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# A SCOPING ASSESSMENT FOR A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR ESKOM'S PROPOSED NEW WOLWEKRAAL-AMANDLA POWER LINE TO BE ESTBLISHED IN THE MPUMALANGA PROVINCE OF SOUTH AFRICA

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## EXECUTIVE SUMMARY

Eskom intends establishing a new 132kV power line between the Wolwekraal Substation and the Amandla Substation near Marble Hall, Groblersdal and the Bakoni Bagamatlala tribal area in the Mpumalanga Province of South Africa. The proposed new power line may impact on some of the types and ranges of heritage resources ('national estate') listed in the National Heritage Resources Act, Act No 25 of 1999. Consequently, Eskom has to conduct a Phase I Heritage Impact Assessment (HIA) as required by Sec 38 of the National Heritage Resources Act (Act No 25 of 1999). The aims with this study will be to determine the possible presence of heritage resources in or near the Eskom project area; the levels of significance of these resources; to determine whether these resources will be affected by the proposed new development and, if so, to make recommendations with regard to the possible mitigation and management of these heritage resources.

This scoping report outlines the types and ranges of heritage resources ('national estate') that are listed in the National Heritage Resources Act, Act No 25 of 1999; contextualise the Eskom project area in its pre-historical, historical and cultural context; outlines the possible types and ranges of heritage resources that may be found in the Eskom project area; the methodology that will be used to conduct the Phase I HIA study and possible mitigation and management measures that could be followed if any types and ranges of heritage resources may be affected (destroyed) by Eskom's proposed new development.

The Phase I HIA study will consist of a scoping study supplemented with a Phase I HIA study (survey). Depending on the types and ranges of heritage resources that may be discovered in the Eskom project area and the levels of significance of these remains, certain conservation (mitigation) and management measures have to be applied to these resources - particularly if they are to be affected (destroyed) by existing or future planned development activities that Eskom intends to undertake.

The protection and management of the national estate occurs through formal and general protection measures. Mitigation measures that would apply to the possible types and ranges of heritage resources that may occur in the Eskom project area would entail some of the categories listed under 'general protection'. The mitigation of heritage resources are usually referred to as Phase II studies which include in-depth heritage studies and which

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exhumation and reburial of human remains; the documentation of structures or rock art sites, etc (see Part 5.2).

The presence (or absence) of heritage resources must be documented in Environmental Management Programmes [EMP] reports. These reports also require mitigation measures and management proposals for heritage resources

This scoping study subsequently outlines the scope, terms of reference, the approach and the methodology that will be followed in order for the Phase I HIA study to comply with the National Heritage Resources Act, Act No. 25 of 1999 as well as with the objectives of the EMP report that has to be compiled for Eskom.

(iii) ethnographic art and objects;

(iv) military objects;

(v) objects of decorative or fine art;

(vi) objects of scientific or technological interest; and

(vii) books, records, documents, photographs, positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996, Act No. 43 of 1996.

Section 3 of the National Heritage Resources Act, Act No. 25 of 1999 also distinguishes nine criteria for places and objects to qualify as 'part of the national estate if they have cultural significance or other special value ...'. These criteria are the following:

(a) its importance in the community, or pattern of South Africa's history;

(b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;

(c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;

(d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;

(e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

(f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;

(g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;

(h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and

(i) sites of significance relating to the history of slavery in South Africa.

KwaZulu-Natal and the North-West Provinces of South Africa during the 6th – 9th centuries AD. Early Iron Age sites have been recorded near Marble Hall and the Loskop Dam.

### 3.2.3 Late Iron Age remains

According to oral tradition two/three clans can be associated with the Eskom project area prior to the arrival of the first Colonists in the late 19th century, namely the Bakôpa, Bantwane and the Ndebele. This time period is also referred to as the Late Iron Age and is characterised by stone walled settlements. The histories of those Late Iron Age communities who lived in or close to the Eskom project area are now briefly reviewed.

The Kôpa lived at Maleoskop on the Riet River, a tributary of the Olifants River on the farms Rietkloof 166JS and Weltevreden 165JS in the first half of the 19th century. The Berlin missionaries Alexander Merensky and Heinrich Grützner established the Gerlachshoop missionary station on the farm Rietkloof where they started with missionary work in 1860. The Kôpa maintained a hostile relationship with the ZAR. A combined force of Pedi and ZAR soldiers attacked the Kôpa in the second half of 1863. This attack followed as a result of an earlier attack by the Ndzundza-Ndebele and the Kôpa on the Pedi. The Kôpa successfully defended the attack. However, the Swazi again attacked the Kôpa on 10 May 1864 and dealt them a crushing defeat. More than 850 Kôpa soldiers were killed and 2 500 soldiers and women were taken prisoner. Boleu, chief of the Kôpa, was killed and succeeded by his son Ramapudu.

The Bantwane originated from Botswana and were an offshoot from the Kwena (Bamangwato). They migrated under Chief Mathabathe to Thabazimbi where the first division of this group occurred. A junior section under Ngwato fled to Kranskop near Nylstroom (Modimolle) where Ngwato died in c. AD1730. Makoni Mathabathe, who ruled for a short period (c. 1730 to 1735) succeeded him. Mohlamme

farm, Lourens Erasmus. The clan then moved to Witpankloof where Ramatsedi died in 1896.

Ramatsedi was succeeded by his brother Paledi Mathebe. The clan bought the farm Kwarrielaagte where he died in 1923. He was buried in the cattle kraal of the *mosate* (capital). Kwarrielaagte, thirty kilometres to the south-west of Groblersdal, together with Elandsdoorn, Waterkloof and Valschfontein became the Bantwane's permanent home.

The Bakoni bagamatlala
Numerous black townships developed during the 20th century, many later became part of homelands such as Bophuthatswana and Kwandebele.

During the first half of the 19th century, numerous traders, adventurers and explorers visited the western parts of the Highveld. A hunting group from Somerset West and traders such as Schoon and McLuckie (1829) were the first white people to visit the area north of the Magaliesberg. Missionaries such as Robert Moffet (1829), the scientist Andrew Smith (1835) and the adventurer Cornwallis Harris (1836) moved through the Magaliesberg while on route through the western parts of the Highveld.

These early travellers were followed from the 1840's by the first colonists who settled in various places in the Magaliesberg such as Rustenburg, Marikana and in places such as Tierpoort, Garsfontein and Swawelpoort
The Delagoa Bay railway line was opened on 1 January 1895 and the railway line to Pietersburg on 1 May 1899.

The Transvaal Anglo Boer War followed in 1880 to 1881. The Second Anglo Boer War raged from 1899 to 1902. Battlefields, graveyards and fortifications from this time still exist from Irene (Centurion) through to Pretoria,

The main crops are cotton, sunflower seed, ground nuts, maize, wheat, lucerne, tobacco, vegetables and citrus fruit. Vineyards have adapted successfully to the semi-tropical climate of the area.

An area of 12 775 ha around the dam has been set aside as a nature reserve which is home to virtual all species of antelope, together with a few white rhino.

The 20th century also saw the introduction of irrigation and dry land farming in the Eskom project area.

### 3.3 Possible types and ranges of heritage resources in the Eskom project area

Not all of the types and ranges of heritage resources as outlined in the National Heritage Resources Act, Act No 25 of 1999 will occur in the Eskom project area. However, when considering the brief pre-historical and historical context that has been provided for the wider Eskom project area (Part 3.2) it is possible that the following types and ranges of heritage resources may exist in or near the Eskom project area, namely:

- Archaeological sites and features (particularly Stone Age sites and tools)
- Remains associated with the arrival of the first Bantu-Negroid farmers in the Mpumalanga Province (AD 600 to 900)
- Stone walled sites associated with Late Iron Age farmers such as the Kopa, Bantwane and the Bakoni (AD 1600 to 1850).
- Historical remains associated with the establishment of the first colonists during the second half of the 19th century.
- Remains dating from the more recent past such as homesteads occupied by farmers and their co-workers. These residential remains may be associated with single graves or with small cemeteries.
- Historical structures and buildings. All structures older than 60 years qualify as heritage resources.

(e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

(f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and

(g) plans for mitigation of any adverse effects during and after the completion of the proposed development'.

(Section 38[3] of the National Heritage Resources Act [Act No. 25 of 1999]).

partly developed areas as well as previously utilised but now abandoned activity areas.

The co-ordinates of sensitive remains such as graves, graveyards and inconspicuous heritage remains such as Stone Age sites and an Iron Age site in or near the proposed new power line corridor will be geo-referenced using a GPS instrument.

## 4.3 Limitations

The Phase I HIA study therefore may contain recommendations for further Phase II studies to be done. Phase II studies may require the attention of specialists (see Part 5.2).

It must be pointed out that heritage resources can be found in the most unexpected places. It must also be borne in mind that surveys may not detect all the heritage resources in any given study area. While certain remains may simply be missed during surveys (observations), others may occur below the surface of the earth and may only be exposed once development (such as mining) commences.

protecting public monuments and memorials and requiring developers to implement heritage resources management plans for various categories of development.

## 5.2 Mitigating possible heritage resources in the Eskom project area

Mitigation measures that would apply to any of the possible types and ranges of heritage resources that may occur in the Eskom project area would entail some of those listed under 'general protection'. These mitigation measures may include some of the following:

- the prevention of the destruction/altering of heritage resources older than 60 years;
- providing special measures in dealing with archaeological ... material...;
- conserving and caring for burial grounds and graves and possibly, but not necessarily;
- requiring developers (Eskom) to implement heritage resources management plans for various categories of development.

Most of these mitigation principles are generally referred to as Phase II investigations.

## 5.3 Phase II investigations

Phase II studies include in-depth heritage studies and vary according to the types and ranges of heritage resources that may be affected. These studies include the documentation of archaeological sites dating from the Stone Age, Iron Age and the historical period. The documenting of archaeological sites include the mapping (surveying), excavating and description of archaeological sites. Excavations of archaeological sites could be followed by laboratory work if archaeological collections have to be studied and analysed.

# Assessment of the Vegetation alongthe proposed Amandla - Wolwekraal Power Line

by

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and utilization by man. Certain plant communities will show signs of deterioration sooner, under a certain management regime.

From a development point of view, the type of development will have a definite impact on any ecosystem, and especially the vegetation and animals present. A wide range of development options exists, from low impact development to the kind of development that will totally destroy the natural environment of the specific site. It is therefore important to assess the conservation status and rarity of the site in question, and then evaluate the potential and suitability of the site for different kinds of development. A power line is a low impact development.

It is therefore clear that the plant communities and their associated habitats form the basis of scientifically based development and environmental and veld management. All development should be based on the recognition of homogeneous or related plant communities as the representative ecosystems of the area. All components of any of the ecosystems (physical environment, vegetation, animals) of a site are interrelated and interdependent - a holistic approach is therefore imperative to effectively utilize, and where necessary conserve the given natural resources. Ideally the area should be developed and managed to be self-sustaining, while the quality of the resources should not be allowed to decrease, as this would inevitably lead to ecosystem degradation and lower productivity. This is however often not possible with urban development projects, but the ecological potential of the site should determine the kind of development.

It is therefore necessary to make a thorough inventory of the plant communities and their associated habitats (=ecosystems), in order to evaluate the impact of the newly proposed power line.

- Process data (vegetation and habitat classification) to determine vegetation types on an **ecological** basis.
- Describe the habitat and vegetation
- Prepare a vegetation map of the area if more than one plant community is present.

*4. General*

- Identify and describe ecologically sensitive areas.
- Identify problem areas in need of special treatment or management, e.g. bush encroachment, erosion, degraded areas, reclamation areas.
- Make recommendations on aspects that should be monitored during development.

## STUDY AREA

### Location

The power line is situated in the general mixed bushveld area between Groblersdal and Marble Hall. The landscape is flat to slightly undulating. The area represents a mixed bushveld interspersed by agricultural land and degraded grazing camps.

### Vegetation Types

The site is situated in the Mixed Bushveld (Acocks 1988) and the Mixed Bushveld (Low & Rebelo 1996).

**High:** The deep loamy soil has a high potential for cultivation of crops.

**Medium:** The shallow soil has a medium potential for cultivation of crops.

**Low:** The shallow, rocky soil has little or no potential for cultivation of crops, and can be used for grazing only.

The PRECIS database of the National Botanical Institute were used to obtain lists of the Plants that occur in Grids 2429 CD and 2529 AA and 2529 AB. These lists were then evaluated in terms of habitat available on the site, and also in terms of the present development and presence of man in the area.

The routes were travelled by 4x4 and the vegetation through which the proposed transmission line would transect was assessed, and linked to the present descriptions of the vegetation.

Table 1: Plant species in the northern parts

| | |
|---|---|
| **Grasses** | |
| *Aristida congesta* subsp. *congesta* | *Eragrostis rigidior* |
| *Cynodon dactylon* | *Eriochloa sp* |
| *Digitaria eriantha* | *Heteropogon contortus* |
| *Enneapogon scoparius* | *Melinis repens* |
| | |
| **Forbs** | |
| *Aloe greatheadii* | *Evolvulus alsinoides* |
| | *Geigeria burkei* |
| *Aloe transvaalensis* | *Nidorella hottentotica* |
| *Aptosimum linearium* | *Sida alba* |
| *Commelina erecta* | *Solanum panduriforme* |
| *Dolichos angustifolius* | *Waltheria indica* |
| | |
| **Woody** | |
| *Acacia tortilis* | *Grewia flava* |
| *Boscia foetida* | *Lantana rugosa* |
| *Aloe marlothii* | *Opuntia ficusindica* |
| *Dichrostachys cinerea* | *Rhus lancea* |
| *Ehretia rigida* | *Spirostachys africana* |
| *Phyllanthus reticulatus* | *Ziziphus mucronata* |

**Section 1, Site 2: Cultivated land surrounded by mixed bushveld S 25°01"31.9' E 29°17"23.2'**

| **Section 1, Site 2: Cultivated land surrounded by mixed bushveld** | | | |
|---|---|---|---|
| | | | |
| **Status** | Cultivated land | | |
| **Soil** | Red soil, deep | **Rockiness** | 0-5% |
| **Wildlife** | Small mammals, birds | **Conservation priority:** | Low |
| **Agricultural potential:** | High | **Need for rehabilitation** | Low |
| | | | |
| **Dominant spp.** | *Dichrostachys cinerea* | | |

Section 1, Site 3: Mixed Bushveld on Rocky areas
E.G S 25°02"37.0' E 29°16"13.3'

| Section 1, Site 3: Rocky Mixed bushveld on rocky area | | | |
|---|---|---|---|
| | | | |
| **Status** | Dense mixed bushveld | | |
| **Soil** | Shallow, rocky | **Rockiness** | 15-25% |
| **Wildlife** | Small mammals, birds | **Conservation priority:** | Medium-Low |
| **Agricultural potential:** | Low | **Need for rehabilitation** | Low |
| | | | |
| **Dominant spp.** | *Combretum apiculatum* | | |

Dense mixed bushveld on rocky, gravely ridges and outcrops dominates the landscape in this area. These area are narrow outcrops with rocky substrates, and here a specific plant community dominated by *Euclea crispa, Dichrostachys cinerea* and *Strychnos madagascariensis* is present. These area are very local and should not be affected significantly by the power line.

**Table 3: Plant species from Site 3, Rocky areas**

| | |
|---|---|
| **Grasses** | |
| *Aristida congesta* subsp. *congesta* | *Enneapogon scoparius* |
| *Aristida stipitata* | *Eragrostis rigidior* |
| *Digitaria eriantha* | *Melinis repens* |
| **Forbs** | |
| *Chlorophytum fasticulatum* | *Justicia flava* |
| *Cyperus margaritaceus* | *Melhania prostata* |
| *Evolvulus alsinoides* | *Senecio sp.* |
| *Gomphrena celosioides* | *Solanum panduriforme* |
| *Hibiscus trionum* | *Waltheria indica* |
| *Ipomoae obscura* | *Xerophyta humilis* |
| **Woody** | |
| *Boscia foetida* | *Euclea undulata* |
| *Dichrostachys cinerea* | *Grewia bicolor* |

## Section 2: Mixed Bushveld in Game Farm areas

The vegetation of this section is very similar to that of Section 1, though the vegetation is in a more pristine condition. The species composition is also similar. Although fairly rich in especially woody species, this type of bushveld occurs widespread and it is not threatened. Some of the bushveld vegetation will have to be cleared for the construction of the line. No rare species were encountered, though note should be taken of the presence of *Sclerocarya birrea* (Marula) which is a protected tree. A permit from the provincial nature conservation authority will be needed if any individual of this species that may occur in the way of the proposed line, has to be removed.

The proposed line through this area can be supported.

The proposed line through this area can be supported.

**Table 4: Plant species from Amandla Substation northwards**

| | |
|---|---|
| **Grasses** | |
| *Aristida diffusa* subsp. *diffusa* | *Hyperthelia dissoluta* |
| *Brachiaria nigropedata* | *Loudetia simplex* |
| *Digitaria eriantha* | *Pogonarthria squarossa* |
| *Enneapogon scoparuis* | *Themeda triandra* |
| *Eragrostis rigidior* | *Tricholaena monachne* |
| | |
| **Forbs** | |
| *Aloe greatheadii* var. *davyana* | *Hibiscus trionum* |
| *Asclepias* sp. | *Indigofera daleoides* |
| *Blepharis subvolubilus* | *Ipomoea obscura* |
| *Chlorophytum* sp. | *Kyphocarpa angustifolia* |
| *Dicerocaryum eriocarpum* | *Ledebouria marginata* |
| *Elephantorrhiza elephantina* | *Lippia rehmannii* |
| *Evolvulus alsinoides* | *Pygmaeothamnus zeyheri* |
| *Gladiolus* sp. | *Senecio* sp. |
| *Hermannia boraginiflora* | *Tephrosia capensis* |
| *Hibiscus pusillus* | *Waltheria indica* |
| **Woody** | |
| *Acacia gerrardii* | *Ficus thonningii* |
| *Acacia robusta* | *Grewia monticola* |
| *Acacia tortilis* | *Lannea discolor* |
| *Combretum apiculatum* | *Ozoroa paniculosa* |
| *Combretum zeyheri* | *Sclerocarya caffra* |
| *Dichrostachys cinerea* | *Terminalia sericea* |

## CONCLUSION AND RECOMMENDATIONS

The proposed line will traverse three vegetation types, these are:

1) Dense mixed bushveld in the north, with local cultivated fields and rocky outcrops
2) Mixed bushveld of the central areas with Game Farms
3) Shrubveld in the south