

**DESKTOP AVIFAUNAL ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF  
KHAUTA SOLAR PV CLUSTER OUTSIDE RIEBEECKSTAD WITHIN LEJWELEPUTSWA  
DISTRICT MUNICIPALITY IN THE FREE STATE**



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## INTRODUCTION

This desktop avifaunal assessment was conducted by MORA Ecological Services (Pty) Ltd (the specialist) for Enviro Works (the client) in support of a proposed development of a solar farm outside Welkom in the Free State.

## VEGETATION

The study area falls within three different national vegetation types as described by Mucina & Rutherford (2006). The vegetation types are Vaal-Vet Sandy Grassland, Highveld Salt Pans and Highveld Alluvial Vegetation.

## STATUS OF LOCAL AVIFAUNA

From the desktop assessment, the study area has a potential to support a variety of birdlife. Free State province has records of just over 450 bird species, and according to Southern African Bird Atlas Project 2 (SABAP2), about 98 bird species were previously recorded around the project area. Out of these recorded species, no Red Data species were recorded. The list of birds that were previously recorded in the area is provided in the appendix.

## POTENTIAL IMPACTS

One of the inevitable impacts is habitat loss which would be caused by extensive vegetation clearance during project initiation.

Other major impacts include collision and electrocution by overhead powerlines. A preliminary collision risk map has been included (Fig 1 & 2). The presence of waterbodies attracts a high number of birds, including large bodied species which are prone to collision with powerlines.

## RECOMMENDATIONS

### 1. Solar Facilities:

- (i) **3x 100 MW:** No Avifaunal issues
- (ii) **2x 19.9 MW:** No Avifaunal issues

### 2. Transmission Lines:

- (i) Preferred routes: These OHL will cross a watercourse at the same location, which would make line marking easier and cost effective.

### 44 kV Option 2 Riebeeckstad Substation

## 132 kV Option 2 Leander Substation

### (i) Not preferred routes:

44 kV Option 1 Riebeeckstad Substation. It's located far from the other routes, and it will require its own line markers.

132 kV Option 1 Everest Substation. This line runs past Doringpan which is likely to be a High Collision Risk Area.

### **CONCLUDING REMARKS**

A desktop study can never replace a study that involves a detailed site visit and the collection of physical avifaunal data, habitat data and other ecological information. The data and information in this report are of a basic nature and may over or underestimate the current biodiversity of the project area. This study gives a broad scale assessment of the species diversity over an area, which includes the project area.

In order to provide a comprehensive species list and to determine the ecological condition of the of the study area, an on-site assessment will be required.

This will help in determining the exact locations of collision risk areas and provide relevant mitigations. For the overhead powerlines, mitigations will include installation of bird flight diverters.

Overall, the impacts associated with the facilities can be mitigated.

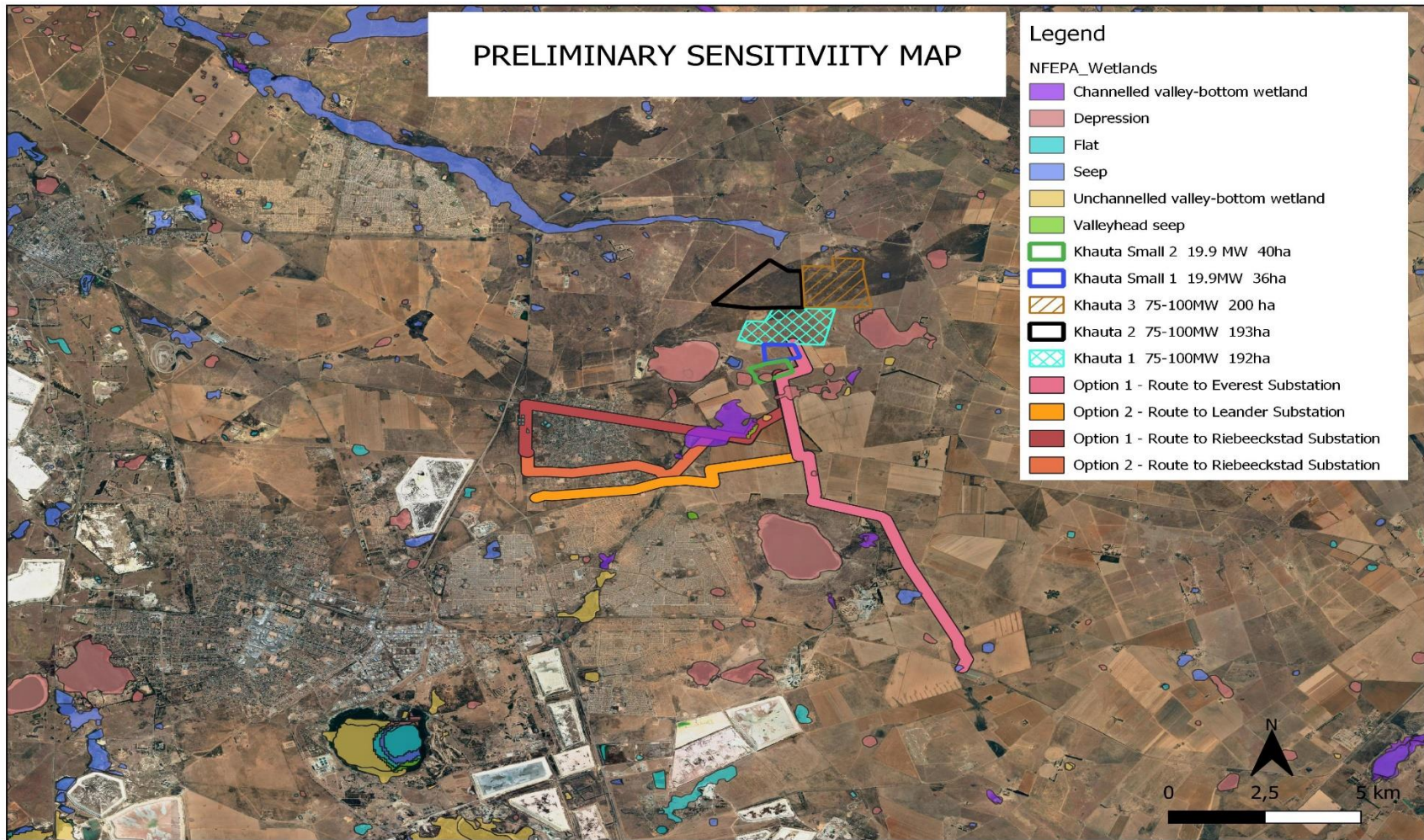


Figure 1: Solar facility and transmission lines in relation to the water bodies.

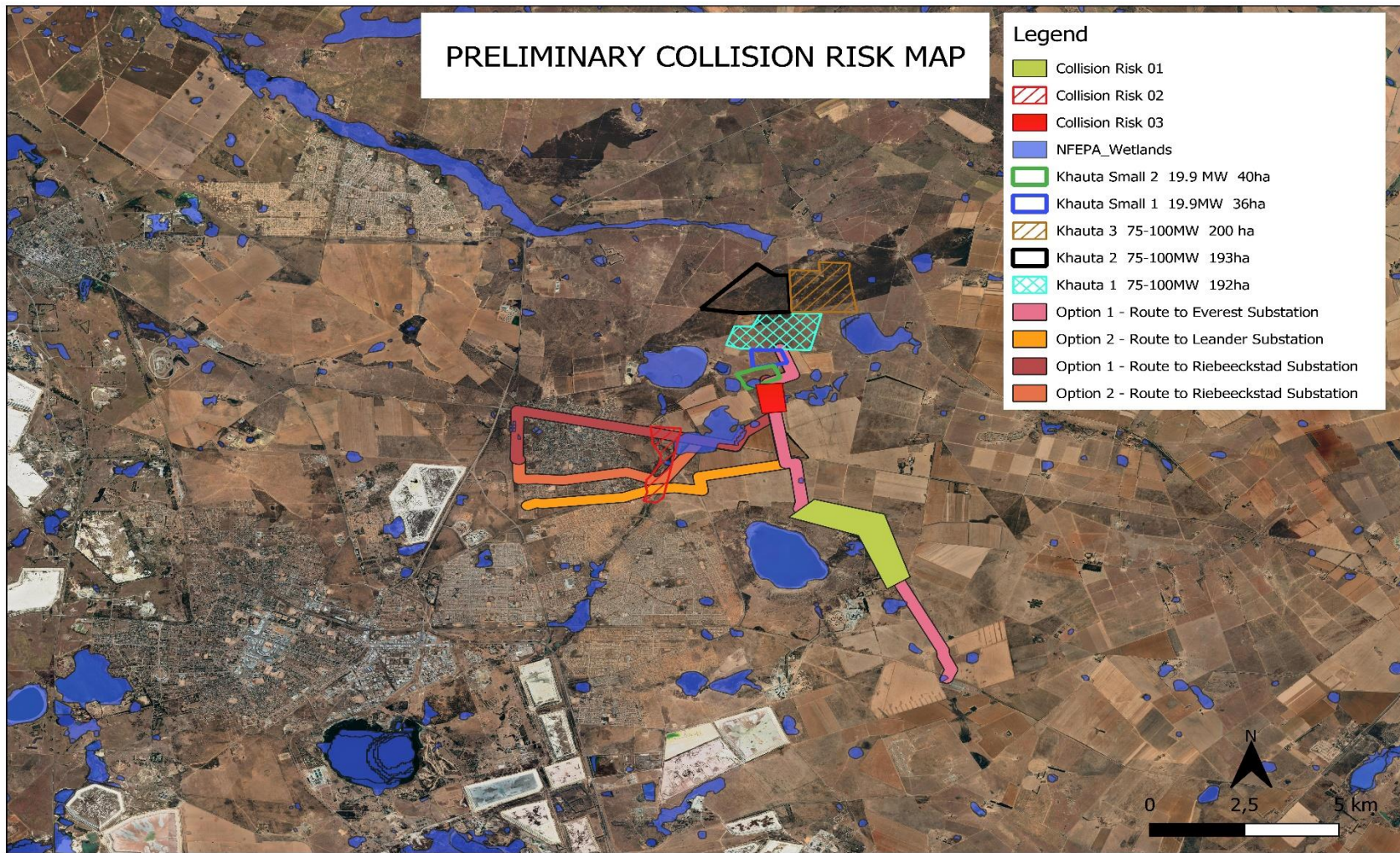


Figure 2: Collision risk areas around the solar facility.

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## APPENDIX

### Appendix 2: SABAP2 Bird list

Pentad: 2750\_2650

No	Common group	Common species	Genus	Species	FP (RR%)	Latest FP
1		Bokmakierie	Telophorus	zeylonus	50.0	2010-02-19
2		Neddicky	Cisticola	fulvicapilla	75.0	2021-04-17
3		Quailfinch	Ortygospiza	atricollis	75.0	2021-04-17
4		Secretarybird	Sagittarius	serpentarius	25.0	2010-02-19
5	Barbet	Acacia Pied	Tricholaema	leucomelas	100.0	2021-04-17
6	Batis	Pirit	Batis	pririt	50.0	2010-02-19
7	Bishop	Southern Red	Euplectes	orix	25.0	2014-02-07
8	Bishop	Yellow-crowned	Euplectes	afer	50.0	2014-02-07
9	Buzzard	Common	Buteo	buteo	50.0	2014-02-07
10	Canary	Black-throated	Crithagra	atroregularis	50.0	2010-02-19
11	Canary	Yellow	Crithagra	flaviventris	100.0	2021-04-17
12	Chat	Ant-eating	Myrmecocichla	formicivora	100.0	2021-04-17
13	Cisticola	Cloud	Cisticola	textrix	25.0	2010-02-19
14	Cisticola	Levaillant's	Cisticola	tinniens	25.0	2014-02-07
15	Cisticola	Zitting	Cisticola	juncidis	25.0	2010-02-19
16	Coot	Red-knobbed	Fulica	crinata	75.0	2021-04-17
17	Cormorant	Reed	Microcarbo	africanus	25.0	2009-07-17
18	Crombec	Long-billed	Sylvietta	rufescens	25.0	2010-02-19



No	Common group	Common species	Genus	Species	FP (RR%)	Latest FP
19	Cuckoo	Common	Cuculus	canorus	25.0	2010-02-19
20	Cuckoo	Diederik	Chrysococcyx	caprius	50.0	2014-02-07
21	Dove	Cape Turtle	Streptopelia	capicola	75.0	2014-02-07
22	Dove	Laughing	Spilopelia	senegalensis	75.0	2021-04-17
23	Dove	Namaqua	Oena	capensis	100.0	2021-04-17
24	Dove	Red-eyed	Streptopelia	semitorquata	25.0	2009-07-17
25	Dove	Rock	Columba	livia	25.0	2014-02-07
26	Duck	White-faced Whistling	Dendrocygna	viduata	25.0	2014-02-07
27	Duck	Yellow-billed	Anas	undulata	50.0	2014-02-07
28	Eagle-Owl	Spotted	Bubo	africanus	25.0	2010-02-19
29	Egret	Western Cattle	Bubulcus	ibis	75.0	2021-04-17
30	Eremomela	Yellow-bellied	Eremomela	icteropygialis	25.0	2010-02-19
31	Falcon	Amur	Falco	amurensis	25.0	2010-02-19
32	Finch	Red-headed	Amadina	erythrocephala	25.0	2010-02-19
33	Firefinch	Red-billed	Lagonosticta	senegala	25.0	2009-07-17
34	Fiscal	Southern	Lanius	collaris	100.0	2021-04-17
35	Flycatcher	Fiscal	Melaenornis	silens	75.0	2021-04-17
36	Goose	Egyptian	Alopochen	aegyptiaca	75.0	2014-02-07
37	Goose	Spur-winged	Plectropterus	gambensis	50.0	2014-02-07
38	Goshawk	Pale Chanting	Melierax	canorus	50.0	2010-02-19
39	Guineafowl	Helmeted	Numida	meleagris	50.0	2014-02-07

No	Common group	Common species	Genus	Species	FP (RR%)	Latest FP
40	Heron	Black-headed	Ardea	melanocephala	75.0	2021-04-17
41	Heron	Grey	Ardea	cinerea	25.0	2009-07-17
42	Ibis	African Sacred	Threskiornis	aethiopicus	25.0	2009-07-17
43	Ibis	Hadada	Bostrychia	hagedash	25.0	2009-07-17
44	Kestrel	Lesser	Falco	naumanni	25.0	2010-02-19
45	Kestrel	Rock	Falco	rupicolus	25.0	2009-07-17
46	Kite	Black-winged	Elanus	caeruleus	50.0	2021-04-17
47	Korhaan	Blue	Eupodotis	caerulescens	50.0	2010-02-19
48	Korhaan	Northern Black	Afrotis	afraoides	100.0	2021-04-17
49	Lapwing	Blacksmith	Vanellus	armatus	100.0	2021-04-17
50	Lapwing	Crowned	Vanellus	coronatus	100.0	2021-04-17
51	Lark	Eastern Clapper	Mirafra	fasciolata	25.0	2010-02-19
52	Lark	Pink-billed	Spizocorys	conirostris	25.0	2010-02-19
53	Lark	Rufous-naped	Mirafra	africana	50.0	2014-02-07
54	Lark	Sabota	Calendulauda	sabota	25.0	2010-02-19
55	Lark	Spike-heeled	Chersomanes	albofasciata	50.0	2010-02-19
56	Longclaw	Cape	Macronyx	capensis	25.0	2010-02-19
57	Mousebird	Red-faced	Urocolius	indicus	25.0	2021-04-17
58	Mousebird	White-backed	Colius	colius	25.0	2021-04-17
59	Ostrich	Common	Struthio	camelus	25.0	2010-02-19
60	Owl	Marsh	Asio	capensis	0.0	-
61	Owl	Western Barn	Tyto	alba	25.0	2009-07-17

No	Common group	Common species	Genus	Species	FP (RR%)	Latest FP
62	Pigeon	Speckled	Columba	guinea	100.0	2021-04-17
63	Pipit	African	Anthus	cinnamomeus	50.0	2014-02-07
64	Pratincole	Black-winged	Glareola	nordmanni	25.0	2010-02-19
65	Prinia	Black-chested	Prinia	flavicans	75.0	2014-02-07
66	Quelea	Red-billed	Quelea	quelea	75.0	2021-04-17
67	Scimitarbill	Common	Rhinopomastus	cyanomelas	50.0	2010-02-19
68	Scrub Robin	Kalahari	Cercotrichas	paena	75.0	2021-04-17
69	Shrike	Lesser Grey	Lanius	minor	25.0	2010-02-19
70	Shrike	Red-backed	Lanius	collurio	50.0	2014-02-07
71	Sparrow	Cape	Passer	melanurus	75.0	2021-04-17
72	Sparrow	House	Passer	domesticus	50.0	2010-02-19
73	Sparrow	Southern Grey-headed	Passer	diffusus	50.0	2014-02-07
74	Sparrow-Weaver	White-browed	Plocepasser	mahali	100.0	2021-04-17
75	Spurfowl	Swainson's	Pternistis	swainsonii	100.0	2021-04-17
76	Starling	Wattled	Creatophora	cinerea	25.0	2021-04-17
77	Stilt	Black-winged	Himantopus	himantopus	25.0	2009-07-17
78	Stonechat	African	Saxicola	torquatus	75.0	2021-04-17
79	Swallow	Barn	Hirundo	rustica	50.0	2014-02-07
80	Swallow	Greater Striped	Cecropis	cucullata	75.0	2021-04-17
81	Swallow	South African Cliff	Petrochelidon	spilodera	25.0	2014-02-07
82	Tchagra	Brown-crowned	Tchagra	australis	25.0	2010-02-19

No	Common group	Common species	Genus	Species	FP (RR%)	Latest FP
83	Teal	Red-billed	Anas	erythrorhyncha	75.0	2014-02-07
84	Tern	Whiskered	Chlidonias	hybrida	25.0	2014-02-07
85	Tit	Ashy	Melaniparus	cinerascens	25.0	2010-02-19
86	Wagtail	Cape	Motacilla	capensis	75.0	2021-04-17
87	Warbler	Chestnut-vented	Curruca	subcoerulea	50.0	2010-02-19
88	Warbler	Willow	Phylloscopus	trochilus	25.0	2010-02-19
89	Waxbill	Common	Estrilda	astrild	25.0	2021-04-17
90	Waxbill	Violet-eared	Granatina	granatina	25.0	2021-04-17
91	Weaver	Scaly-feathered	Sporopipes	squamifrons	25.0	2021-04-17
92	Weaver	Southern Masked	Ploceus	velatus	100.0	2021-04-17
93	White-eye	Orange River	Zosterops	pallidus	25.0	2009-07-17
94	Whydah	Long-tailed Paradise	Vidua	paradisaea	25.0	2010-02-19
95	Whydah	Pin-tailed	Vidua	macroura	50.0	2014-02-07
96	Widowbird	Long-tailed	Euplectes	progne	50.0	2014-02-07
97	Widowbird	White-winged	Euplectes	albonotatus	25.0	2014-02-07
98	Woodpecker	Cardinal	Dendropicos	fuscescens	25.0	2009-07-17