



# Proposed Khoe Wind Energy Facility, near De Doorns, Western Cape

Animal Species Specialist Scoping  
Report

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# Proposed Khoe Wind Energy Facility, near De Doorns, Western Cape

## Animal Species Specialist Scoping Report

0695823



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## CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	2
1.1 BACKGROUND	2
1.2 PROJECT DESCRIPTION	2
1.3 TERMS OF REFERENCE	2
2. METHODS	3
2.1 SITE VISIT AND CAMERA TRAP SURVEY	3
2.2 SITE ECOLOGICAL IMPORTANCE	3
2.3 IMPACT ASSESSMENT RATING SYSTEM	4
3. RESULTS	5
3.1 ASSUMPTIONS AND LIMITATIONS	5
3.2 REGIONAL CONTEXT	5
3.3 LOCAL CONTEXT	5
3.3.1 Sampling	6
3.4 PREDICTED AND OBSERVED SPECIES	8
3.4.1 Riverine Rabbit	8
3.4.2 Leopard	9
3.4.3 Grey Rhebok	9
3.5 SENSITIVITY MAPPING	9
3.5.1 Current Impacts	9
3.5.2 Site Ecological Importance	10
4. IDENTIFICATION OF IMPACTS AND OPPORTUNITIES	11
4.1 IMPACTS	11
4.2 OPPORTUNITIES	13
4.3 MITIGATION MEASURES	13
5. EVALUATION OF SITE RISK	16
5.1 KHOE WIND ENERGY FACILITY	16
5.2 CUMULATIVE IMPACTS	16
5.3 RESIDUAL IMPACTS	16
5.4 NO-GO ALTERNATIVE	16
6. CONCLUSION	17
APPENDIX A SITE SENSITIVITY VERIFICATION REPORT	
APPENDIX B IMPACT ASSESSMENT METHODS	
APPENDIX C DECLARATION OF INDEPENDENCE	

**LIST OF TABLES**

TABLE 1 DECISION MATRIX FOR THE DETERMINATION OF BIODIVERSITY IMPORTANCE	4
TABLE 2 DECISION MATRIX FOR THE DETERMINATION OF SITE ECOLOGICAL IMPORTANCE	4
TABLE 3 SAMPLING SITE DESCRIPTIONS	7
TABLE 4 SITE ECOLOGICAL IMPORTANCE CALCULATION FOR ANIMAL SPECIES OF CONSERVATION CONCERN RELEVANT TO THE PROPOSED DEVELOPMENT AREA	10
TABLE 5 IDENTIFICATION OF POTENTIAL IMPACTS TO ANIMALS ASSOCIATED WITH THE PROPOSED DEVELOPMENT	11
TABLE 6 MITIGATION MEASURES AVAILABLE TO REDUCE THE SIGNIFICANCE OF POTENTIAL IMPACTS ASSOCIATED WITH THE PROPOSED DEVELOPMENT	14

**LIST OF FIGURES**

FIGURE 1 LOCATION AND CONTEXT OF THE PROPOSED KHOE WIND ENERGY FACILITY	2
FIGURE 2 POSITION OF THE PROPOSED DEVELOPMENT SITE (GREEN) RELATIVE TO KERNEL DENSITY POLYGONS AROUND RIVERINE RABBIT RECORDS (REPRODUCED FROM COLLINS AND DU TOIT (2016))	6
FIGURE 3 CAMERA TRAP SURVEY SAMPLING LOCATIONS	7
FIGURE 7 OBSERVED IMPACTS EXISTING ACROSS THE PROPOSED DEVELOPMENT AREA INCLUDE A) ROADKILL THROUGH VEHICULAR COLLISION AND B) MODIFICATION OF HABITAT THROUGH VEGETATION CLEARING FOR AGRICULTURAL ACTIVITY.	10
FIGURE 8 MAP OF THE PRELIMINARY SITE ECOLOGICAL IMPORTANCE BASED OFF THE RELATIVELY LOW-RESOLUTION HABITAT SUITABILITY MODEL INCLUDED IN THE NATIONAL WEB-BASED SCREENING TOOL	11

## EXECUTIVE SUMMARY

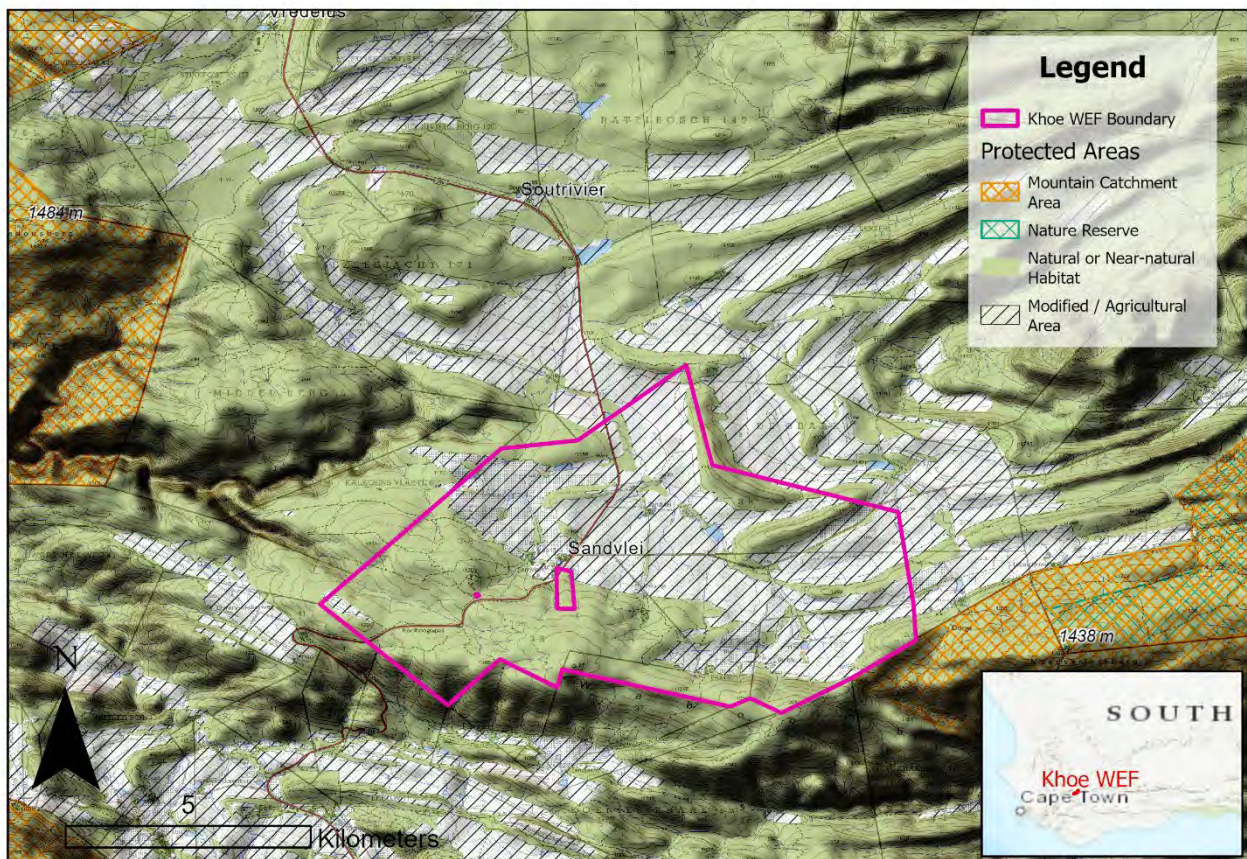
- The proposed Khoe Wind Energy Facility, located near De Doorns in the Western Cape, will comprise up to 38 turbines with a maximum output capacity of up to 290 MW;
- Of the nine (9) potential animal Species of Conservation Concern (SCCs) listed in the Site Sensitivity Screening Report, only three (3) species were considered relevant for the impact assessment process;
- Animal SCCs included the Critically Endangered Riverine Rabbit (*Bunolagus monticularis*), Vulnerable Leopard (*Panthera pardus*) and Near Threatened Grey Rhebok (*Pelea capreolus*);
- Large portions of the proposed development site have been modified through agricultural activity;
- Remaining areas of natural or near-natural vegetation appear to be extensively grazed by livestock, particularly sheep;
- The Site Ecological Importance (SEI) indicates a Medium to Low rating for the proposed development site;
- The habitat suitability data for Riverine Rabbit included in the National Web-based Screening Tool is of insufficient resolution to inform the animal sensitivity of the site and layout design;
- In the specialist's experience, none of the remaining patches of natural or near-natural vegetation are in a condition likely to support Riverine Rabbit;
- Camera traps were nevertheless deployed within remaining patches of natural or near-natural vegetation with the highest likelihood of supporting Riverine Rabbit, noting that presence would be of low likelihood even in those areas;
- Grey Rhebok were confirmed to be present within the proposed development site, observed utilizing natural or near-natural habitats and modified habitats;
- Further analyses of the camera trap data will refine the site sensitivity for animal SCCs;
- Relevant mitigation measures are available, and likely to be effective, for reducing the risks of potential impacts identified during the scoping exercise;
- Opportunity exists to potentially improve habitat suitability and connectivity of the proposed development area for animal SCCs through the strategic rehabilitation and restoration of areas currently modified by agricultural activity;
- It is recommended that the application process **can proceed** to the respective EIA phases for further assessment.

# 1. INTRODUCTION

## 1.1 BACKGROUND

Environmental Resources Management Southern Africa Pty Ltd (ERM) was appointed by FE Hugo & Khoe Pty Ltd to conduct a Terrestrial Animal Species Specialist Assessment for the proposed establishment of the Khoe Wind Energy Facility (WEF) and associated infrastructure in the Western Cape Province. The Khoe WEF project site is located ~20 km southeast of De Doorns (Figure 1).

FIGURE 1 LOCATION AND CONTEXT OF THE PROPOSED KHOE WIND ENERGY FACILITY



## 1.2 PROJECT DESCRIPTION

The proposed Khoe WEF will comprise up to 38 turbines with a maximum output capacity of up to 290 MW. The proposed development will also comprise access roads and internal roads, a Battery Energy Storage System (BESS), an Operations and Maintenance (O&M) building and a temporary site office. Internal 33 kV underground/overhead cabling along the proposed roads and a 132 kV Overhead Transmission Line (OTL) will also be installed to connect the WEF to the national electrical grid network. The grid connection will form part of a separate application process, however cumulative impacts thereof have been considered herein.

## 1.3 TERMS OF REFERENCE

This report follows the requirements of The National Gazette, No. 43855 of 30 October, 2020 (as amended): *“Protocol for the Specialist Assessment and Minimum report Content*

*Requirements for Environmental Impacts on Animal Species*" ('The Protocol') and the Species Environmental Assessment Guideline referred to therein<sup>1</sup>. The Protocol provides the criteria for the specialist assessment and minimum report content requirements for impacts on terrestrial animal species for activities requiring environmental authorization.

The Protocol prescribes that Site Sensitivity Verification be undertaken prior to the commencement of the specialist assessment. A process which aims to confirm or dispute the environmental sensitivity of a proposed site as identified by the National Web-based Screening Tool through a desktop analysis and preliminary on-site inspection. This resulted in the production of a Site Sensitivity Verification Report (Appendix A) which concluded that an Animal Species Specialist Assessment was required.

The terms of reference for this report were therefore to:

- Identify animal Species of Conservation Concern (SCCs) that occur (or are likely to occur) within the study area;
- Describe the distribution, location, viability and population size of SCCs identified within the study area;
- Determine the conservation importance of the population of SCCs identified within the study area;
- Determine the potential impact of the proposed development on the habitat of SCCs located within the study area;
- Review relevant literature on SCCs identified within the study area, including national or provincial species management plans and provide opinion on the compatibility of the proposed development with conservation objectives;
- Identify any dynamic ecological processes that may be disrupted by the proposed development and result in a negative impact on identified SCCs;
- Determine the Site Ecological Importance (SEI) and produce an animal sensitivity map to inform layout design;
- Identify the potential impacts of the proposed development to animal SCCs;
- Identify relevant mitigation measures (if any) to reduce the potential impacts of the proposed development on animal SCCs.

## 2. METHODS

### 2.1 SITE VISIT AND CAMERA TRAP SURVEY

Two (2) camera traps were deployed on 17 February 2022 and decommissioned on 23 December 2022. Camera trap locations were determined based on specialist determination of habitat suitability for Riverine Rabbit.

### 2.2 SITE ECOLOGICAL IMPORTANCE

Site Ecological Importance (SEI) is considered to be a function of the biodiversity importance (BI) of the receiving environment (e.g., species of conservation concern and the habitat type

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<sup>1</sup> South African National Biodiversity Institute (SANBI). 2020. Species Environmental Assessment Guideline. Guidelines for the implementation of the Terrestrial Fauna and Terrestrial Flora Species Protocols for environmental impact assessments in South Africa. South African National Biodiversity Institute, Pretoria.



present on the site) and its resilience to impacts (i.e., receptor resilience [RR]). The BI of the receiving environment is in turn a function of the conservation importance (CI) and the functional integrity (FI) of the receiving environment.

Biodiversity Importance was determined using the decision matrix presented in the Species Environmental Assessment Guideline (reproduced below), this matrix considers the Conservation Importance and Functional Integrity classifications outlined in those guidelines (Table 1).

**TABLE 1 DECISION MATRIX FOR THE DETERMINATION OF BIODIVERSITY IMPORTANCE**

Biodiversity Importance	Conservation Importance					
		Very High	High	Medium	Low	Very Low
Functional Integrity	Very High	Very High	Very High	High	Medium	Low
	High	Very High	Very High	High	Medium	Very Low
	Medium	Very High	High	Medium	Low	Very Low
	Low	High	Medium	Low	Very Low	Very Low
	Very Low	Medium	Low	Very Low	Very Low	Very Low

Similarly, the SEI is then determined using a similar decision matrix that considers the Biodiversity Importance determined using the first decision matrix, and the Receptor Resilience using classifications outlined in the guidelines (Table 2).

**TABLE 2 DECISION MATRIX FOR THE DETERMINATION OF SITE ECOLOGICAL IMPORTANCE**

Site Ecological Importance	Biodiversity Importance					
		Very High	High	Medium	Low	Very Low
Receptor Resilience	Very High	Very High	Very High	High	Medium	Low
	High	Very High	Very High	High	Medium	Very Low
	Medium	Very High	High	Medium	Low	Very Low
	Low	High	Medium	Low	Very Low	Very Low
	Very Low	Medium	Low	Very Low	Very Low	Very Low

### 2.3 IMPACT ASSESSMENT RATING SYSTEM

Significance ratings of the potential impacts to be carried out during the EIA phase will be determined following the methods outlined in Appendix B. The impact assessment is to consider the results of the monitoring programme in the context of the receiving environment, the conservation status of the species observed/expected, the susceptibility of species to the potential impacts and the species' utilization of the proposed development site. The outcomes of the impact assessment will inform the suitability of the proposed development site for the proposed development activity from an animal perspective, identify relevant mitigation measures to reduce the residual impacts, and ultimately inform the decision to develop the area as proposed.

## 3. RESULTS

### 3.1 ASSUMPTIONS AND LIMITATIONS

Inventory surveys of animal species occurring across a site are difficult to achieve within the time-frames associated with an EIA. To compile a comprehensive site-specific list would require extensive sampling. For assessment purposes, it is considered more important identify species and processes of conservation value that may be impacted upon. Therefore, this assessment attempts to identify threatened and other significant species, important habitats, and ecological processes. It is not possible to confirm the absence of a species certainty. Presence confirmation, therefore, is considered more significant than absence.

However, at locations simultaneously monitored off the proposed development, where presence was confirmed, Riverine Rabbit were generally detected and recorded relatively soon after camera trap deployment and regularly thereafter throughout the extended deployment period. This indicates that they are relatively common within areas of suitable habitat and it is considered unlikely that they were present at sites where they were not detected. Current distribution and habitat suitability models for Riverine Rabbit largely utilize abiotic factors and sighting records and are likely subject to refinement as research on this poorly understood species improves.

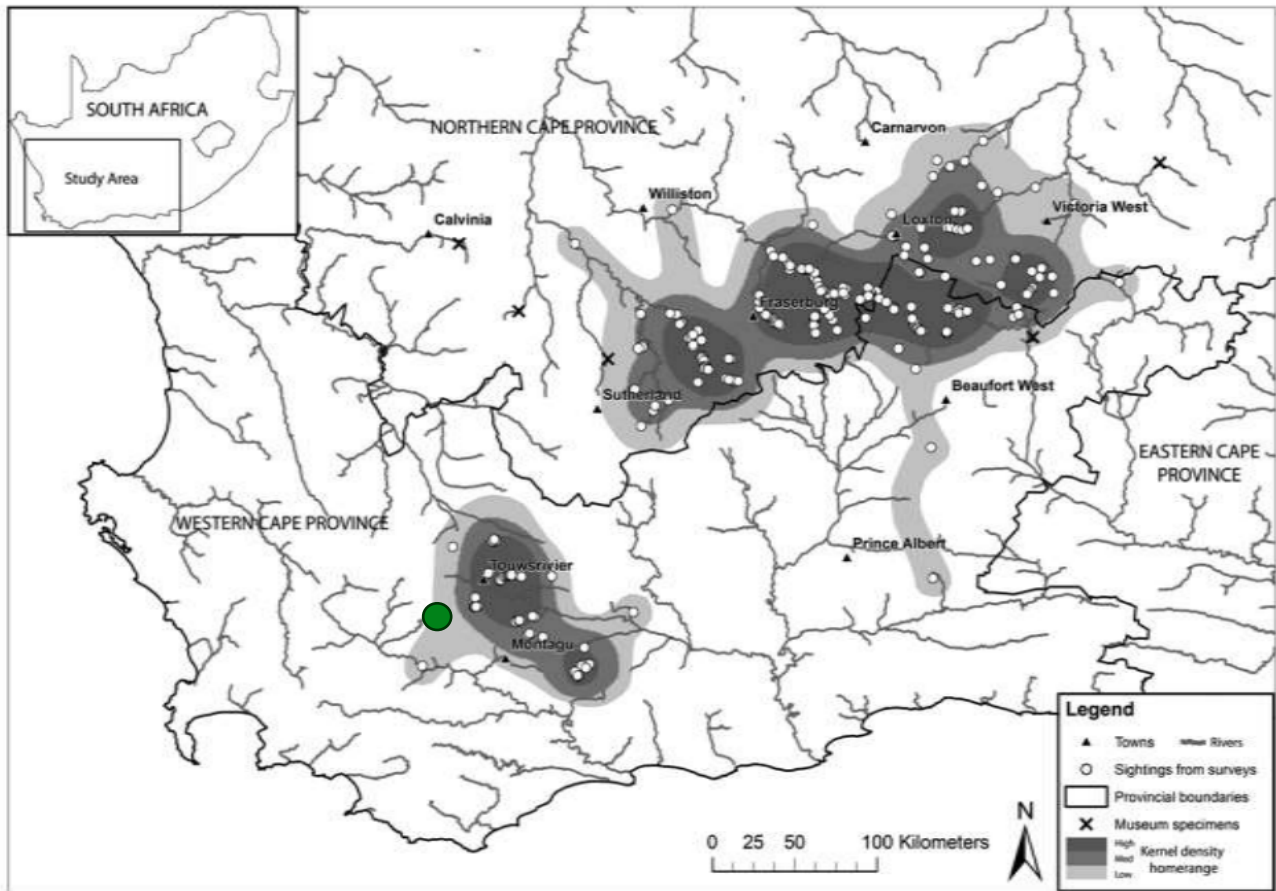
### 3.2 REGIONAL CONTEXT

The proposed development area falls within a transition zone between the Succulent Karoo and Fynbos Biomes. The Succulent Karoo Biome is primarily determined by the presence of low winter rainfall and extreme summer aridity. Rainfall varies between 20 and 290 mm per year. Few data are available for the fauna of the Succulent Karoo. Of importance in the area are heuweltjies, raised mounds of calcium-rich soil, which often support distinctive plant communities.

### 3.3 LOCAL CONTEXT

The main vegetation types across the proposed development area are Matjiesfontein Shale Renosterveld, with North Langeberg Sandstone Fynbos on the mountain slopes. Ploughed fields dominate the low-lying areas, with small grain grazing and a relatively high density of sheep farming (c. 53 density per km<sup>2</sup>). The proposed development area lies near the southwestern edge of the currently understood range for Riverine Rabbit (Figure 2).

FIGURE 2 POSITION OF THE PROPOSED DEVELOPMENT SITE (GREEN) RELATIVE TO KERNEL DENSITY POLYGONS AROUND RIVERINE RABBIT RECORDS (REPRODUCED FROM COLLINS AND DU TOIT (2016)<sup>2</sup>



Source: Collins, K. and du Toit, J.T. (2016)

### 3.3.1 SAMPLING

#### 3.3.1.1 SAMPLING SITES

Sampling sites were positioned within small strips of remaining natural or near-natural vegetation, in low-lying areas identified by the National Web-based Screening Tool to potentially support Riverine Rabbit. Representative sites with the highest likelihood of Riverine Rabbit were selected amongst those available across the site, nevertheless the likelihood of Riverine Rabbit being present remained low in the specialist’s experience (Figure 3).

<sup>2</sup> Collins, K. and du Toit, J.T. (2016), Population status and distribution modelling of the critically endangered riverine rabbit (*Bunolagus monticularis*). *Afr. J. Ecol.*, 54: 195-206. <https://doi.org/10.1111/aje.12285>

FIGURE 3 CAMERA TRAP SURVEY SAMPLING LOCATIONS

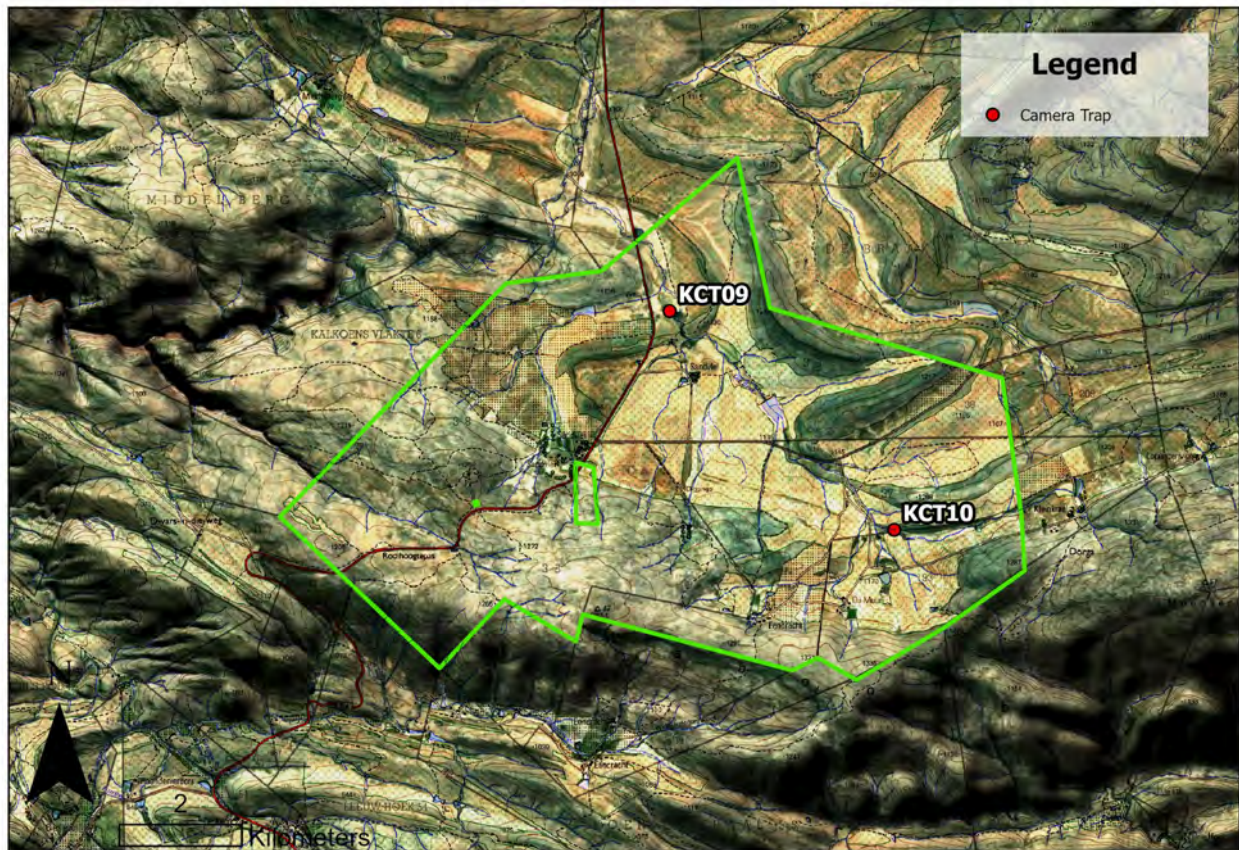



TABLE 3 SAMPLING SITE DESCRIPTIONS

Name	Habitat	Likelihood of SCC	Photo
<p><b>KCT09</b>                      -33.580448°                      19.879868°                      306 Nights</p>	<p>Drainage line on border of modified cultivated land.</p>	<p>Low</p>	

Name	Habitat	Likelihood of SCC	Photo
<p><b>KCT10</b> -33.607145° 19.910105° 306 Nights</p>	<p>Drainage line on border of modified cultivated land. Against fence with hole allowing animal passage.</p>	<p>Low</p>	

### 3.3.1.2 SAMPLING CONDITIONS

Sampling was conducting through a wide-range of conditions experience between 19 February 2022 (commissioned) and 22 December 2022 (decommissioned), including summer, autumn, winter and spring.

### 3.3.1.3 SAMPLING EFFORT

Camera traps were deployed across the site for a combined 612 camera trap days.

## 3.4 PREDICTED AND OBSERVED SPECIES

Of the nine (9) animal species of conservation concern with ranges that potentially overlap with the proposed development area, the presence of Bontebok (*Damaliscus pygargus pygargus*), African Buffalo (*Syncerus caffer*), African Elephant (*Loxodonta africana*), Lion (*Panthera leo*) and Hippopotamus (*Hippopotamus amphibius*) have been excluded as part of the SEI evaluation and will be omitted from the impact assessment process. These records are associated with individuals re-introduced to managed game reserves but are not considered to be fully functioning as part of the PAOI ecosystem. The subspecies of Tent Tortoise (*Psammobates tentorius*) relevant to the proposed development area is the Karoo Tent Tortoise (*P. t. tentorius*), listed as Least Concern therefore not considered to be a SCC. The rare Caledonian Copper Butterfly (*Aloeides caledoni*) was considered unlikely to occur across the proposed project area and highly unlikely to experience significant negative impact from the proposed development and was therefore also excluded from further consideration. The primary animal SCCs relevant to the proposed development were therefore the Critically Endangered Riverine Rabbit (*Bunolagus monticularis*), Vulnerable Leopard (*Panthera pardus*) and Near Threatened Grey Rhebok (*Pelea capreolus*).

### 3.4.1 RIVERINE RABBIT

Riverine Rabbits are considered to have a critically low population size, with estimates for a total population size of 157 – 207 mature individuals<sup>3</sup>.

<sup>3</sup> Collins, K., Bragg, C. & Birss, C. 2019. *Bunolagus monticularis*. The IUCN Red List of Threatened Species 2019: e.T3326A45176532

There are an estimated 12 subpopulations, three in the southern population and nine in the northern population. Subpopulations are isolated from each other by jackal-proof fencing and severe land transformation through agricultural practices. The distribution and population size for this species is not well understood. A recent study suggested<sup>4</sup> that riverine rabbits may be restricted to the more fertile plains, whilst being unable to compete with the ecologically flexible hares (*Lepus* spp.) which can use refugia present along a range of ruggedness. The study did not detect Riverine Rabbit and hare together at any site and inferred spatial segregation through interspecific competition as a strong driver of species distribution.

### 3.4.2 LEOPARD

The southern African leopard population is comprised of a number of geographically isolated groups, with slight genetic differences caused by distance isolation. These differences are not considered enough to classify each group as a separate subspecies. The Cape Leopard in the proposed development area (*Panthera pardus pardus*) is therefore classified as the same species as the savanna/bushveld leopard. Nevertheless, Cape leopards are about half the mass of Savanna Leopard. On average males weigh in at around 35 kg (cf. 60 – 70 kg for Savanna Leopard), whereas females weigh around 20 kg (cf. 35 – 40 kg). Another key difference is that home range sizes of Cape Leopard are far larger than those of Savanna Leopard. While male leopards in the Kruger National Park have a home range of 25 to 50 km<sup>2</sup>, the range of a male Cape leopard is between 200 and 1 000 km<sup>2</sup>. There is no definitive total for leopard numbers in the Western Cape, however data from recent studies in three distinct mountain areas suggest the number to be fewer than 1 000<sup>5</sup> individuals. Effective conservation of leopards depends largely on the protective measures that can be implemented outside existing conservation areas. Habitat loss and fragmentation, roads and traffic and too frequent and large-scale veld fires are considered amongst the main conservation threats to Cape Leopard.

### 3.4.3 GREY RHEBOK

Grey Rhebok, listed as Near Threatened and endemic to South Africa, Lesotho and parts of Eswatini, were recorded across the proposed development area (Figure 6). Local declines in their population have been attributed to increased densities of natural predators, such as Black-backed Jackal, Caracal and Leopard. This species has been confirmed present across the proposed development area, however, Grey Rhebok are a relatively mobile species and are not strictly dependent on any particular habitat. Suitable habitat is therefore widely available in the immediate vicinity of the proposed development and individuals will unlikely be permanently displaced if movement across the area is not prevented.

## 3.5 SENSITIVITY MAPPING

### 3.5.1 CURRENT IMPACTS

Current impacts to animals across the site include roadkill through vehicle collisions along the well-used R318 that bisects the site. Regular vehicular traffic along this route includes large goods vehicles and agricultural equipment. Modification of large portions of land across the

<sup>4</sup> Woodgate, Z. & Distiller, G. & O'Riain, M.J. 2021. Hare today, gone tomorrow: the role of interspecific competition in shaping riverine rabbit occurrence. *Endangered Species Research*. 44. 10.3354/esr01106.

<sup>5</sup> Cape Leopard Trust. <https://capeleopard.org.za>

proposed development area has occurred for agricultural activity, including regular ploughing and removal of vegetative cover (Figure 7).

**FIGURE 4 OBSERVED IMPACTS EXISTING ACROSS THE PROPOSED DEVELOPMENT AREA INCLUDE A) ROADKILL THROUGH VEHICULAR COLLISION AND B) MODIFICATION OF HABITAT THROUGH VEGETATION CLEARING FOR AGRICULTURAL ACTIVITY.**



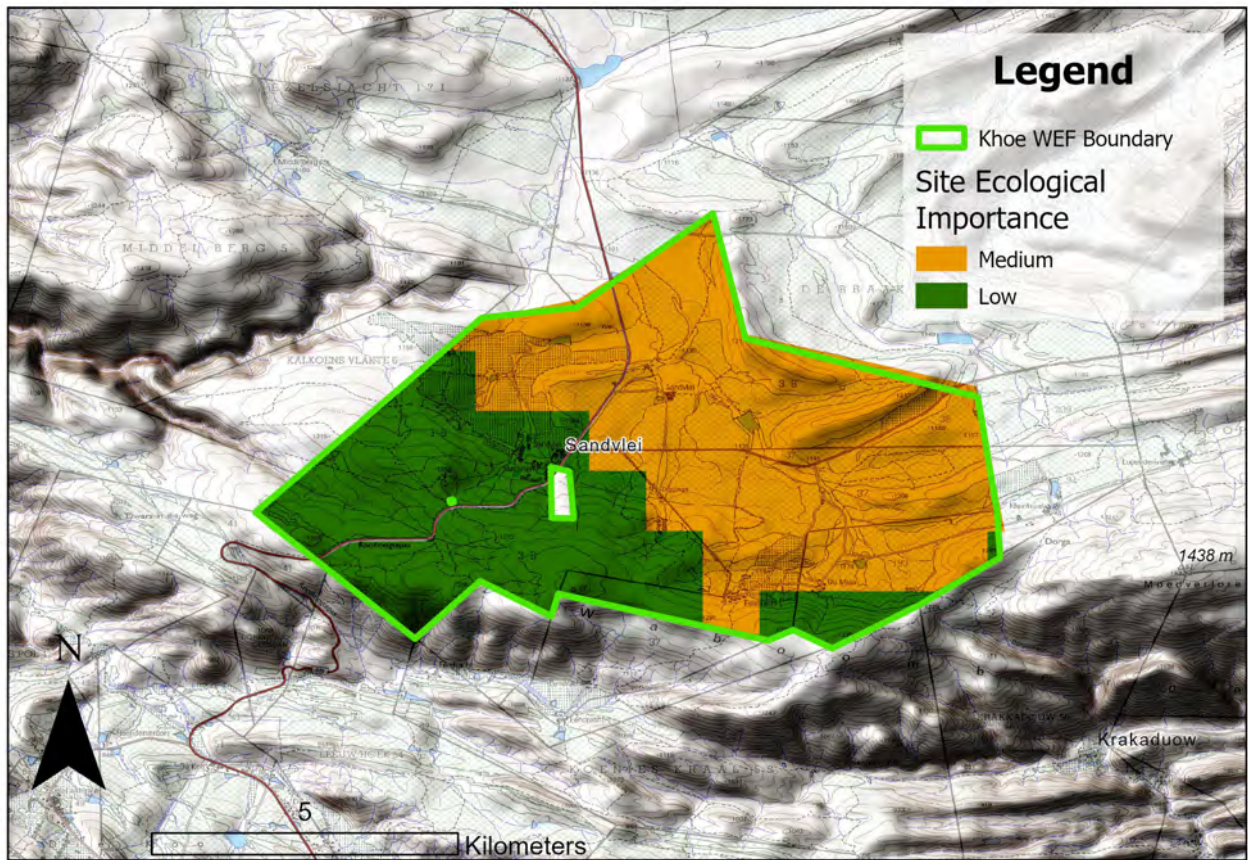
### 3.5.2 SITE ECOLOGICAL IMPORTANCE

The site ecological importance exercise indicated that parts of the site are of medium ecological importance for Riverine Rabbit, with remaining areas of low ecological importance for Leopard and Grey Rhebok (Table 4, Figure 8).

**TABLE 4 SITE ECOLOGICAL IMPORTANCE CALCULATION FOR ANIMAL SPECIES OF CONSERVATION CONCERN RELEVANT TO THE PROPOSED DEVELOPMENT AREA**

SCC	Habitat	EOO (km <sup>2</sup> )	Status	CI	FI	BI	RR	SEI
Riverine Rabbit	Dry drainage lines, washes and lowland scrub	> 10	CR	High	Medium	Medium	Medium	<b>Medium</b>
Leopard	Mountainous scrub	>10	VU	High	Medium	Medium	High	<b>Low</b>
Grey Rhebok	Natural and modified areas	>10	NT	Medium	High	Medium	High	<b>Low</b>

FIGURE 5 MAP OF THE PRELIMINARY SITE ECOLOGICAL IMPORTANCE BASED OFF THE RELATIVELY LOW-RESOLUTION HABITAT SUITABILITY MODEL INCLUDED IN THE NATIONAL WEB-BASED SCREENING TOOL



## 4. IDENTIFICATION OF IMPACTS AND OPPORTUNITIES

### 4.1 IMPACTS

The primary potential impacts of the proposed development to animals are listed in Table 5 below.

TABLE 5 IDENTIFICATION OF POTENTIAL IMPACTS TO ANIMALS ASSOCIATED WITH THE PROPOSED DEVELOPMENT

Impact	Description
<b>Construction Phase</b>	
<ul style="list-style-type: none"> <li>• Direct Habitat Loss                             <ul style="list-style-type: none"> <li>◦ Vegetation Clearing</li> <li>◦ Fire Frequency</li> </ul> </li> </ul>	<p>The construction of roads, turbine hard-stands, roads, laydown areas and site offices will result in the removal of currently intact vegetation.</p> <p>Artificially altered fire regimes may reduce habitat suitability by changing vegetative communities and habitat structure.</p>
<ul style="list-style-type: none"> <li>• Indirect Habitat Loss</li> </ul>	



Impact	Description
<ul style="list-style-type: none"> <li>◦ Reduced Connectivity and restricted movement</li> </ul>	<p>Construction activities and novel infrastructure (e.g., perimeter fencing) may exclude species from portions of suitable habitat by restricting animals' movement across the landscape.</p>
<ul style="list-style-type: none"> <li>◦ Altered Flow Regimes</li> </ul>	<p>Construction of infrastructure may alter water flow characteristics such as runoff, sedimentation and infiltration. These could change vegetation community composition, soil depth and habitat suitability.</p>
<ul style="list-style-type: none"> <li>◦ Overgrazing</li> </ul>	<p>Construction areas becoming unavailable for grazing may alter grazing patterns, potentially concentrating livestock in areas of high habitat suitability for various SCCs.</p>
<ul style="list-style-type: none"> <li>• Disturbance/Displacement</li> </ul>	<p>Increase in construction activity, movement of machinery and operation of equipment may disturb and/ or displace certain animal SCCs from the vicinity of construction.</p>
<ul style="list-style-type: none"> <li>• Direct Mortality</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Increased Traffic and Roadkill</li> </ul>	<p>Increased frequency of vehicle movement associated with construction activity increases the possibility of vehicles colliding with animals resulting in roadkill fatalities.</p>
<ul style="list-style-type: none"> <li>◦ Illegal collecting, poaching and/ or entrapment with infrastructure</li> </ul>	<p>Increased access to the site from construction activities could increase the possibility of illegal collection of animals and increased poaching opportunities. Animals may also become entangled or entrapped in temporary fencing or excavations.</p>
<ul style="list-style-type: none"> <li>• Indirect Mortality</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Increased predator presence</li> </ul>	<p>Construction camps can attract species such as crows, which depredate on various animals such as tortoises and juvenile rabbits.</p>
<ul style="list-style-type: none"> <li>◦ Decreased predator detection</li> </ul>	<p>Increased noise from construction activities may mask natural sounds and reduce the ability for animals to detect the presence of predators.</p>
<b>Operational Phase</b>	
<ul style="list-style-type: none"> <li>• Direct Habitat Loss</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Fire Frequency</li> </ul>	<p>Artificially altered fire regimes may reduce habitat suitability by changing vegetative communities and habitat structure.</p>
<ul style="list-style-type: none"> <li>• Indirect Habitat Loss</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Reduced Connectivity and restricted movement</li> </ul>	<p>Novel infrastructure (e.g., perimeter fencing) may exclude species from portions of suitable habitat by restricting animals' movement across the landscape.</p>
<ul style="list-style-type: none"> <li>◦ Altered Flow Regimes</li> </ul>	<p>Novel infrastructure may alter water flow characteristics such as runoff, sedimentation and infiltration. These could change vegetation community composition, soil depth and habitat suitability.</p>
<ul style="list-style-type: none"> <li>◦ Overgrazing</li> </ul>	<p>Infrastructure areas becoming unavailable for grazing may alter grazing patterns, potentially concentrating livestock in areas of high habitat suitability for various SCCs.</p>

Impact	Description
<ul style="list-style-type: none"> <li>• Disturbance/Displacement</li> </ul>	Operational activities may disturb and/ or displace certain animal SCCs from the vicinity of infrastructure.
<ul style="list-style-type: none"> <li>• Direct Mortality</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Increased Traffic and Roadkill</li> </ul>	Increased frequency of vehicle movement associated with operational activity increases the possibility of vehicles colliding with animals resulting in roadkill fatalities.
<ul style="list-style-type: none"> <li>◦ Entrapment with infrastructure</li> </ul>	Animals may become entangled or entrapped in fencing or cattle grids.
<ul style="list-style-type: none"> <li>• Indirect Mortality</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Increased predator presence</li> </ul>	Operational activities can attract species such as crows, which depredate on various animals such as tortoises and juvenile rabbits. Associated infrastructure such as transmission pylons may provide perching or nesting platforms for predatory species such as Martial Eagle and/ or Jackal Buzzard which prey on various animal SCCs.
<ul style="list-style-type: none"> <li>◦ Decreased predator detection</li> </ul>	Increased noise from wind turbine generators and operational activities may mask natural sounds and reduce the ability for animals to detect the presence of predators.
<b>Decommission Phase</b>	
As per construction phase	Anticipated impacts of the decommission phase are expected to mirror those of the construction phase.

## 4.2 OPPORTUNITIES

Several key opportunities exist to improve the conservation of animal SCCs in the broader area. Large areas of the proposed development site have been extensively modified through ongoing agricultural activity, resulting in a reduction in available movement corridors for animals between natural or near natural habitat patches.

The proposed development presents an opportunity to improve habitat connectivity for species, particularly for the Critically Endangered Riverine Rabbit. The restoration of key movement corridors between natural or near-natural vegetation, currently separated by areas of modified agricultural fields, would be highly desirable for the long-term viability and persistence of the local population. Similarly, the proposed development area provides opportunity to significantly contribute to improving research on Riverine Rabbit and presents a land-use alternative more compatible with conservation goals than expanded agricultural activity. The position of the proposed site abutting the mountains to the north and west, and seemingly outside of Riverine Rabbit’s core range, provides the ideal opportunity to better understand the potential impacts of renewable energy developments with reduced risk.

## 4.3 MITIGATION MEASURES

The following table indicates a list of available mitigation measures to reduce the potential impact of the proposed development to animals.

**TABLE 6 MITIGATION MEASURES AVAILABLE TO REDUCE THE SIGNIFICANCE OF POTENTIAL IMPACTS ASSOCIATED WITH THE PROPOSED DEVELOPMENT**

Impact	Available Mitigation
<b>Construction Phase</b>	
<ul style="list-style-type: none"> <li>• Direct Habitat Loss</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Vegetation Clearing</li> </ul>	<ul style="list-style-type: none"> <li>• Mapping of habitat sensitivity at a resolution suitable to inform layout design.</li> <li>• Avoidance of highly sensitive habitats during the planning and design phase as far as practically possible.</li> <li>• Minimization of development footprint and utilization of existing roads and existing modified areas for temporary laydown areas and site buildings.</li> </ul>
<ul style="list-style-type: none"> <li>◦ Fire Frequency</li> </ul>	<ul style="list-style-type: none"> <li>• No open fires to be permitted.</li> </ul>
<ul style="list-style-type: none"> <li>• Indirect Habitat Loss</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Reduced Connectivity and restricted movement</li> </ul>	<ul style="list-style-type: none"> <li>• Minimization of length and width of road network.</li> <li>• Fencing and road designs to allow for passage of animals (e.g., short, wide culverts in roads and wildlife friendly fencing).</li> </ul>
<ul style="list-style-type: none"> <li>◦ Altered Flow Regimes</li> </ul>	<ul style="list-style-type: none"> <li>• Adequate flow and erosion control measures.</li> </ul>
<ul style="list-style-type: none"> <li>◦ Overgrazing</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary laydown areas, construction yards and site office buildings to be placed in low sensitivity or modified areas.</li> </ul>
<ul style="list-style-type: none"> <li>• Disturbance/Displacement</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-construction baseline animal monitoring programme, with focus on areas identified for the construction footprint during the design phase (e.g., road network).</li> <li>• Avoidance of highly sensitive habitats for construction areas.</li> <li>• Clearly demarcated construction areas and no unauthorized personnel to be permitted beyond demarcated areas.</li> <li>• Adequate noise reduction measures (where possible) on heavy machinery.</li> <li>• Minimize construction activity that occurs between dusk and dawn.</li> <li>• Minimization of lighting used to illuminate construction areas and site buildings.</li> </ul>
<ul style="list-style-type: none"> <li>• Direct Mortality</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Increased Traffic and Roadkill</li> </ul>	<ul style="list-style-type: none"> <li>• No movement of construction vehicles between dusk and dawn.</li> <li>• Implementation and enforcement of speed limits.</li> <li>• Roadkill monitoring and recording programme.</li> <li>• Induction toolbox talk to construction personnel to increase awareness about animal SCCs present and roadkill risks.</li> </ul>
<ul style="list-style-type: none"> <li>◦ Illegal collecting, poaching and/ or entrapment with infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• No unauthorized movement of personnel.</li> <li>• No unauthorized access to the construction site.</li> <li>• No trenches to be left uncovered overnight.</li> <li>• Trenches, excavations and cattle grids to have slopes to allow for animals to escape should they fall in.</li> <li>• No hunting permitted.</li> </ul>

Impact	Available Mitigation
	<ul style="list-style-type: none"> <li>No dogs or cats permitted (other than those of the landowner).</li> </ul>
<ul style="list-style-type: none"> <li>Indirect Mortality</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Increased predator presence</li> </ul>	<ul style="list-style-type: none"> <li>Waste management programme to prevent trash buildup attracting species such as crows.</li> <li>Roadkill to be immediately reported, removed and suitably disposed of to prevent scavenging (e.g., buried).</li> </ul>
<ul style="list-style-type: none"> <li>◦ Decreased predator detection</li> </ul>	<ul style="list-style-type: none"> <li>Construction activity to be minimized during the night to reduce noise pollution during periods when Riverine Rabbit are most active.</li> </ul>
<b>Operational Phase</b>	
<ul style="list-style-type: none"> <li>Direct Habitat Loss</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Fire Frequency</li> </ul>	<ul style="list-style-type: none"> <li>No open fires to be permitted.</li> </ul>
<ul style="list-style-type: none"> <li>Indirect Habitat Loss</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Reduced Connectivity and restricted movement</li> </ul>	<ul style="list-style-type: none"> <li>Strategic restoration of currently modified areas to improve habitat connectivity.</li> <li>Wildlife friendly road and fence crossings.</li> </ul>
<ul style="list-style-type: none"> <li>◦ Altered Flow Regimes</li> </ul>	<ul style="list-style-type: none"> <li>Flow and erosion control measures.</li> </ul>
<ul style="list-style-type: none"> <li>◦ Overgrazing</li> </ul>	<ul style="list-style-type: none"> <li>Minimized development footprint in natural or near-natural areas utilized for grazing.</li> </ul>
<ul style="list-style-type: none"> <li>Disturbance/Displacement</li> </ul>	<ul style="list-style-type: none"> <li>Minimized lighting.</li> <li>Strategic restoration and rehabilitation of currently modified areas.</li> <li>Long-term animal monitoring programme.</li> <li>Establishment of stewardship programme to research and conserve Riverine Rabbit, following appropriate Biodiversity Offset Guidelines.</li> </ul>
<ul style="list-style-type: none"> <li>Direct Mortality</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Increased Traffic and Roadkill</li> </ul>	<ul style="list-style-type: none"> <li>Strictly enforced speed limits.</li> <li>Minimized movement of personnel vehicles at night.</li> <li>Wildlife friendly road crossings.</li> <li>Signage, education and awareness induction training about relevant animal SCCs to personnel.</li> </ul>
<ul style="list-style-type: none"> <li>◦ Entrapment with infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Wildlife friendly fencing and cattle grids.</li> </ul>
<ul style="list-style-type: none"> <li>Indirect Mortality</li> </ul>	
<ul style="list-style-type: none"> <li>◦ Increased predator presence</li> </ul>	<ul style="list-style-type: none"> <li>Overhead Transmission Lines to be of a type and design that reduces nesting opportunities (e.g., solid pylon design).</li> <li>Nest and perch deterrents on transmission line pylons.</li> <li>Waste management programme.</li> <li>Roadkill to be reported and immediately removed for adequate disposal that prevents scavenging (e.g., buried).</li> </ul>
<ul style="list-style-type: none"> <li>◦ Decreased predator detection</li> </ul>	<ul style="list-style-type: none"> <li>Operational studies on sound and animal populations (e.g., Riverine Rabbit) across the site.</li> </ul>

Impact	Available Mitigation
	<ul style="list-style-type: none"> <li>No spinning wind turbine generators at wind speeds below a certain cut-in speed.</li> </ul>
Decommission Phase	
As per construction phase	As per construction phase

## 5. EVALUATION OF SITE RISK

### 5.1 KHOE WIND ENERGY FACILITY

The Khoe WEF is unlikely to have a significant negative impact on the long-term viability and persistence of animal SCCs in the area following the implementation of available mitigation measures. Large portions of the proposed development area are modified by agricultural activity, presenting an opportunity to improve habitat availability and local habitat connectivity through rehabilitation and restoration of strategic areas.

### 5.2 CUMULATIVE IMPACTS

Four (4) renewable energy developments have been approved within 30 km of the proposed development area, all of which being solar photovoltaic (PV) developments. The existing 44 MW Touwsrivier CPV Solar Project is situated on 190 ha to the northeast of the proposed WEF development. Solar PV developments generally require the clearance of large areas for the solar arrays, particularly in flatter low-lying areas utilized by species such as Riverine Rabbit. In contrast, the proposed WEF development is largely focused on elevated hilltops, allowing for a reduced impact on low-lying habitats. Current land-use practices across the site, such as agricultural ploughing and fruit production plantations, represent a significant threat to remaining areas of natural or near-natural habitat and animal SCCs as these activities necessitate the modification of large areas of land. The impact significance of existing agriculture could potentially be reduced through restoration programmes.

### 5.3 RESIDUAL IMPACTS

The surrounding mountains act as a natural barrier for many species, therefore the position of the proposed development reduces the likelihood of having significant impacts on animal populations. In addition, the relative size of a WEF development footprint is generally only a small fraction of the proposed development area, therefore conservation of animal species is often compatible with this type of development. Such a development can facilitate a reduced rate of habitat modification for agricultural activity (e.g., ploughing) by offering a land-use alternative more conducive to the retention and improvement of natural or near-natural habitats.

### 5.4 NO-GO ALTERNATIVE

The 'No-Go' alternative considers that the proposed development is not constructed. Most of the potential impacts associated with the development would therefore not be imposed on the animal community of the receiving environment. From an animal perspective, however, the proposed development presents an opportunity to improve habitats present across the proposed development area.

Furthermore, the 'No-Go' alternative reduces the opportunity to progress the de-carbonization transition of the economy and achieve various climate change mitigation targets outlined by the South Africa's Low Emission Development Strategy, The National Development Plan, The National Climate Change Response Policy, Integrated Resource Plan, the National Climate Change Adaptation Strategy (amongst others) and ultimately South Africa's commitment to the Paris Agreement. The proposed development site appears to be well suited for the proposed development.

## 6. CONCLUSION

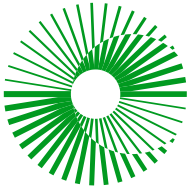
The proposed development appears unlikely to have a significant negative impact on animal SCCs following the implementation of appropriate mitigation measures, including avoidance of areas of elevated sensitivity. The sensitivity areas identified at this stage are not final, and will be significantly refined after detailed analyses of camera trap survey data. The resolution of the sensitivity mapping provided by the National Web-based Screening Tool is wholly inadequate (and misleading) at the scale required to inform project layout design and impact assessment, as this is not its intended purpose.

It is therefore recommended that the application process **proceeds** to the respective EIA phases for further assessment.



APPENDIX A

SITE SENSITIVITY VERIFICATION  
REPORT



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APPENDIX B      IMPACT ASSESSMENT METHODS





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APPENDIX C      DECLARATION OF INDEPENDENCE



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APPENDIX D

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