



ARCUS

**PROPOSED EXPANSION OF THE EXISTING KOMSBERG
MAIN TRANSMISSION SUBSTATION (MTS)**

Avifaunal Specialist Short Report

On behalf of

Savannah Environmental

September 2015



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Arcus Consultancy Ltd. is independent and have no business, financial or personal interest in the activity, application or appeal in respect of which it was appointed, other than fair remuneration for work carried out. There are no circumstances that compromise the objectivity of their specialists performing such work.

Andrew Pearson is an Avifauna Specialist at Arcus and has a Four Year BSc in Conservation Ecology, certificates in Environmental Law, as well as seven years' experience as an environmental management professional. The findings, results, observations, conclusions and recommendations given in this report are based on this author's best scientific and professional knowledge as well as available information. Andrew conducted the site visit and provided inputs with regard to the analysis and interpretations of the avifauna data as an Avifauna Specialist. Andrew is a certified Professional Natural Scientist. The Natural Scientific Professions Act of 2003 aims to "Provide for the establishment of the South African Council of Natural Scientific Professions (SACNSP) and for the registration of professional, candidate and certified natural scientists; and to provide for matters connected therewith." Andrew is a professional member of the SACNSP, as detailed below:

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1 INTRODUCTION

Savannah Environmental (Pty) Ltd ('Savannah') has appointed Arcus Consultancy Services Ltd ('Arcus') to provide a short specialist report to identify and assess the potential impacts on avifauna associated with the proposed expansion of the Komsberg Main Transmission Substation (MTS) ('the project'), and to recommend appropriate mitigation. The expansion area (approximately 19.8ha), will fit within the Eskom property and is located next to and between the positions of the existing capacitor banks installation. The existing Capacitor banks will form part of the expanded substation footprint. The total footprint of the expanded Komsberg MTS is likely to be approximately 440m x 450m, all on Eskom's property.

2 TERMS OF REFERENCE

The following terms of reference were utilized for this study:

- Identification of Regional Red Data species (Taylor, 2014) potentially occurring in the area;
- Determination of a list of focal species potentially occurring on or near the project site, and which are most likely to be impacted upon;
- Identification and description of the avifaunal microhabitats available;
- Identification and assessment of the potential bird impacts arising throughout the proposed project's construction and operational phases; and
- Provide an impact statement, recommendations and description of potential mitigation measures.

3 METHODOLOGY

In order to assess the potential impacts of a project the baseline environment must first be defined. The potential nature of impacts from the project type is then considered and assessed using a set, repeatable criteria applied by a specialist utilising their professional judgement.

The baseline avifauna environment for the substation expansion was defined utilising a desk based study of the following data sources:

- Bird distribution data of the Southern African Bird Atlas Project (SABAP1, Harrison, Allan, Underhill, Herremans, Tree, Parker & Brown, 1997) and Southern African Bird Atlas Project 2 (SABAP2) obtained from the Avian Demography Unit of the University of Cape Town;
- Co-ordinated Water-bird Count (CWAC) project (Taylor, Navarro, Wren- Sargent, Harrison & Kieswetter, 1999);
- The Important Bird Areas of southern Africa (IBA) project (Barnes, 1998);
- Pre-construction Bird Monitoring Report and Updated Avifaunal Assessment for the Three Phased Hidden Valley Wind Energy Facility (EWT, 2014); and
- Publically available satellite imagery.

This information was examined to determine the potential location and abundance of avifauna which may be sensitive to the project, and to understand their conservation status and sensitivity. The area surrounding the existing Komsberg Substation was also visited on 20 July 2015 by the avifauna specialist to identify microhabitats and any associated sensitive areas.

3.1 Limitations and Assumptions

- The SABAP1 data covers the period 1986-1997. Bird distribution patterns fluctuate continuously according to availability of food and nesting substrate. For a full discussion of potential inaccuracies in SABAP data, see Harrison, Allan, Underhill, Herremans, Tree, Parker & Brown (1997); and
- No SABAP2 data was available for the project site, while surrounding pentads had low to moderate counting effort.

3.2 Assessment of Potential Impacts

After collation of the baseline data using the methods outlined above, the impacts of the project were assessed. Focal species for the assessment were first identified utilising the following method:

1. Identification of the micro-habitats (section 4.7 below).
2. Determining which species are likely to be present, from desk based resources.
3. Identification of species which have a high likelihood of being present on, and/or utilising, the project site considering steps 1 and 2 and the findings of a site visit; which are likely to be more abundant than others; and which of these species has the potential to be impacted upon by the type of development i.e. a substation expansion (based on the experience and opinion of the specialist).
4. Determining species conservation status or other reasons for protecting the species. This involved primarily consulting the Red Data bird species (Taylor, 2014).

In many cases, these focal species serve as proxy for other similar species (as mitigation will be effective for both), examples being Southern Black Korhaan for Karoo Korhaan, Martial Eagle for Verreaux's Eagle and Large-billed Lark for Cape Clapper Lark. Assorted more common species will also be relevant to this study, but it is believed that the focal species will to a large extent serve as surrogates for these in terms of impact assessment and management. The nature of the potential impacts from the project on avifauna were then identified. These impacts were then assessed for their significance, using the Savannah methodology provided in Appendix 1.

4 BASELINE

4.1 Southern African Bird Atlas Project 1

The SABAP1 data was collected over an 11 year period between 1986 and 1997 and remains the best long term data set on bird distribution and abundance available in South Africa at present. This data was collected in quarter degree squares, with the project site being located in the 3220DC square¹. Table 1 indicates the reporting rate for endemics or near-endemics, raptors and Priority Species² recorded by the SABAP1 data within this square for the 17 cards submitted. Report rates are essentially percentages of the number of times a species was recorded in the square, divided by the number of times that square was counted (i.e. the number of cards submitted). It is important to note that these species were recorded in the entire quarter degree square, i.e. the greater area, in each case and may not actually have been recorded on the proposed project site. The SABAP1 project recorded a total of 98 species, including 13 Priority Species, six Red Data species and 18

¹ http://sabap1.adu.org.za/sabap_site_summary.php?autoSite=SABAP&QDGC=3220DC

² Retief, E, Anderson, M., Diamond, M., Smit, H., Jenkins, A. & Brooks, M. (2011) Avian Wind Farm Sensitivity Map for South Africa: Criteria and Procedures used. Priority species list updated in 2014 by Bird Life SA (BLSA). The priority species were determined by BLSA and the Endangered Wildlife Trust (EWT) after considering various factors including bird families most impacted upon by WEFs (including associated infrastructure), physical size, species behaviour, endemism, range size and conservation status.

endemic or near-endemic species (Table 1). Important species with moderate to high reporting rates include Black Harrier, Steppe Buzzard and Black Korhaan.

TABLE 1: Endemics or near endemics, raptors and Priority Species recorded by SABAP1 in the Quarter Degree Square covering the area of the proposed substation expansion (Harrison *et al*, 1997).

Species	Regional Red Data Status (Taylor, 2014)	Endemic/Near-endemic*	Priority Species Score	Report rate (%)
Bustard, Ludwig's	EN	-	320	6
Buzzard, Steppe	-	-	210	18
Buzzard, Jackal	-	X	250	6
Canary, Black-headed	-	X	-	24
Chat, Sickle-winged	-	X	-	24
Eagle, Booted	-	-	230	6
Eagle, Martial	EN	-	350	6
Eagle, Verreaux's	VU	-	360	6
Flycatcher, Fiscal	-	X	-	6
Francolin, Grey-winged	-	X	190	6
Goshawk, Pale Chanting	-	-	200	41
Harrier, Black	EN	X	345	12
Kestrel, Rock	-	-	-	59
Kite, Black-shouldered	-	-	174	29
Korhaan, Black (pre-split)+	VU	X	270	18
Lark, Clapper (pre-split)+	-	X	-	12
Lark, Karoo	-	X	-	6
Lark, Large-billed	-	X	-	41
Owl, Spotted Eagle-	-	-	170	6
Prinia, Karoo	-	X	-	53
Spurfowl, Cape	-	X	-	35
Starling, Pied	-	X	-	59
Stork, Black	VU	-	330	6
Sunbird, Southern Double-collared	-	X	-	18
Tit, Grey	-	X	-	35
Tit-Babbler, Layard's	-	X	-	6
Warbler, Namaqua	-	X	-	18
Weaver, Cape	-	X	-	18
Woodpecker, Ground	-	X	-	6

EN = Endangered; V = Vulnerable; NT = Near-threatened. *Species recorded prior to being split into multiple separate taxa. *Endemic or near-endemic (i.e. ~70% or more of population in RSA) to South Africa (not southern Africa as in

field guides) or endemic to South Africa, Lesotho and Swaziland. Taken from BirdLife South Africa Checklist of Birds in South Africa, 2014.

4.2 Southern African Bird Atlas Project 2

The SABAP2 is part of an ongoing study by the Animal Demography Unit (ADU), a research unit based at the University of Cape Town (UCT). SABAP2 data was examined for pentads (which are roughly 8 km x 8 km squares, and are smaller than the squares used in SABAP1). The project site falls within a pentad for which no SABAP2 data has been submitted (3255_2035) and therefore data for three pentads (3255_2030, 3250_2035 and 3250_2030) immediately adjacent have been considered. Table 2 indicates the reporting rate for endemics or near-endemics, raptors and Priority Species recorded by the SABAP2 data considered. The SABAP2 project recorded a total of 13 Priority Species, five Red Data species and 21 endemic or near-endemic species (Table 2). Important species for the study with moderate to high reporting rates include Jackal Buzzard, Booted Eagle, Verreaux's Eagle and Grey-winged Francolin. Although its reporting rate is low, Black Harrier is an important species, and the only Red Data species recorded that is both an endemic and a Priority Species.

TABLE 2: Endemics or near endemics, raptors and Priority Species recorded by SABAP2 in the pentads immediately adjacent to the area of the proposed substation expansion.

Species	Regional Red Data Status (Taylor, 2014)	Endemic / Near-endemic*	Priority Species Score	Report Rate %		
				3250_2030	3250_2035	3255_2030
<i>Number of Cards</i>				7	4	9
<i>Number of Species</i>				72	62	82
Bustard, Ludwig's	EN	-	320	14.29	-	
Buzzard, Steppe	-	-	210	-	-	11.1
Buzzard, Jackal	-	X	250	42.86	50	44.4
Canary, Black-headed	-	X	-	42.86	25	44.4
Chat, Sickle-winged	-	X	-	57.14	25	77.8
Eagle, Booted	-	-	230	28.57	-	x
Eagle, Martial	EN	-	350	-	25	x
Eagle, Verreaux's'	VU	-	360	71.43	-	22.2
Flycatcher, Fairy	-	X	-	-	25	
Flycatcher, Fiscal	-	X	-	-	25	
Francolin, Grey-winged	-	X	190	42.86	-	22.2
Goshawk, Pale Chanting	-	-	200	28.57	25	33.3
Harrier, Black	EN	X	345	14.29	-	
Kestrel, Lesser	-	-	284		-	Incidental
Kestrel, Rock	-	-	-	85.71	50	55.6
Kite, Black-shouldered	-	-	174	14.29	-	-
Korhaan, Karoo	NT	-	240	14.29	25	11.1
Lark, Cape Clapper	-	X	-	42.86	-	33.3

Species	Regional Red Data Status (Taylor, 2014)	Endemic / Near-endemic*	Priority Species Score	Report Rate %		
				3250_2030	3250_2035	3255_2030
Lark, Karoo	-	X	-	28.57	-	11.1
Lark, Large-billed	-	X	-	85.71	25	33.3
Owl, Spotted Eagle-	-	-	170	-	100	-
Prinia, Karoo	-	X	-	57.14	75	88.9
Spurfowl, Cape	-	X	-	-	50	22.2
Starling, Pied	-	X	-	100	100	77.8
Sunbird, Southern Double-collared	-	X	-	14.29	50	33.3
Thrush, Karoo	-	X	-	-	50	-
Tit, Grey	-	X	-	14.29	-	11.1
Tit-babbler, Layard's	-	X	-	-	-	44.4
Warbler, Namaqua	-	X	-	-	25	-
Weaver, Cape	-	X	-	71.43	50	33.3
White-eye, Cape	-	X	-	-	25	-
Woodpecker, Ground	-	X	-	14.29	-	-

EN = Endangered; V = Vulnerable; NT = Near-threatened. Report rates are essentially percentages of the number of times a species was recorded in the square, divided by the number of times that square was counted. *Endemic or near-endemic (i.e. ~70% or more of population in RSA) to South Africa (not southern Africa as in field guides) or endemic to South Africa, Lesotho and Swaziland. Taken from BirdLife South Africa Checklist of Birds in South Africa, 2014.

4.3 Coordinated Waterbird Count (CWAC) Data

There are no CWAC sites within 50 km of the proposed project site.

4.4 Important Bird Area (IBA) Project

The Anysberg Nature Reserve (SA108) is approximately 42 km to the south of the proposed project site. Globally threatened species found in this IBA include Blue Crane, Ludwig's Bustard, Southern Black Korhaan, Martial Eagle and Black Harrier. Regionally threatened species are Verreaux's' Eagle, Black Stork, Lanner Falcon and Cape Rockjumper. Range- and biome-restricted species that are common in the IBA are Cape Spurfowl, Cape Bulbul and Karoo Chat. Locally common range- or biome-restricted species are Karoo Korhaan, Karoo Lark, Layard's Tit-babbler, Karoo Eremomela and Namaqua Warbler, while uncommon species in this category are Ludwig's Bustard, Sickle-winged Chat, Cape Rockjumper, Victorin's Warbler, Cape Sugarbird, Cape Siskin, Protea Seedeater, Orange-breasted Sunbird, Pale-winged Starling and Black-headed Canary. The distance of this IBA from the project site means it is unlikely that the presence of the smaller passerines discussed in the IBA data, infers that they would occur on the project site. All except two (Blue Crane and Lanner Falcon) of the larger terrestrial species and raptors, have been recorded by the SABAP data considered for the project site.

4.5 Pre-construction Bird Monitoring Report and Updated Avifaunal Assessment for the Three Phased Hidden Valley Wind Energy Facility.

This study was conducted by the Endangered Wildlife Trust (EWT, 2014) on the Hidden Valley Wind energy Facility site, which subsequently has been re-named according to its various phases, one of which is the proposed Karusa Wind Farm which borders the proposed Komsberg Substation expansion project site. The study included four seasonal surveys across a 12 month period. Appendix B of the EWT (2014) report included 149³ species, including 20 priority species and 9 Regional Red Data species in the greater area. EWT (2014) recorded several important species that were not recorded by SABAP1 or SABAP2 for the Komsberg Substation expansion site considered above, including Blue Crane (*Near-threatened*), Cape Eagle-owl, Lanner Falcon (*Vulnerable*), African Harrier-hawk, African Rock Pipit (*Near-threatened*), Black Sparrowhawk, Rufous-breasted Sparrowhawk, Greater Double-collared Sunbird and Cape Bulbul.

4.6 Species Summary

A total of 20 Priority Species, 25 endemic or near-endemic species, 15 raptor species and nine species with Red Data Status were recorded by SABAP1 and SABAP2 data considered as well as by EWT (2014). Eighteen of the 25 endemic or near-endemic species are small terrestrial passerines, and three (Grey-winged Francolin, Karoo Korhaan and Black Korhaan) are larger-bodied terrestrial species. Cape Crows, Pied Crows and White-necked Ravens have also been recorded frequently in the area but these are not considered to be threatened or Priority Species.

4.7 Bird Microhabitats

The extent of the substation expansion mostly includes flat, karoo shrubland. This area may be utilised by birds such as bustards, korhaans, francolins and storks. Martins, swallows and a variety of raptors, such as Southern Pale Chanting Goshawk, Jackal Buzzard, Martial Eagle, Verreaux's Eagle and Black Harrier may also forage over these open grassy scrub areas. The scrubland habitat is also suitable for many small passerine birds such as chats, larks, tits, eremomelas and prinias, many of which are endemic or near-endemic species.

5 IDENTIFICATION AND ASSESSMENT OF IMPACTS

Using the method outlined in Section 3.2 of this report, the following species were found to be focal species for the assessment of impacts from the project: Black Stork; Ludwig's Bustard; Jackal Buzzard; Booted Eagle; Martial Eagle; Black Harrier; Southern Black Korhaan; Grey-winged Francolin; Pale Chanting Goshawk; Spotted Eagle-Owl; Rock Kestrel; Lanner Falcon; Large-billed Lark; Karoo Prinia; Grey Tit; and Black-headed Canary.

These focal species form a key component of the assessment of the impact of the project, utilising the impact types identified below. The following key potential impacts, arising from the proposed project's construction and operational phases have been identified. A significance rating and impact assessment has been done for each impact using impact tables and criteria supplied by Savannah (Appendix 1). Recommended mitigation measures for each of the identified impacts has also been provided.

³ Arcus assumes that one of these species, the Red-winged Warbler, was a misidentification or typing error and therefore the actual number recorded is 148.

5.1 Construction Phase Impacts

5.1.1 Habitat Destruction and Displacement of Birds

The clearing of vegetation will result in the permanent loss of habitats for birds, although to a limited extent of approximately 440m x 450m. There will also be temporary loss of habitats (that may be rehabilitated following construction) for the construction of access roads and construction camps/laydown areas etc. This may have an impact on birds breeding, foraging and roosting, and may also result in species being displaced, from the immediate area. The extent of the site is relatively small (approximately 20 hectares) and the habitat is not particularly unique in the area and the impact therefore represents a low significance. Mitigation measures beyond generally accepted environmental best-practices to reduce the destruction of natural vegetation, are limited. From the findings of the Ecology assessment it however appears that any disturbed areas should re-establish relatively easily given the species identified and their ability to colonize previously disturbed areas at an effective rate.

TABLE 3: Impact Significance Assessment: Habitat Destruction and Displacement of Birds

Nature The clearing of vegetation will result in the permanent loss of habitats for birds. There will also be temporary loss of habitats (that may be rehabilitated following construction) for the construction of access roads and construction camps/laydown areas etc. This may have an impact on birds breeding, foraging and roosting, and may also result in species being displaced, from the immediate area.		
	Without mitigation	With mitigation
Extent	1	1
Duration	5	5
Magnitude	3	2
Probability	4	3
Significance	Medium (36)	Low (24)
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources	No	No
Can impacts be mitigated	Partially	-
Mitigation:		
<ul style="list-style-type: none"> Existing roads should be used where possible. The minimum footprint areas of infrastructure should be used wherever possible. A site specific Construction Environmental Management Plan (CEMP) must be implemented, which gives appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction of habitat. All contractors are to adhere to the CEMP and should apply good environmental practice during construction. During construction temporary access roads should be kept to a minimum in order to limit direct vegetation loss and habitat fragmentation, while designated no-go areas must be enforced i.e. no unnecessary off road driving should be allowed. Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks and laydown areas) must be undertaken and to this end a habitat restoration plan is to be included within the Construction Environmental Management Plan (CEMP). 		
Cumulative impacts:		
There are currently at least 4 potential new Wind Energy Facilities (WEFs) proposed within a 20 km radius around the project site, all of which will (if constructed) consist of additional electrical infrastructure including facility substations and power lines. The cumulative impact of Habitat Destruction and Displacement of Birds is therefore expected to be of Medium Significance, should all surrounding projects be approved and constructed.		
Residual impacts:		
Yes. Although somewhat reduced, the residual impacts of habitat destruction on birds following mitigation will have a Medium significance.		

5.1.2 Disturbance and Displacement of Birds

Disturbances and noise may result in species being displaced, either temporarily (i.e. for some period during the construction activity) or permanently (i.e. they are disturbed and do not return), from the project site. Mitigation can reduce the disturbance resulting in a Low significance.

TABLE 4: Impact Significance Assessment: Disturbance and Displacement of Birds

Nature: Disturbances and noise from staff and construction activities can impact on certain sensitive species, both on and beyond the project site, particularly whilst feeding and breeding. This may result in these species being displaced, either temporarily (i.e. for some period during the construction activity) or permanently (i.e. they are disturbed and do not return), from the project site.		
	Without mitigation	With mitigation
Extent	2	1
Duration	2	2
Magnitude	4	2
Probability	4	3
Significance	Medium (32)	Low (15)
Status	Negative	Negative
Reversibility	Low	Medium
Irreplaceable loss of resources	No	No
Can impacts be mitigated	Yes	-
Mitigation:		
<ul style="list-style-type: none"> A site specific CEMP must be implemented, which gives appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction of habitat. All contractors are to adhere to the CEMP and should apply good environmental practice during construction. The appointed Environmental Control Officer (ECO) must be trained by an avifaunal specialist to identify the potential Red Data species as well as the signs that indicate possible breeding by these species. The ECO must then, during his/her regular audits/site visits, make a concerted effort to look out for breeding activities of Red Data species, and such effort may include the training of construction staff (e.g. in Toolbox talks) to identify Red Data species, followed by regular questioning of Staff as to the regular whereabouts on site of these species. If any of the Red Data species are confirmed to be breeding (e.g. if a nest site is found) within 500m of construction activities an avifaunal specialist is to be contacted and called to site immediately for further assessment of the situation and instruction on how to proceed. 		
Cumulative impacts:		
There are currently at least 4 potential new Wind Energy Facilities (WEFs) proposed within a 20 km radius around the project site, all of which will (if constructed) consist of additional electrical infrastructure including facility substations and power lines. Considering that the majority of the species likely to be disturbed and displaced have suitable habitat beyond the project site, the cumulative impact of Disturbance and Displacement of Birds is therefore expected to be of Low to Medium Significance, should all surrounding projects be approved and constructed.		
Residual impacts:		
Yes. It is likely that some birds, regardless of mitigations, will be disturbed and possibly displaced however the level of significance is reduced to Low.		

5.2 Operational Phase Impacts

5.2.1 Electrocution of Birds

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 (van Rooyen, 2004). Electrocutions within the substation, during its operation, could potentially have a negative impact on a variety of bird species, particularly those species that regularly utilize the electrical infrastructure within the substation yard on which to perch, or breed and nest as well as those tolerant of disturbances e.g. crows, herons, sparrows, owls, kestrels, falcons and geese. Nesting of small passerine birds, crows or ravens on or within substation infrastructure may also lead to electrocutions and outages. Mitigation measures may reduce

the number of electrocutions and outages experienced at the substation, with the resulting impact significance being Low.

TABLE 5: Impact Significance Assessment: Electrocutation.

Nature: Electrocutation occurs when a bird causes an electrical short circuit by physically bridging the air gap between live components and/or live and earthed components of electrical infrastructure, usually resulting in mortality.		
	Without mitigation	With mitigation
Extent	1	1
Duration	5	5
Magnitude	8	8
Probability	3	2
Significance	Medium (42)	Low (28)
Status	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources	Yes	Yes
Can impacts be mitigated	Yes	-
Mitigation:		
<ul style="list-style-type: none"> • Bird perch deterrents and physical exclusion barriers, frames and covers may reduce incidence of birds perching and nesting on infrastructure. • Insulating, covering or isolating hardware (e.g. >180 cm between phase conductors or phase conductors and grounded infrastructure) may reduce electrocutions and outages. • Electrocutations to be monitored and recorded, and reported to the Endangered Wildlife Trust's (EWT) Wildlife and Energy Programme (WEP) to determine if further mitigation action is required. • Potential Faulting (caused by nesting and perching of birds on structures in the substation) may require detailed, site specific mitigation dependent on the precise design and equipment in the new substation. Upon completion of construction, an avifaunal specialist is to be contacted to determine if mitigation is required and if so, what mitigation measures are to be implemented. • No nests may be removed, without first consulting the Endangered Wildlife Trust's (EWT) Wildlife and Energy Programme (WEP). 		
Cumulative impacts:		
There are currently at least 4 potential new Wind Energy Facilities (WEFs) proposed within a 20 km radius around the project site, all of which will (if constructed) consist of additional electrical infrastructure including facility substations and power lines. Considering that effective mitigations are available and assuming that that all new electrical infrastructure associated with the surrounding WEFs will be constructed using safe 'bird friendly' design, the cumulative impact of Electrocutation is therefore expected to be of Low to Medium Significance.		
Residual impacts:		
Yes. Low Significance.		

6 CONCLUSION AND IMPACT STATEMENT

In conclusion, the proposed project presents a **low** level of impact with the application of the listed mitigation measures. The habitat in the project site is not particularly unique and given the relatively small extent of the site only a small area of habitat will be lost. The identified flora species that might be affected have also been found to be capable of colonizing previously disturbed areas at an effective rate, and therefore it is possible that some displaced avifauna may return to utilise the successfully rehabilitated areas. Although there are numerous species susceptible to electrocutions that may potentially be present on the project site, effective mitigation measures exist to mitigate this impact to a Low significance. The cumulative impacts of the proposed project together with proposed similar developments (i.e electrical infrastructure developments) within a 20 km radius may have a low to medium significance.

7 REFERENCES

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APPENDIX 1: IMPACT ASSESSMENT CRITERIA AND METHODOLOGY