 1; Red Data Status definitions (SANBI, 2010)**

<b>EX</b>	<b>Extinct</b>	A taxon is Extinct when there is no reasonable doubt that the last individual has died. Taxa should be listed as extinct only once exhaustive surveys throughout the historic range have failed to record an individual.
<b>EW</b>	<b>Extinct in the Wild</b>	A taxon is Extinct in the Wild when it is known to survive only in cultivation or as a naturalised population (or populations) well outside the past range.
<b>CR PE</b>	<b>Critically Endangered (Possibly Extinct)</b>	Critically Endangered (Possibly Extinct) taxa are those that are, on the balance of evidence, likely to be extinct, but for which there is a small chance that they may be extant. Hence they should not be listed as Extinct until adequate surveys have failed to record the taxon.
<b>CR</b>	<b>Critically Endangered</b>	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five IUCN criteria for Critically Endangered, and is therefore facing an extremely high risk of extinction in the wild.
<b>EN</b>	<b>Endangered</b>	A taxon is Endangered when the best available evidence indicates that it meets any of the five IUCN criteria for Endangered, and is therefore facing a very high risk of extinction in the wild.
<b>VU</b>	<b>Vulnerable</b>	A taxon is Vulnerable when the best available evidence indicates that it meets any of the five IUCN criteria for Vulnerable, and is therefore facing a high risk of extinction in the wild.
<b>NT</b>	<b>Near Threatened</b>	A taxon is Near Threatened when available evidence indicates that it nearly meets any of the five IUCN criteria for Vulnerable, and is therefore likely to qualify for a threatened category in the near future.



<b>CRITICALLY RARE</b>		A taxon is Critically Rare when it is known to occur only at a single site, but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to the five IUCN criteria.
<b>RARE</b>		A taxon is Rare when it meets any of the four South African criteria for rarity, but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to the five IUCN criteria.
<b>DECLINING</b>		A taxon is Declining when it does not meet any of the five IUCN criteria and does not qualify for the categories Critically Endangered, Endangered, Vulnerable or Near Threatened, but there are threatening processes causing a continuing decline in the population.
<b>DDD</b>	<b>Data Deficient—Insufficient Information</b>	A taxon is DDD when there is inadequate information to make an assessment of its risk of extinction, but the taxon is well defined. Data Deficient is not a category of threat. However, listing of taxa in this category indicates that more information is required and that future research could show that a threatened classification is appropriate.
<b>LC</b>	<b>Least Concern</b>	A taxon is Least Concern when it has been evaluated against the five IUCN criteria and does not qualify for the categories Critically Endangered, Endangered, Vulnerable or Near Threatened, and it is not rare and the population is not declining.

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## **Broad vegetation patterns of the study site**

### **Biophysical environment of the study site**

Generally; study is dominated by grassveld with sparse shrubs and small trees. The geology of the Zeerust Thornveld comprises of sediments from the Pretoria Group with shales dominating and less quartzite with a bit of conglomerates. Amongst other formations, the study area consists of carbonates, volcanic rocks, breccias, diamictites, bronzite, harzburgite, gabro and norite. The area has sandy-loam collapsible soils.

### **Sensitive areas**

There are number of sensitive areas observed within the study area; (1) At pole 8 (pan/pond observed), (2) Between Ngwedi substation and Pole 9 to the Styldrift on the North westerly direction, a non-perennial stream has been observed and the powerline will cross 4 times. (3) Ngwedi-Bakubung powerline will cross once the Elands river between pole number 17 and 18 going North Westerly direction of the Bakubung substation.



**Figure 1; the pan/pond between pole 17 and 18 of the Ngwedi-Bakubung powerline.**



**Figure 2; Non-perennial stream between poles 8 and 9 along the Ngwedi-Styldrift Powerline**

### **Veld types and vegetation units**

Within the study area, one vegetation unit was found. It is referred to as the Zeerust Thornveld (*Mucina&Rutherford, 2006*) but was previously known as the Sourish Mixed Bushveld (*Acocks, 1953*) or the Mixed Bushveld (*Low & Rebelo, 1996*).

### **Verification of the approved lines**

Both alignments start from Ngwedi substation following the same route in a North-easterly direction, both crossing over a non-perennial stream between pole 8, 9 and 10 and then diverging thereafter. While the Ngwedi- Styldrift powerline runs straight in Northerly to the Styldrift substation, the Ngwedi-Bakubung powerline bends in a South Westerly backward direction towards the Ngwedi Substation then turn straight to the Bakubung substation.

The site is characterised by deciduous, open to short thorny woodlands dominated by various *Acacia* species and *Searsia lancea*. The grasses form the herbaceous layer on clays on the plains, lowlands and between the rocky ridges (*Mucina&Rutherford, 2006*).



**Figure 3; Styldrift Substation**

Figure 4: Comprehensive species list recorded during field survey

Species Name	National Status	Likelihood of occurrence (permanent and Temporary) Recorded	Recommendations and mitigations			
<i>Ziziphus macronata</i>	Not protected	Forest, thickets, outcrops and drainage lines	Impact description	Significance of impact before mitigation	Recommendations and mitigations	Impact significance after mitigations
<i>Acacia karoo</i>	Not protected	Shrubs	Fragmentation of habitat	High	Minimise loss and disturbance of natural habitat by aligning from high ground to high ground Make use of ready existing access roads	Medium
<i>Searsia lancea</i>	Dominant	Grasslands				
<i>A. tortilis</i>	Shrubs	Open grassland	Loss of important flora and fauna species	Very Low	Align structures alongside existing linear infrastructure	Medium
					Disturbance as well as killing of serpentes by uneducated crews	Low
					Alignment with least significance impact should be selected Crews must be educated to the value of biodiversity and not to disturb or kill wild animals	
			Loss of habitat and creation of breaks in	Medium	Make use of existing access roads.	Low



continuity of biodiversity corridors			
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**Alien invasive species**

<i>Dichrostachys cinerea</i>	Declared weed	Bush encroachment,	<p>Disturbance as well as killing of serpentines by uneducated crews</p> <p>The activity (Powerlines) will have no real impact on biodiversity processes. The only possible impact can be oil or fuel spillages that can occur during construction or the installation and maintenance of the transformers. It is always suggested that fuel and oil must not be stored on site during the construction phase and that containment dams or berms are constructed around transformers. In addition, a clear plan how to manage accidental spills be included in the ECO report for the project</p>
<i>Ricinis communis</i>	Declared weed	Category 2 weed/invader	
<i>Solanum mauritium</i>	Declared weed	Category 1 invader	
<i>Melia azedarach</i>	Declared weed	Category 3 invader	
<i>Opuntia ficus indica</i>	Declared weed	Category 3 invader	

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## **7. Monitoring and reporting requirements**

The following reporting and monitoring requirements are recommended as part of the walkthrough and verification plans:

- Monitoring should be conducted on a monthly basis where the external ECO will conduct his/her monitoring at the beginning of the month and the Eskom ECO conduct their monitoring towards the end the month. All incidents should be recorded along with the remedial measures implemented.
- Operational phase compliance monitoring of any incidents and transgressions.
- Ensure no oil or fuel spills occur during construction or installation of transformers.
- During the finalisation on the power line, placement of structures near all streams must be confirmed to ensure the integrity of the habitat is not compromised.
- From an ecological perspective, the route is a viable option because of the limited need to clear large quantities of natural vegetation. Minimum clearing for the servitude will be needed. Some trimming of branches may be needed. It is suggested that the point near the stream is moved to the east to lower the impact on the waterway.
- Currently the site is in a fair condition and historic land use is observed. Apart from roads, mining, processing of raw material in plants and town developments around the mining industrial area, the only other land-uses include grazing, cultivation of lands and wood collection. Limited overgrazing occurred on or near the site.
- The activity (power line) will have no real impact on biodiversity processes. The only possible impact can be oil or fuel spillages that can occur during construction or the installation and maintenance of the transformers. It is always suggested that fuel and oil must not be stored on site during the construction phase and that containment dams or berms are constructed around transformers. In addition, a clear plan how to manage accidental spills included in the EMP for the site.

## **8. Guide to Species for the Study Site**

The following photographs illustrate the species observed on site that are of no conservation concerns, but generally represent the vegetation unit within the study





area. The list is not complete, but serves to illustrate the majority of species likely to be encountered on site.



**Figure 5; Low shrubs areas and small trees dominated by *Acacia karoo***



**Figure 6; Grassveld areas dominated by *Ziziphus macronata*, *Acacia karoo*. The vegetation can be regarded as Grassveld with low shrubs and small trees of the study side**



**Figure 7; vegetation within the Styldrift mining complex vicinity**



**Figure 8; Eland river crossings (water use license has been applied parallel to EIA studies)**



**Figure 9; *Opuntia ficus indica* observed on site along the Ngwedi Bakubung powerline route**