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BIRD IMPACT ASSESSMENT STUDY

Proposed 132kV link line between relocated gas turbines and the national grid at the Ankerlig power station Western Cape Province

Eskom Transmission Division
Western Region

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1. INTRODUCTION

Eskom plans to relocate gas turbines from the Acacia power station in Goodwood to the Ankerlig power station site (Atlantis Industria) just north of Cape Town, Western Cape Province. In order to connect these relocated turbines to the power grid, a short 132 kV power line will be required linking the turbines to the Dassenberg-Koeberg line. Two possible options have been proposed for this line (after a third was disqualified by the scoping study). Savannah Environmental (Pty) Ltd was appointed as the main consulting agency for the Environmental Impact Assessment process. The Endangered Wildlife Trust (EWT) was appointed by Savannah to conduct a specialist avifaunal impact assessment for the proposed line and to select the preferred routing option.

Terms of reference

The terms of reference for the EWT avifaunal study stipulate that the study should include the following:

- A description of environmental issues and potential impacts (direct, indirect and cumulative) that have been identified.
- A statement on the overall, potential significance of the identified impacts, based on the impact evaluation process.
- A comparative evaluation of the identified, feasible alternative routes for the power line, with a nominated, preferred alternative.

2. METHODS

Sources of information

The following information sources were consulted in order to conduct this study:

- Bird distribution data of the Southern African Bird Atlas Project (SABAP – Harrison *et al.* 1997) and of the Avian Demography Unit's 'Birds in Reserves Project' (BIRP) were obtained from the SANBI website (http://www.birds.sanbi.org) for the relevant quarter-degree squares traversed by the proposed line (Melkbosstrand 3318CB & Philadelphia 3318DA). A composite list of species likely to occur in the impact zone of the line was drawn up as a combination of these bird lists based on general knowledge of the avifauna of the region (APPENDIX 1).
- Conservation status and endemicity of all species considered likely to occur in the area was determined as per the most recent iteration of the national Red-list for birds (Barnes 2000), and the most recent and comprehensive summary of southern African bird biology (Hockey *et al.* 2005).

- The power line bird mortality incident database of the Eskom - Endangered Wildlife Trust Strategic Partnership (1996 to present) was consulted to determine which of the species occurring in the study area are typically impacted by power lines and the extent to which they are affected.
- A classification of the vegetation types present in the study area was obtained from Mucina & Rutherford (2006), and an additional classification of the 'avi-vegetational zones' in each quarter degree square was obtained from Harrison *et al.* (1997).

Assumptions & Limitations

This study made the assumption that the above sources of information are reliable. The following factors may potentially detract from the accuracy of the predicted results:

- The SABAP data covers the period 1986-1997. Bird distribution patterns fluctuate continuously according to changes in land use, habitat quality and climatic conditions, which in turn affect levels of disturbance, and the availability of food and nesting substrates.
- Sources of error in the SABAP database, particularly inadequate coverage of some quarter degree squares.
- Difficult road access and limited time made examination of some parts of the study area from the ground difficult.

3. DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 Vegetation

The study site falls within the Fynbos biome, and the West Strandveld bioregion (Mucina & Rutherford 2006), and borders on areas of Cape Flats Dune Strandveld and Atlantis Sand Fynbos. Just east of the intersection of the R27 and the R307 there is a small patch of Cape Inland Salt Pan vegetation, coincident with a sizeable wetland area and sewage treatment plant. In terms of the avi-vegetational zones identified by the southern African bird atlas project (SABAP, Harrison *et al.* 1997), the area includes elements of both the Fynbos and the Succulent Karoo regions.

More specifically, the impact zone of the proposed line features five avian microhabitats – (i) Degraded/recovering Strandveld or Sand Fynbos, (ii) Alien Acacia-infested Strandveld or Sand Fynbos, (iii) Developed areas, from rural homesteads and farm buildings to light-moderate industrial development (APPENDIX 1).

3.2 Relevant bird populations

The impact zone of the line is likely to support 66 bird species (APPENDIX 1), of which two species are Red-listed and 17 species are regional endemics or near-endemics (Barnes 2000, Hockey *et al.* 2005). None of the bird populations present in the impact area are likely to be of high conservation value. The natural vegetation remnants present within the impact zone are likely to support the highest avian diversity.

4 ASSESSMENT OF IMPACTS

4.1 General description of power line impacts on birds

Because of their size and prominence, electrical infrastructures constitute an important interface between wildlife and man. Negative interactions between wildlife and electricity structures take many forms, but two common problems in southern Africa are electrocution of birds (and other animals) and birds colliding with power lines (Van Rooyen 1999, Van Rooyen & Ledger 1999). Other problems are: electrical faults caused by bird excreta when roosting or breeding on electricity infrastructure; and disturbance and habitat destruction during the construction and maintenance activities associated with electrical infrastructure.

Electrocution refers to the scenario where a bird is perched or attempts to perch on the electrical structure and causes an electrical short circuit by physically bridging the air gap between live components and/or live and earthed components.

Collision refers to the scenario where a bird collides with the conductors or earth wires of overhead power lines. The groups of birds most severely impacted by collision with overhead lines are bustards, storks and cranes. These species are generally large, heavy-bodied birds with limited maneuverability, which makes it difficult for them to take the necessary evasive action to avoid colliding with power lines. An unknown number of smaller, fast-flying species – especially pursuit hunting raptors such as falcons – are also prone to colliding with power lines. Unfortunately, many collision sensitive species are considered threatened in southern Africa, and many are long-lived, slow reproducing species poorly adapted to coping with high rates of adult mortality, inflated by power line casualties.

During the construction phase and maintenance of power lines and substations, some habitat destruction and alteration inevitably takes place. This happens with the construction of access roads, the clearing of servitudes and the leveling of substation yards. Servitudes have to be cleared of excess vegetation at regular intervals in order to allow access to the line for maintenance, to prevent vegetation from intruding into the legally prescribed clearance gap between the ground and the conductors and to minimise the risk of fire under the line which can result in electrical flashovers. These activities have an impact on birds breeding, foraging and

roosting in or in close proximity to the servitude through modification of habitat. Similarly, these activities impact on birds through disturbance, particularly during the bird's breeding activities.

4.2 Description of the anticipated impacts of the proposed power line on birds

Only 12 species of the total estimated avifauna reported to occur in the study area are considered susceptible to either collision with overhead lines and/or electrocution, while the majority are at least to some extent susceptible to disturbance and habitat loss (APPENDIX 1). However, given the moderately to extremely disturbed and modified nature of the most of the habitat traversed by the proposed power line, none of these birds, and particularly none of the Red-listed and/or endemic species, is likely to occur within the impact zone of the proposed line with sufficient regularity or in sufficient numbers for any casualties sustained to be of real significance. Hence there is little if any need to implement a formal mitigation strategy beyond following industry best practice in the installation of the line.

5. SELECTION OF A PREFERRED ROUTE FOR THE LINE

There is little to choose between the two alignment options in terms of possible avian impacts. Option 2 probably poses marginally less collision risk because it nests the new line with a number of existing 400 kV lines, and probably would impact less on remnant vegetation patches adjacent to and within the Ankerlig power station area than Option 1, given that it runs along the edge of the railway track before crossing the industrial area to the 132 kV yard. On this basis, Option 2 would be the preferred routing.

6. IMPACT STATEMENT

The proposed link-line between the relocated Acacia and Port Rex gas turbines and the Dassenberg-Aurora 132 kV line does not traverse over any avian habitats of high conservation value and, provided that general best practice is followed in all aspects of its construction, it is unlikely to have any long-term, significant negative impacts on the local avifauna.

8. REFERENCES

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APPENDIX 1. Annotated list of bird species likely to occur within the impact area of the proposed link line between the relocated Acacia gas turbines and the Dassenberg-Aurora 132 kV line.

Common name	Scientific name	Conservation status	Regional endemicity	Strandveld or Sand Fynbos	Alien acacias	Developed areas	Risk of collision	Risk of electrocution	Risk of disturbance
Grey-winged Francolin	*Scleroptila africanus*	-	Endemic	X			Moderate	-	Moderate
Cape Spurfowl	*Pternistis capensis*	-	Endemic	X			Moderate	-	Moderate
Helmeted Guineafowl	*Numida meleagris*	-	-		X		Moderate	-	Moderate
Egyptian Goose	*Alopochen aegyptiaca*	-	-			X	High	High	-
Acacia Pied Barbet	*Tricholaema leucomelas*	-	Near-endemic		X		-	-	Moderate
African Hoopoe	*Upupa africana*	-	-		X	X	-	-	Moderate
White-backed Mousebird	*Colius colius*	-	Endemic	X	X		-	-	Moderate
Klaas's Cuckoo	*Chrysococcyx klaas*	-	-	X	X		-	-	-
Alpine Swift	*Tachymarptis melba*	-	-	X			-	-	-
African Black Swift	*Apus barbatus*	-	-	X			-	-	-
Little Swift	*Apus affinis*	-	-	X		X	-	-	-
White-rumped Swift	*Apus caffer*	-	-	X		X	-	-	-
Barn Owl	*Tyto alba*	-	-	X	X	X	-	Moderate	-
Spotted Eagle-Owl	*Bubo africanus*	-	-	X	X	X	-	High	Moderate
Fiery-necked Nightjar	*Caprimulgus pectoralis*	-	-	X	X		-	-	Moderate
Rock Dove	*Columba livia*	-	-		X	X	-	-	-
Speckled Pigeon	*Columba guinea*	-	-	X	X		-	-	-
Laughing Dove	*Streptopelia senegalensis*	-	-	X		X	-	-	Moderate
Cape Turtle-Dove	*Streptopelia capicola*	-	-	X		X	-	-	Moderate
Red-eyed Dove	*Streptopelia semitorquata*	-	-	X	X	X	-	-	Moderate

Common name	Scientific name	Conservation status	Regional endemicity	Strandveld or Sand Fynbos	Alien acacias	Developed areas	Risk of collision	Risk of electrocution	Risk of disturbance
Spotted Thick-knee	*Burhinus capensis*	-	-	X			-	-	Moderate
Crowned Lapwing	*Vanellus coronatus*	-	-	X			-	-	Moderate
Black-shouldered Kite	*Elanus caeruleus*	-	-	X	X		-	-	Moderate
Black Kite	*Milvus migrans*	-	-	X	X		-	-	Moderate
African Fish-Eagle	*Haliaeetus vocifer*	-	-				-	High	Moderate
African Goshawk	*Accipiter tachiro*	-	-		X		-	-	Moderate
Black Sparrowhawk	*Accipiter melanoleucus*	-	-	X	X		-	-	Moderate
Steppe Buzzard	*Buteo vulpinus*	-	-	X	X		-	Moderate	-
Jackal Buzzard	*Buteo rufofuscus*	-	Endemic	X	X		-	Moderate	Moderate
Booted Eagle	*Aquila pennatus*	-	-	X			-	-	-
Rock Kestrel	*Falco rupicolus*	-	-	X		X	-	-	-
Lanner Falcon	*Falco biarmicus*	Near-threatened	-	X			High	Moderate	-
Peregrine Falcon	*Falco peregrinus*	Near-threatened	-	X			High	Moderate	-
Black-headed Heron	*Ardea melanocephala*	-	-	X	X		-	Moderate	-
Cattle Egret	*Bubulcus ibis*	-	-	X			-	-	-
Hadeda Ibis	*Bostrychia hagedash*	-	-	X	X		-	-	Moderate
African Sacred Ibis	*Threskiornis aethiopicus*	-	-				-	-	-
Bokmakierie	*Telophorus zeylonus*	-	Near-endemic	X	X		-	-	Moderate
Pied Crow	*Corvus albus*	-	-	X	X	X	-	-	Moderate
Common Fiscal	*Lanius collaris*	-	-	X	X	X	-	-	Moderate
Brown-throated Martin	*Riparia paludicola*	-	-				-	-	-
Barn Swallow	*Hirundo rustica*	-	-	X			-	-	-
Greater Striped Swallow	*Hirundo cucullata*	-	-	X		X	-	-	-
Rock Martin	*Hirundo fuligula*	-	-	X			-	-	-
Cape Bulbul	*Pycnonotus capensis*	-	Endemic	X			-	-	Moderate

Common name	Scientific name	Conservation status	Regional endemicity	Strandveld or Sand Fynbos	Alien acacias	Developed areas	Risk of collision	Risk of electrocution	Risk of disturbance
Grey-backed Cisticola	*Cisticola subruficapilla*	-	Near-endemic	X			-	-	Moderate
Levaillant's Cisticola	*Cisticola tinniens*	-	-	X			-	-	Moderate
Karoo Prinia	*Prinia maculosa*	-	Endemic	X			-	-	Moderate
Olive Thrush	*Turdus olivaceus*	-	-	X	X	X	-	-	Moderate
Fiscal Flycatcher	*Sigelus silens*	-	Endemic	X	X	X	-	-	Moderate
Cape Robin-Chat	*Cossypha caffra*	-	-	X	X	X	-	-	Moderate
Familiar Chat	*Cercomela familiaris*	-	-	X			-	-	Moderate
Red-winged Starling	*Onychognathus morio*	-	-	X		X	-	-	Moderate
Pied Starling	*Spreo bicolor*	-	Endemic	X			-	-	-
Common Starling	*Sturnus vulgaris*	-	-			X	-	-	-
Southern Double-collared Sunbird	*Cinnyris chalybeus*	-	Endemic	X	X	X	-	-	Moderate
Cape Weaver	*Ploceus capensis*	-	Endemic	X	X	X	-	-	Moderate
Southern Masked-Weaver	*Ploceus velatus*	-	-	X	X	X	-	-	Moderate
Southern Red Bishop	*Euplectes orix*	-	-	X			-	-	Moderate
Common Waxbill	*Estrilda astrild*	-	-	X			-	-	Moderate
House Sparrow	*Passer domesticus*	-	-			X	-	-	-
Cape Sparrow	*Passer melanurus*	-	Near-endemic	X	X	X	-	-	Moderate
Cape Wagtail	*Motacilla capensis*	-	-	X			-	-	Moderate
Cape Canary	*Serinus canicollis*	-	Endemic	X	X	X	-	-	Moderate
Yellow Canary	*Crithagra flaviventris*	-	Near-endemic	X			-	-	Moderate
Cape Bunting	*Emberiza capensis*	-	Near-endemic	X			-	-	Moderate