

Kudu Oranjemund 400kV power line Amendment - Avifaunal statement

September 2021

Introduction

The Oranjemund 400kV line crossing was previously assessed and received environmental authorisation (Ref: 14/12/16/3/3/2/977). However a new design came about after a scope change in the then Kudu project where only a single 400kV line was required. The design was re-evaluated and changed to make use of the newly developed 540 series structures to cross the river. The successful prototyping and implementation of the structure has provided confidence in a solution that was not available when the concept design was done for this project. Due to the larger wind span and electrical span of this structure the river could be crossed in a single span which is 975m long.

In summary:

- Change of the towers positioning on the south substation, number of towers present is being reduced from 20 to 8.
- Change in tower height - increase from 42m to 62m;
- Combined tower footprint anticipated to now be 136m² a reduction from 240m².
- Individual tower footprints increased from 12m² from 17m²; and
- Change from two lines to one line.

Coastal & Environmental Services (CES) appointed WildSkies Ecological Services (WildSkies) to conduct a site walk down and statement of impacts based on new tower positions and footprint against previous study and indicate if the nature or severity of impact has increased.

Methods

The site was visited in August 2021 to examine the new tower positions. Each new tower position was visited on foot to assess its placement and impact, and the river crossing was examined. Photographs of the site, and a brief bird list of those species recorded whilst on site are presented in Appendix 1.

Findings

Original findings

The original avifaunal impact assessment was conducted by Chris van Rooyen Consulting (2016). The key findings are summarised below:

- The study area is located approximately 10km upstream from the Orange River Mouth Wetlands Important Bird Area (IBA) (SA 030) This IBA was declared a Ramsar site in 1991, as was the Namibian side of the mouth in 1995.
- The following avian habitat classes were recorded within the core study area:
 - Desert. The vegetation type (Western Gariep Lowland Desert) consists of sparse low shrubland with mainly leaf- and stem-succulent chamaephytes (a low-growing perennial plant whose dormant overwintering buds are borne at or just above the surface of the ground). This vegetation type occurs mainly around the Oranjemond substation on dunes and rocky outcrops. Priority bird species that could be found in this habitat are Ludwig's Bustard, Barlow's Lark, Cape Longbilled Lark, Pale-winged Starling, Tractrac Chat, Martial Eagle *Polemaetus bellicosus* and Lanner Falcon *Falco biarmicus*.
 - Rivers. The study area is situated at the upper end of the Orange River mouth which consists mostly of salt marshes with patches of supratidal salt marshes on elevated terraces. Vegetation is formed mainly of low succulent dwarf shrubland patches, forming a mosaic with creeping grassy mats and patches of reed beds. Alien trees are found along the banks of the river, forming dense stands in places. Priority species that could be found in this habitat are Greater Flamingo, Lesser Flamingo, Great White Pelican, Caspian Tern, African Marsh-harrier, Chestnut-banded Plover, Cape Spurfowl, Black-necked Grebe, South African Shelduck, Cape Shoveler, Pied Avocet and Kelp Gull. The river also acts as a flyway for a large number of non-priority waterbirds, including African Fish-Eagle which utilises the stands of trees for nesting and roosting.
 - Agriculture. Limited agricultural activity, mostly irrigated lucerne, is cultivated along the edge of the river. Few priority species would be attracted to this habitat, except Ludwig's Bustard on occasion.
- Two main groupings of birds were identified as priority: Resident and breeding priority species that are potentially susceptible to displacement from the area during construction activities; Priority waterbird species that may frequent the Orange River, possibly resulting in collision with the proposed power line.
- The potential impacts on avifaunal were found to be as follows: habitat destruction and disturbance, and collision.
 - In the case of displacement of priority species due to habitat destruction and disturbance associated with the construction and decommissioning of the substation and power lines, the impacts are rated as low, and could be further reduced to very low with appropriate mitigation.
 - In the case of priority species mortality due to collisions with the earthwire of the proposed power lines, the impact is rated as moderately negative and it could be reduced to low with the implementation of appropriate mitigation.
- It was concluded that all impacts could be mitigated to acceptable levels.

- The recommended mitigation was as follows:
 - Construction activity should be restricted to the immediate footprint of the infrastructure.
 - Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species.
 - Measures to control noise should be applied according to current best practice in the industry.
 - Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.
 - The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the construction footprint and rehabilitation of disturbed areas is concerned.
 - Nocturnal light emitting diode (LED) mitigation device diverters must be installed on the full span length on the earthwire of each of the spans crossing the Orange River according to Eskom guidelines. These devices are a combination of the basic bird flapper and bird flight diverter concepts, but are equipped with a solar panel which powers flashing LED lights throughout the night to prevent mortalities of bird species flying at night and in thick mist (see Appendix 2). Our Appendix 2 is a reproduction of the original studies Appendix 2.

Current amendment findings

All proposed tower positions are acceptable from an avifaunal perspective. The proposed changes to the project do not materially affect the original findings or recommendations. Any slight change in impact significance (not sufficient to change categorical findings) would be towards less impact on avifauna since far fewer towers are now proposed and two power lines across the Orange River have been reduced to one, which is advantageous. Photographs of the site are shown in Appendix 1. Although not integral to this assessment, nineteen bird species were recorded on site (Appendix 1), one of which is regionally Red Listed – Caspian Tern *Hydroprogne caspia* (Vulnerable – Taylor *et al*, 2015).

Conclusions & recommendations

The avifaunal specialist can confirm that the nature and severity of impact as described in Chris van Rooyen Consulting (2016) remains the same (with some improvement due to the single OHL) and that a Part 1 amendment application can be followed from an avifaunal perspective. We conclude that the proposed amendment will not materially affect the original avifaunal impact assessment findings or the mitigation recommended. Any slight change that the amendment does bring about will be for the better for birds, since less towers and one less power line across the river are required. The walk down process has also identified no new issues or any micro-siting constraints.

All original mitigation measures recommended by Chris van Rooyen Consulting (2016) should be applied. Of particular importance is the requirement to mitigate the risk of collision of birds with the earth wires through the following:

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References

Chris van Rooyen Consulting. 2016. Bird Impact Assessment Report: Kudu PS – Oranjemond Project. Unpublished EIA report.

Taylor, M. R, Peacock, F., & Wanless, R. 2015. The 2015 Eskom Red Data Book of Birds of South Africa, Lesotho & Swaziland.

Appendix 1. Field assessment information.

The following bird species were recorded on site. These are short term data and should not be used formally.

Species primary name	Species tertiary name	Date	Time	Latitude	Longitude
Pied Crow	<i>Corvus albus</i>	2021/08/04	09:12:40	-28.5592	16.55631
South African Shelduck	<i>Tadorna cana</i>	2021/08/04	10:24:52	-28.5395	16.59985
Cape Wagtail	<i>Motacilla capensis</i>	2021/08/04	10:16:58	-28.5391	16.60023
Egyptian Goose	<i>Alopochen aegyptiaca</i>	2021/08/04	09:53:10	-28.5394	16.60093
Swallow-tailed Bee-eater	<i>Merops hirundineus</i>	2021/08/04	12:07:50	-28.5444	16.58925
Tractrac Chat	<i>Emarginata tractrac</i>	2021/08/04	11:01:15	-28.548	16.60159
Bokmakierie	<i>Telophorus zeylonus</i>	2021/08/04	10:10:48	-28.5389	16.60059
African Fish Eagle	<i>Haliaeetus vocifer</i>	2021/08/04	09:15:59	-28.5525	16.57859
Acacia Pied Barbet	<i>Tricholaema leucomelas</i>	2021/08/04	12:06:16	-28.5443	16.58926
African Fish Eagle	<i>Haliaeetus vocifer</i>	2021/08/04	09:49:39	-28.5401	16.60064
Ring-necked Dove	<i>Streptopelia capicola</i>	2021/08/04	10:08:26	-28.5389	16.60073
Caspian Tern	<i>Hydroprogne caspia</i>	2021/08/04	10:05:29	-28.5387	16.60094
White-breasted Cormorant	<i>Phalacrocorax lucidus</i>	2021/08/04	10:13:56	-28.5389	16.60055
Reed Cormorant	<i>Microcarbo africanus</i>	2021/08/04	09:56:39	-28.539	16.60111
Grey-headed Gull	<i>Chroicocephalus cirrocephalus</i>	2021/08/04	09:53:17	-28.5393	16.60093
Cape Robin-Chat	<i>Cossypha caffra</i>	2021/08/04	10:13:05	-28.5389	16.60051
Western Cattle Egret	<i>Bubulcus ibis</i>	2021/08/04	10:12:06	-28.539	16.60055
Grey-backed Cisticola	<i>Cisticola subruficapilla</i>	2021/08/04	10:35:11	-28.5407	16.60111
Speckled Pigeon	<i>Columba guinea</i>	2021/08/04	09:54:43	-28.539	16.60096
Southern Double-collared Sunbird	<i>Cinnyris chalybeus</i>	2021/08/04	12:07:19	-28.5443	16.58924













Appendix 2. Bird flapper information (from Chris Van Rooyen Consulting – 2016).



WORLD'S FIRST LED ANTI-COLLISION DEVICES TO SAVE NIGHT FLYING BIRDS

17th July 2014

Start

The Endangered Wildlife Trust's Wildlife & Energy Programme (EWT-WEP), in partnership with Eskom and Performed Line Products, broke new ground near Kroonstad by installing the world's first nocturnal light emitting diode (LED) mitigation device. These devices are a combination of the basic bird flapper and bird flight diverter concepts, but are equipped with a solar panel which powers flashing LED lights throughout the night to try and prevent mortalities of bird species flying at night.

"Through the years Eskom and the EWT have worked together to reduce the number of wildlife mortalities on Eskom infrastructure across South Africa. One of the major impacts identified over the years was the collision of water birds, such as Flamingos, with power lines. Interestingly it has been observed and recorded that these bird species often fly at dawn, dusk, and after dark, making them prone to collision with power lines. The Greater Flamingo *Phoenicopterus roseus* and Lesser Flamingo *Phoenicopterus minor* are found in most regions of South Africa and Eastern Southern Africa, and both of these species are considered near threatened. Often larger birds such as these will collide with power line infrastructure by simply not being able to see the obstacle in their flight path," commented Constant Hoogstad, Manager of the EWT-WEP.

One of the areas where Greater Flamingos were noted to be affected by power lines was on a farm called Rooihogte, which is 30km outside Kroonstad. Over the past three years more than 50 Flamingos had collided with already marked power lines on this property. The line was fitted with diurnal anti-collision devices but they proved to be ineffective.

"The EWT, Eskom, Performed Line Products, and one of the local concerned landowners, collaborated to fit the first ever nocturnal LED solar charged device on power lines. This was a truly a historic day for the Eskom EWT partnership as we are extremely optimistic about the success of this LED nocturnal anti-collision device and the site will now be monitored to establish its effectiveness. If the devices prove to be successful we hope to integrate them in other parts of the country in order to continue to reduce the mortality rate of large water birds," concluded Hoogstad.

For further information about the Eskom EWT partnership and our work with the LED nocturnal anti-collision devices please contact Constant Hoogstad on constant@ewt.org.za. Thanks to Eskom and their dedicated team, Performed Line Products and Rooihogte Game Farm for their assistance and support on this project.

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The Endangered Wildlife Trust is a non-profit, public benefit organisation dedicated to conserving species and ecosystems in southern Africa to the benefit of all people.

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