

**KOEBERG – ANKERLIG 132KV POWER LINE:  
FAUNA AND FLORA PRECONSTRUCTION WALK-THROUGH REPORT**



**PRODUCED FOR SAVANNAH ENVIRONMENTAL  
ON BEHALF OF ESKOM HOLDINGS SoC LIMITED**



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## Introduction & Background

Eskom obtained environmental authorisation for the re-routing of a portion of the power line between Ankerlig and Koeberg power stations in August 2015. In terms of the requirements of the EMP and Eskom's standard practices, they require an ecological walk through survey to be undertaken for the approved route (Alternative 2). Savannah Environmental has appointed Simon Todd Consulting to provide a walk-through of the pylon positions of the re-routed power line approved route, Alternative 2.

The components that were examined in this study include:

- Power line route from the deviation to Ankerlig.
- 25 pylon positions along the proposed power line corridor of preferred Alternative 2.

The purpose of the walk-through is to locate and identify any protected or threatened plant species or fauna of conservation concern within the development footprint and which may be impacted by the development. This report details the findings of the walk-through study that was conducted for the development footprint of the power line and other checked infrastructure.

## Relevant Aspects of the Development



**Figure 1.** Satellite image showing the location of the Ankerlig power line pylon positions and the power line route. The pylon positions are indicated by the red dots.

## Walk-Through

The walk-through was conducted on the 16<sup>th</sup> of June 2016. During the walk-through, the power line route was checked for potential impacts on intact vegetation fragments. All pylons in close proximity or within natural or near-natural vegetation were checked in the field. Where pylons were located in sensitive areas, alternative locations in the vicinity, as close as possible to the original location, were identified. Only a few pylons are considered to be located within highly sensitive areas. Photographs of sensitive features and pylon positions were taken for documentation purposes.

## Identification of Listed and Protected Species

The conservation status of species of conservation concern were identified based on the SANBI *Red List of South African Plants* (2016), while species protected at the provincial level are taken from the *Western Cape Nature Conservation Laws Amendment Act of 2000*. The *Western Cape Nature Conservation Laws Amendment Act* provides lists of protected species of plant and animals and in some cases whole plant genera or families may be listed as protected. Of particular relevance are the following, which highlights the plant genera and families most likely to be encountered at the site, but is not intended to be a comprehensive list.

### Schedule 4 Protected Flora:

- *Amaryllidaceae* – All species
- *Lachenalia* – All Species
- *Iridaceae* – All Species
- *Mesembryanthemaceae* – All species
- *Orchidaceae* – All species
- *Diascia* – All species

In terms of fauna, the following *inter alia* are protected and may not be hunted, captured or harmed without a permit:

- All tortoises
- All lizards
- All frogs
- Most snakes
- All indigenous antelope
- Aardvark
- Most small carnivores such as Honey Badger, Cape Fox, Bat-eared Fox, Large Grey Mongoose etc.
- Most birds except pest species

Burrows of any of the above species within the development footprint, or specialized habitat home to red-listed fauna, or nesting and roosting sites of birds such as raptors or cranes would be important to avoid.

In addition to the listed species, it is also important to note that the power line occurs almost entirely within listed ecosystems, within Atlantis Sand Fynbos (Critically Endangered) and within Cape Flats Dune Strandveld (Endangered). Only 43% of Cape Flats Dune Strandveld remains and 51% of Atlantis Sand Fynbos. Both vegetation types have exceptional levels of diversity and associated species of conservation concern, with 66 red data species known from Cape Flats Dune Strandveld and 84 from Atlantis Sand Fynbos. Any additional habitat loss within these vegetation types is undesirable and intact fragments should be avoided as much as possible.

## **Study Limitations**

Conditions at the time of the walk-through were adequate for the assessment. It was reasonably wet at the time of the site visit, although it was quite early in the wet season and some additional late-season geophytes may be present that could not be observed. As a result, there are few limitations associated with the study. However, it is important to note that many of the pylons are in close proximity to intact fragments and even small changes to the location of the pylons would potentially negate the findings of the walk-through.





## **Walk-Through Results**





The results of the walk-through are illustrated below. Not all pylon positions are illustrated as some of the positions are within transformed areas with minimum impact on natural vegetation. For each pylon or feature, recommendations are made with regards to the location of the pylon or ensuring that there is no impact on important biodiversity features. Mitigation in particular was considered for those pylons situated in very good quality Cape Flats Dune strandveld (between Pylon 22 and 18) and in slightly degraded strandveld between Pylon 17 and 11.





The table below provides a brief description of each pylon site, including the ecological condition, species and proposed mitigation. Photographs were taken in the direction from Pylon 24 toward Pylon 1 or south to north.






\* = exotic weeds in table below

**Table 1.** Pylon location habitat description and avoidance recommendations.



Pylon	Habitat condition/Species	Image	Avoidance & Mitigation
25	Start of the deviation		Not applicable
24	<p>Disturbed area dominated by <i>Ehrharta villosa</i>, <i>Cynodon dactylon</i>, <i>*Acacia saligna</i> and <i>*Raphanus raphanistrum</i>. Additional species include <i>Searsia laevigata</i>, <i>Osteopermum moniliferum</i>, <i>Trachyandra ciliata</i>, <i>Euphorbia mauritanica</i>, <i>Searsia glauca</i> and <i>Brunsvigia orientalis</i>.</p>		Suitable site
23	<p>Moderate to dense infestations of <i>*Acacia cyclops</i> with partial clearing carried out. Intact vegetation occurs with infestations of <i>Acacia cyclops</i> at varying levels of cover density. Species: <i>Searsia laevigata</i>, <i>Trachyandra ciliata</i>, <i>Albica</i> sp., <i>Putterlickia pyracantha</i>, <i>Euphorbia mauritanica</i>, <i>Ruschia indecora</i> (ENDANGERED) and <i>Thamnochortus spicigerus</i>. Note that <i>Ruschia indecora</i> also occurs in the surrounding habitat. Thus moving the pylon would not mitigate impacts.</p>		Suitable site
22	<p>Intact, good condition Cape Flats Dune Strandveld located on a dune. Dominant species include <i>Searsia laevigata</i>, <i>Euphorbia mauritanica</i>, <i>Ruschia indecora</i> (ENDANGERED) and <i>Euclea racemosa</i>. Additional species: <i>Carpobrotus acinaciformis</i>, <i>Searsia glauca</i>, <i>Putterlickia pyracantha</i>, <i>Ficinia</i> sp. and <i>Ruschia macowanii</i>.</p>		Construction of a service road through this vegetation will have a High Impact.

<p>21</p>	<p>Dense patch of <i>Ruschia indecora</i> (ENDANGERED) along with additional species such as <i>Searsia laevigata</i>, <i>Trachyandra ciliata</i> and <i>Trachyandra</i> sp., <i>Zygophyllum</i> sp. and <i>Babiana</i> cf. <i>tubulosa</i> (VULNERABLE).</p> <p>Since the general area supports high numbers of <i>Ruschia indecora</i> there is no leeway to reposition the pylon.</p>		<p>No leeway to reposition the pylon. The surrounding habitat is the same.</p>
<p>20</p>	<p>Degraded area overrun with *<i>Acacia cyclops</i> and *<i>Acacia saligna</i> and dominated by <i>Ehrharta villosa</i>. Additional species include <i>Zygophyllum morgsana</i>, <i>Trachyandra ciliaris</i>, <i>Asparagus capensis</i> and <i>Searsia laevigata</i>.</p>		<p>Suitable site</p>
<p>19</p>	<p>Intact, good condition Cape Flats Dune Strandveld of the same type at Pylon 22.</p>		<p>Construction of a service road through this vegetation will have a High Impact. Moving the site to waypoint 001 (33°36'20.80"S; 18°27'29.82"E) would be slightly less harmful since the vegetation is in a semi-intact condition at this point.</p>
<p>18</p>	<p>Semi-intact to intact vegetation located on top of a dune. The vegetation is dominated by <i>Euclea racemosa</i>, with open patches containing low-growing species including cf. <i>Arctotis</i> sp. and <i>Jordaniella dubia</i>. Additional species include <i>Asparagus capensis</i>, <i>Euphorbia mauritanica</i>, <i>Limonium peregrinum</i>, <i>Ruschia indecora</i> (ENDANGERED), <i>Searsia glauca</i> and <i>Romulea flava</i>.</p>		<p>No leeway to reposition the pylon. The surrounding habitat is the same.</p>

17	<p>Area heavily infested with <i>*Acacia saligna</i> and <i>*Acacia cyclops</i>. Area needs to be cleared of Invasive Alien Plants (IAPs).</p>		<p>Suitable site</p>
16	<p>Mosaic or disturbed open patches covered with <i>Ehrharta villosa</i> and <i>Jordaaniella dubia</i> and large shrubs including <i>Searsia glauca</i> and several <i>Euclea racemosa</i> plants. Additional species include <i>Thamnochortus spicigerus</i> and <i>Cotyledon orbiculata</i>.</p> <p>Note shrubs are important habitat refuge and should be avoided.</p>		<p>The shrubs could be avoided by moving the pylon 10 m south.</p>
15	<p>Disturbed area dominated by <i>Ehrharta villosa</i>, with a large <i>Searsia glauca</i> plant. Additional species include <i>Albucca</i> sp. and <i>Ruschia macowanii</i>.</p>		<p>Avoid large <i>Searsia</i> shrubs if possible</p>
14	<p>Same habitat as Pylon 12 with additional species including <i>Limonium peregrinum</i> and <i>Euphorbia mauritanica</i>.</p>		<p>The Pylon should be moved off the dune to the disturbed patch at waypoint 004 (33°35'50.74"S; 18°27'12.83"E).</p>

13	<p>Semi-intact to intact vegetation with a mosaic of shrubs and open patches. The open patches are dominated by <i>Ehrharta villosa</i>, <i>Jordaaniella dubia</i> and cf. <i>Arctotis</i> sp. The dominant shrubs and restioids include <i>Thamnochortus spicigerus</i>, <i>Pelargonium</i> sp., <i>Metalasia muricata</i> and <i>Ruschia indecora</i> (ENDANGERED).</p>		<p>The pylon would have less impact if positioned closer to the fenceline at the industrial area to the south-east.</p>
12	<p>Intact vegetation on top of a dune. Dominant species include <i>Thamnochortus spicigerus</i>, <i>Ehrharta villosa</i> and <i>Joordaaniella dubia</i>. Additional species include <i>Lachenalia rubida</i>, <i>Muraltia spinosa</i>, <i>Searsia glauca</i>, <i>Euclea racemosa</i>, <i>Metalasia muricata</i> and <i>Olea exasperata</i>.</p>		<p>Move pylon off the top of the dune to disturbed patch at waypoint 002 (33°35'39.20"S; 18°27'19.63"E).</p>
11	<p>Semi-intact vegetation with the same array of species at Pylon 12.</p>		<p>Suitable site</p>
10 to 6	<p>Transformed area located within Ankerlig Power Station (APS).</p>		<p>Suitable sites</p>
5 to 3	<p>Located on almost flat ground along disturbed edge near rehabilitated dune/embankment. The area is highly degraded and covered mostly with alien grasses.</p>		<p>Suitable sites</p>



2	Degraded area where rehabilitation was not been implemented properly (i.e. no follow up weed management, seeding and replanting) dominated by <i>Tetragonia fruticosa</i> , * <i>Raphanus raphanistrum</i> and <i>Trachyandra divaricata</i> . Additional species include <i>Salvia cf. lanceolata</i> , <i>Ruschia macowanii</i> , <i>Cynodon dactylon</i> , <i>Hellmuthia membranacea</i> and <i>Zygophyllum sp.</i>		Suitable site
1	Same habitat as Pylon 2		Suitable site

**Fauna:**

There were no active burrows of any listed mammal or reptile species in the immediate vicinity of the proposed pylon position areas. Furthermore there were no nests or roosting sites of avifauna within the pylon footprints. As a result there are no faunal issues that require avoidance. However, during construction, some fauna may be disturbed and should be allowed to move off undisturbed.

**Conclusions and Recommendations**

Table 2 indicates that the majority of pylons are situated on suitable sites. Pylons 12, 13, 14, 15, 16, 19 and 22 can be re-located to within a few metres, to avoid sensitive areas.

Pylon 21 is within intact dense patch of *Ruschia indecora* (ENDANGERED) along with additional species such as *Searsia laevigata*, *Trachyandra ciliata* and *Trachyandra sp.*, *Zygophyllum sp.* and *Babiana cf. tubulosa* (VULNERABLE) and is highly likely to have some impact on protected species. This pylon cannot be relocated within a radius of ca 50m as it is located within a much broader patch of *Ruschia indecora*. As a result, the impact of this pylon should be mitigated on-site during construction. The following mitigation and avoidance measures should be implemented during the construction of the pylon and power line within the intact fragment at Pylon 21:

- No formal vegetation clearing should be done on-site. This will allow geophytes, forbs and more tolerant perennials to persist within the disturbed area which should largely recover after the disturbance if the soil is not disturbed. Only the actual footprint of the pylon, where excavation is required, should be disturbed.
- Where possible, the mature specimens of *Ruschia indecora* should not be disturbed.

- The work area should be demarcated by an ecologist prior to construction and enforced by the ECO during construction. This area should be demarcated with construction tape or similar and no activity should be allowed outside of this area.
- Due to the uncertainties involved in the footprint, it is difficult to provide precise estimates of the number of individuals of protected species that would be impacted by the development. The numbers estimated are those likely to be impacted by the construction of the pylons and it is assumed that sufficient avoidance can be implemented along the access route to minimise significant impact due to access.
- Based on the observations made to date and assuming a worst-case scenario, the following numbers of individuals are indicated as appropriate for the CapeNature permit application:

<b>Family</b>	<b>Species</b>	<b>Status</b>	<b>No affected</b>
<i>Amaryllidaceae</i>	<i>Brunsvigia orientalis</i>	Schedule 4	3
<i>Iridaceae</i>	<i>Babiana sp.</i>	Schedule 4	2
<i>Iridaceae</i>	<i>Romulea flava</i>	Schedule 4	5
<i>Aizoaceae</i>	<i>Ruschia indecora</i>	Endangered	Ca 15

**Recommendations:**

**Flora:**

Vegetation clearing should be kept to a minimum. The corridor should be cleared of alien species.

If endangered plant species such as *Ruschia indecora* cannot be avoided, they should be marked and translocated prior to the commencement of construction as part of the search and rescue operation for the development.

**Fauna:**

Any fauna that are directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person and all construction staff should undergo an environmental induction at the start of the project to ensure that they are aware of the appropriate response to the presence of fauna at the site and do not kill or harm fauna such as snakes or other reptiles which are often feared.

All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.