
Conducting a corridor assessment for the animals for the Hydra-Kronos 2nd 400 kV power line

General Animal Assessment



ESKOM



Client: Eskom Holdings SOC Limited



BIOASSETS
biological assessments



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EXECUTIVE SUMMARY

The proposed project entails the construction of the 2nd 400 kV powerline from the Hydra Substation to the Kronos Substation and the associated feeder bays at the respective substations. This power line will follow a corridor adjacent to the existing 400 kV power line.

The proposed works to be undertaken by Eskom Holdings SOC Ltd are indicated below:

- Construction of a second 187 km, 400 kV power line from Kronos substation to Hydra substation.
- Bypass series compensation on the 1st Hydra – Kronos 400 kV power line.
- Kronos Substation:
 - Extend the 400 kV busbar at the Kronos Substation.
 - Establish and equip a new 400 kV feeder bay at Kronos Substation.
- Hydra Substation:
 - Equip the existing 400 kV feeder bay at the Hydra Substation.
- Include the assessment on the full Holput Farm as requested during the survey.

As a greater part of the powerline is within a "Strategic Powerline Corridor", a 300 m wide corridor was assessed as the route has been pre-negotiated. This corridor will follow the existing Hydra to Kronos 400 kV power line, and this report will be compiled according to the Gazetted Requirement i.e. the Assessment Protocols for Animal Species and Terrestrial Biodiversity Assessment (Government Gazette No 43110, 20 March 2020) and Species Environmental Assessment guidelines. In addition, the assessment will take cumulative impacts into consideration.

This report focuses on the animal assessment.

- The vegetation over the larger study corridor is in fair to moderately good condition.
- The corridor has a diverse habitat pattern.
 - In areas it forms a mosaic pattern with patches of drainage lines, open shrubland, rocky outcrops and low hills and mountains.
 - This diversity is important in supporting the plants and animals in semi-arid/arid areas.
- The denser vegetation associated with the drainage lines (especially the seasonal streams) is an important habitat for all animals – both for habitation and food resources and migration corridors.
- The rocky habitats are important habitat for small birds, reptiles and small mammals (habitation) and are therefore considered to be sensitive areas.

- In order to limit impacts on the larger ecosystem, it is recommended that the existing corridor (1st power line) is used as access during construction and maintenance for the 2nd 400 kV power line.
- Placement of pylons must as far as possible avoid rocky outcrops, low hills and drainage lines. It will not be possible to avoid all areas, but with planning, the impacts can be limited.
- It is recommended that no travelling must be done under the new power line – access to construction sites must be from the existing corridor and road.
- Where possible, limit travel over outcrops, hills and low mountains – access from either side during construction in order to limit negative impact on the sloped areas. This will lower damage to the sensitive areas and lower the risk of erosion on the slopes.
- A concern is poaching where people can actively hunt or collect slower moving animals (e.g. the tortoises) or by snaring (small mammals and birds).
- The higher traffic associated with construction can increase the potential for road kills.
- During construction, animals (mammals and reptiles) can be trapped in deep excavated holes.
 - It will be important to monitor all open pits daily.
 - It is recommended that where possible, holes for construction must be dug only when the teams are ready for construction.
- No lights are to be left on at the sites at night, as this will attract animals to these areas – e.g. increased insect activity and this will attract bats, snakes and small mammals feeding on the insects, resulting in a higher incidence of snakes on the construction areas and animals being trapped in the open excavation pits.

Declaration of Independence

The National Environmental Management Act, Act 107 of 1998, Environmental Impact Assessment Regulations Government Notice R982 of 2014 (as amended) requires that certain information is included in specialist reports, i.e. the terms of reference, purpose of the report, methodologies, assumptions/limitations, impact assessment and mitigation (where relevant to the scope of work) and summaries of consultations (where applicable) are included within the main report. Other relevant information is set out below:

Expertise of author:

- Working in the field of ecology since 1996 and vegetation related assessments since 2000.
- Worked in the field of freshwater ecology and wetlands since 2000.
- Involved with visual assessments since 2009.
- Is registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions (Reg. No. 400109/95).

Declaration of independence:

BioAssets in an independent consultant and hereby declare that it does not have any financial or other vested interest in the undertaking of the proposed activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act 107 of 1998). In addition, remuneration for services provided by BioAssets is not subjected to or based on approval of the proposed project by the relevant authorities responsible for authorising this proposed project.

In addition I, Wynand Vlok, as the appointed biodiversity specialist, hereby declare/affirm the correctness of the information provided in this compliance statement, and that I:

- Meet the general requirements to be independent and
- Have no business, financial, personal or other interest in the proposed development and that no circumstances have occurred that may have compromised my objectivity; and
- Am aware that a false declaration is an offence in terms of regulation 48 of the EIA Regulations (2014).

Disclosure:

BioAssets CC undertake to disclose to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and will provide the competent authority with access to all information at its disposal regarding the application, whether such information is favourable to the applicant or not.

Based on information provided to BioAssets CC by the client, and in addition to information obtained during the course of this study, BioAssets CC present the results and conclusion within the associated document to the best of the author's professional judgement and in accordance with best practise.



Dr Wynand Vlok

30 May 2023

Date

Assumptions and limitations

Availability of baseline information

Baseline information for the study of the site was obtained from historic maps, photographs and reports. The desktop survey provided adequate baseline information for the area and therefore this was not a constraint.

Constraints

The survey was conducted during daytime only. All the different habitats at the site were investigated and it was therefore possible to complete a rapid survey and obtain information on the protected and red data animals that are present along the proposed corridor.

It is important to note that no trapping of small animals or reptiles were conducted (time constraint for the project).

Bio-physical constraints

Weather conditions during the period were cool/cold with a light to moderate wind blowing. The region has received little rainfall prior to the site visit in May 2023 and rain has occurred during the survey. This will have obvious implications on the biodiversity (not applicable to this study) that are likely to occur in the area. Nevertheless, the conditions during the survey were suitable for a survey of this nature.

Confidentially constraints

There were no confidentially constraints.

Implications for the study

Apart from the prevailing weather conditions at the site, there were no other significant constraints that would negatively impact upon the study. Access to all areas of the study site was possible even after the rains made areas very wet and restricted vehicle travel. There is sufficient good quality data available in the literature that partially negates the negative effect that the type of survey had on the quality of the assessment.

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1 INTRODUCTION

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This report focus on the animal assessment.

When carrying out a study of this nature, the aim is to identify the protected species in the corridor, sensitive habitat for animals, reptiles and bats, map the positions and make recommendation for the placement of the pylons in order to avoid the more sensitive areas. This will be done and a summary document (Excel Spreadsheet) will be compiled with the relevant information collated from the recent survey into one document.

1.1 Terms of Reference

BioAssets CC was appointed by the DIGES Group (on behalf of Eskom Holdings SOC Ltd) to conduct a walk-through assessment of the 300 m corridor for the proposed new Hydra/Kronos 2nd 400 kV power line between the Hydra Substation (near De Aar) and the Kronos Substation (near Copperton) (Figure 1.1). The aim of the assessment was to evaluate the general habitat related to the animal community in the area. Sightings of animals or signs of activity of the animals (e.g. active burrows, scat, bones or quills) was noted and recorded. Activity outside the corridor was noted, as the animals normally cover larger area for foraging of food. This information will be used to identify sensitive areas and can then be collated to other surveys to compile maps as required by the client.

1.2 Objectives of the Animal Survey

The objectives were:



- To conduct a habitat assessment along the 187 km corridor for the proposed 2nd 400 kV powerline between the Kronos Substation and the Hydra Substation.
- Identify any red data or protected animals species in the proposed corridor (300 m wide).
 - Identification of species that are protected (Threatened or Protected Species (TOPS) by the Northern Cape Nature Conservation Department (NCNCD)) or considered threatened (CR, EN, VU) on the South African Red Data List.
- To make recommendations and provide mitigating measures related to any red data or protected animals found in the affected area.
- To take photographs to illustrate the impacts and integrity of the site.

1.3 The Study Area

The locality map for the study area is depicted in Figure 1.1 and 1.2. This was the information received from the client prior to the assessment and it was used to plot the corridor and pylon positions (existing power line as guide for possible positions) for the survey.

Figure 1.1 depicts the route corridor in grey from the Hydra Substation (east of De Aar) to the Kronos Substation (southwest of Copperton) and Figure 1.2 is an aerial image of the route (purple line).



Figure 1.1: Map of the study area (Hydra Substation to the Kronos Substation) between De Aar and Copperton (Northern Cape Province). The proposed corridor of the power line is represented by the grey line.

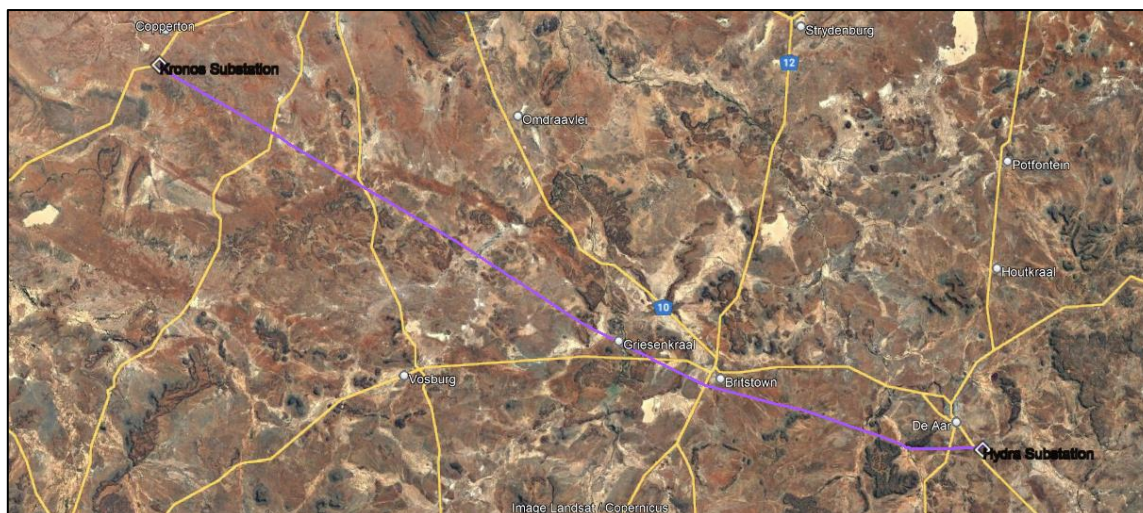


Figure 1.2: Aerial view of the study area with the corridor in purple.

1.4 Animals

As part of the assessment, a general list of animals or their activities were recorded. No trapping or night surveys were conducted, but only day-time assessments along the corridor were done. Animals observed while travelling near the corridor were included to ensure the list was as comprehensive as possible. The limited timeframe and cooler conditions will contribute to the extent of animals observed during the survey. This is particularly applicable to the reptiles and amphibians, as the dry and colder weather conditions definitely limit the activity of these groups.

Table 1.1 is a summary of the data extracted from the Northern Cape Mammals lists and Table 1.2 is the extract from "The Virtual Museum developed by the Animal Demography Unit at University of Cape Town (UCT) (The FitzPatrick Institute of African Ornithology at the Department of Biological Sciences, UCT) and managed by The Biodiversity and Development Institute (BDI) and include potential lists of mammals, reptiles and amphibians expected associated with the corridor for the proposed power line.

Table 1.1: Summary of mammals, reptiles and amphibians from the Northern Cape.

Mammals			
Order	Scientific name	Common name	Conservation status
Afrosoricida	<i>Chlorotalpa sclateri</i>	Sclater's golden mole	Data Deficient
Afrosoricida	<i>Chrysochloris asiatica</i>	Cape golden mole	Data Deficient
Afrosoricida	<i>Chrysochloris visagiei</i>	Visagie's golden mole	Critically Endangered
Afrosoricida	<i>Cryptochloris wintoni</i>	De Winton's golden mole	Critically Endangered
Afrosoricida	<i>Eremitalpa granti</i>	Grant's golden mole	Vulnerable
Carnivora	<i>Acinonyx jubatus</i>	Cheetah	Vulnerable
Carnivora	<i>Aonyx capensis</i>	African clawless otter	Least Concern
Carnivora	<i>Atilax paludinosus</i>	Marsh mongoose	Least Concern
Carnivora	<i>Canis mesomelas</i>	Black-backed jackal	Least Concern
Carnivora	<i>Caracal caracal</i>	Caracal	Least Concern
Carnivora	<i>Crocuta crocuta</i>	Spotted hyena	Near Threatened
Carnivora	<i>Cynictis penicillata</i>	Yellow mongoose	Least Concern
Carnivora	<i>Felis nigripes</i>	Black-footed cat	Threatened
Carnivora	<i>Felis silvestris</i>	African wild cat	Least Concern
Carnivora	<i>Galerella pulverulenta</i>	Cape grey mongoose	Least Concern
Carnivora	<i>Galerella sanguinea</i>	Slender mongoose	Least Concern
Carnivora	<i>Genetta genetta</i>	Small-spotted genet	Least Concern
Carnivora	<i>Genetta tigrina</i>	Southern Large-spotted genet	Least Concern

Carnivora	<i>Ichneumia albicauda</i>	White-tailed mongoose	Least Concern
Carnivora	<i>Ictonyx striatus</i>	Striped polecat	Least Concern
Carnivora	<i>Leptailurus serval</i>	Serval	Near Threatened
Carnivora	<i>Lutra maculicollis</i>	Spotted-necked otter	Near Threatened
Carnivora	<i>Lycaon pictus</i>	African wild dog	Endangered
Carnivora	<i>Mellivora capensis</i>	Honey badger	Near Threatened
Carnivora	<i>Mungos mungo</i>	Banded mongoose	Least Concern
Carnivora	<i>Otocyon megalotis</i>	Bat-eared fox	Least Concern
Carnivora	<i>Panthera leo</i>	Lion	Vulnerable
Carnivora	<i>Panthera pardus</i>	Leopard	Least Concern
Carnivora	<i>Parahaena brunnea</i>	Brown hyena	Near Threatened
Carnivora	<i>Poecilogale albinucha</i>	African striped weasel	Data Deficient
Carnivora	<i>Proteles cristatus</i>	Aardwolf	Least Concern
Carnivora	<i>Suricata suricatta</i>	Suricate	Least Concern
Carnivora	<i>Vulpes chama</i>	Cape fox	Least Concern
Chiroptera	<i>Cistugo lesueuri</i>	Lesueur's hairy bat	Near Threatened
Chiroptera	<i>Cistugo seabrai</i>	Angolan hairy bat	Vulnerable
Chiroptera	<i>Eidolon helvum</i>	Straw-coloured fruit bat	Least Concern
Chiroptera	<i>Eptesicus hottentotus</i>	Long-tailed serotine bat	Least Concern
Chiroptera	<i>Hipposideros caffer</i>	Sundevall's roundleaf bat	Data Deficient
Chiroptera	<i>Miniopterus schreibersii</i>	Schreiber's long-fingered bat	Near Threatened
Chiroptera	<i>Myotis tricolour</i>	Temminck's hairy bat	Near Threatened
Chiroptera	<i>Neoromicia capensis</i>	Cape serotine bat	Least Concern
Chiroptera	<i>Nycteris thebaica</i>	Egyptian slit-faced bat	Least Concern
Chiroptera	<i>Pipistrellus rueppellii</i>	Rüppell's pipistrelle	Least Concern
Chiroptera	<i>Rhinolophus capensis</i>	Cape horseshoe bat	Near Threatened
Chiroptera	<i>Rhinolophus clivosus</i>	Geoffroy's horseshoe bat	Near Threatened
Chiroptera	<i>Rhinolophus darlingi</i>	Darling's horseshoe bat	Near Threatened
Chiroptera	<i>Rhinolophus denti</i>	Dent's horseshoe bat	Near Threatened
Chiroptera	<i>Rhinolophus fumigatus</i>	Rüppell's horseshoe bat	Near Threatened
Chiroptera	<i>Rousettus aegyptiacus</i>	Egyptian rousette	Least Concern
Chiroptera	<i>Sauromys petrophilus</i>	Flat-headed free-tailed bat	Least Concern
Chiroptera	<i>Scotophilus dinganii</i>	African yellow bat	Least Concern
Chiroptera	<i>Tadarida aegyptiaca</i>	Egyptian free-tailed bat	Least Concern
Chiroptera	<i>Taphozous mauritanus</i>	Mauritian tomb bat	Least Concern
Eulipotyphla	<i>Atelerix frontalis</i>	Southern African hedgehog	Near Threatened
Eulipotyphla	<i>Crocodyura cyanea</i>	Reddish-grey musk shrew	Data Deficient
Eulipotyphla	<i>Crocodyura flavescens</i>	Greater red musk shrew	Data Deficient
Eulipotyphla	<i>Crocodyura hirta</i>	Lesser red musk shrew	Data Deficient
Eulipotyphla	<i>Myosorex varius</i>	Forest shrew	Data Deficient
Eulipotyphla	<i>Suncus varilla</i>	Lesser dwarf shrew	Data Deficient
Hyracoidea	<i>Procavia capensis</i>	Rock hyrax	Least Concern
Lagomorpha	<i>Bunolagus monticularis</i>	Riverine rabbit	Critically Endangered
Lagomorpha	<i>Lepus capensis</i>	Cape hare	Least Concern
Lagomorpha	<i>Lepus saxatilis</i>	Scrub hare	Least Concern
Lagomorpha	<i>Pronolagus rupestris</i>	Smith's red rock rabbit	Least Concern
Macroscelidea	<i>Elephantulus edwardii</i>	Cape rock elephant-shrew	Least Concern
Macroscelidea	<i>Elephantulus intufi</i>	Bushveld elephant-shrew	Data Deficient
Macroscelidea	<i>Elephantulus myurus</i>	Eastern rock elephant-shrew	Least Concern
Macroscelidea	<i>Elephantulus rupestris</i>	Western rock elephant-shrew	Least Concern
Macroscelidea	<i>Macroscelides proboscideus</i>	Round-eared elephant-shrew	Least Concern
Perissodactyla	<i>Ceratotherium simum</i>	White rhinoceros	Least Concern
Perissodactyla	<i>Diceros bicornis</i>	Black rhinoceros	Critically Endangered
Perissodactyla	<i>Equus quagga</i>	Plains zebra	Least Concern
Perissodactyla	<i>Equus zebra hartmannae</i>	Hartmann's mountain zebra	Endangered
Perissodactyla	<i>Equus zebra zebra</i>	Cape mountain zebra	Vulnerable
Pholidota	<i>Manis temminckii</i>	Ground pangolin	Vulnerable
Primates	<i>Cercopithecus pygerythrus</i>	Vervet monkey	Least Concern
Primates	<i>Papio ursinus</i>	Chacma baboon	Least Concern
Rodentia	<i>Aethomys chrysophilus</i>	Red veld rat	Least Concern
Rodentia	<i>Bathyergus janetta</i>	Namaqua dune mole-rat	Near Threatened
Rodentia	<i>Cryptomys damarensis</i>	Damaraland mole-rat	Least Concern
Rodentia	<i>Cryptomys hottentotus</i>	African mole-rat	Least Concern
Rodentia	<i>Dendromus melanotis</i>	Grey climbing mouse	Least Concern
Rodentia	<i>Desmodillus auricularis</i>	Cape short-tailed gerbil	Least Concern

Rodentia	<i>Georchus capensis</i>	Cape mole-rat	Least Concern
Rodentia	<i>Gerbillurus paeba</i>	Hairy-footed gerbil	Least Concern
Rodentia	<i>Gerbillurus vullinus</i>	Brush-tailed hairy-footed gerbil	Least Concern
Rodentia	<i>Graphiurus murinus</i>	Woodland dormouse	Least Concern
Rodentia	<i>Graphiurus oculus</i>	Spectacled dormouse	Least Concern
Rodentia	<i>Graphiurus platyops</i>	Rock dormouse	Data Deficient
Rodentia	<i>Hystrix africaeustralis</i>	Cape porcupine	Least Concern
Rodentia	<i>Malacothrix typica</i>	Gerbil mouse	Least Concern
Rodentia	<i>Mastomys coucha</i>	Southern multimammate mouse	Least Concern
Rodentia	<i>Micaelamys (Aethomys) granti</i>	Grant's rock mouse	Least Concern
Rodentia	<i>Micaelamys (Aethomys) namaquensis</i>	Namaqua rock mouse	Least Concern
Rodentia	<i>Mus indutus</i>	Desert pygmy mouse	Least Concern
Rodentia	<i>Mus minutoides</i>	Pygmy mouse	Least Concern
Rodentia	<i>Mystromys albicaudatus</i>	White-tailed mouse	Endangered
Rodentia	<i>Otomys irroratus</i>	Vlei rat	Least Concern
Rodentia	<i>Otomys sloggetti</i>	Sloggett's vlei rat	Data Deficient
Rodentia	<i>Otomys unisulcatus</i>	Bush vlei rat	Least Concern
Rodentia	<i>Parotomys brantsii</i>	Brant's whistling rat	Least Concern
Rodentia	<i>Parotomys littledalei</i>	Littledale's whistling rat	Near Threatened
Rodentia	<i>Pedetes capensis</i>	Springhare	Least Concern
Rodentia	<i>Petromus typicus</i>	Dassie rat	Near Threatened
Rodentia	<i>Petromyscus barbouri</i>	Barbour's rock mouse	Least Concern
Rodentia	<i>Petromyscus collinus</i>	Pygmy rock mouse	Least Concern
Rodentia	<i>Rhabdomys pumilio</i>	Four-striped grass mouse	Least Concern
Rodentia	<i>Saccostomus campestris</i>	Pouched mouse	Least Concern
Rodentia	<i>Steatomys krebsii</i>	Kreb's fat mouse	Least Concern
Rodentia	<i>Tatera afra</i>	Cape gerbil	Least Concern
Rodentia	<i>Tatera brantsii</i>	Highveld gerbil	Least Concern
Rodentia	<i>Tatera leucogaster</i>	Bushveld gerbil	Data Deficient
Rodentia	<i>Thallomys nigricauda</i>	Black-tailed tree rat	Least Concern
Rodentia	<i>Xerus inauris</i>	South African ground squirrel	Least Concern
Rodentia	<i>Zelotomys woosnami</i>	Woosnam's desert mouse	Least Concern
Ruminantia	<i>Aepyceros melampus</i>	Impala	Least Concern
Ruminantia	<i>Alcelaphus buselaphus</i>	Red hartebeest	Least Concern
Ruminantia	<i>Antidorcas marsupialis</i>	Springbok	Least Concern
Ruminantia	<i>Connochaetes gnou</i>	Black wildebeest	Least Concern
Ruminantia	<i>Connochaetes taurinus</i>	Blue wildebeest	Least Concern
Ruminantia	<i>Damaliscus lunatus</i>	Tsessebe	Endangered
Ruminantia	<i>Damaliscus pygargus phillipsi</i>	Blesbok	Least Concern
Ruminantia	<i>Giraffa camelopardalis</i>	Giraffe	Least Concern
Ruminantia	<i>Hippotragus equinus</i>	Roan	Vulnerable
Ruminantia	<i>Oreotragus oreotragus</i>	Klipspringer	Least Concern
Ruminantia	<i>Oryx gazella</i>	Gemsbok	Least Concern
Ruminantia	<i>Pelea capreolus</i>	Grey rhebok	Least Concern
Ruminantia	<i>Raphicerus campestris</i>	Steenbok	Least Concern
Ruminantia	<i>Raphicerus melanotis</i>	Cape grysbok	Least Concern
Ruminantia	<i>Redunca fulvorufula</i>	Mountain reedbuck	Least Concern
Ruminantia	<i>Sylvicapra grimmia</i>	Common duiker	Least Concern
Ruminantia	<i>Syncerus caffer</i>	African buffalo	Least Concern
Ruminantia	<i>Tragelaphus oryx</i>	Eland	Least Concern
Ruminantia	<i>Tragelaphus strepsiceros</i>	Greater kudu	Least Concern
Suiformes	<i>Phacochoerus africanus</i>	Common warthog	Least Concern
Tubulidentata	<i>Orycteropus afer</i>	Aardvark	Least Concern
Whippomorpha	<i>Hippopotamus amphibius</i>	Hippopotamus	Least Concern
Reptiles			
Family	Scientific name	Common name	Conservation status
Agamidae	<i>Agama aculeata aculeata</i>	Common Ground Agama	Least Concern
Agamidae	<i>Agama atra</i>	Southern Rock Agama	Least Concern
Amphisbaenidae	<i>Monopeltis capensis</i>	Cape Worm Lizard	Least Concern
Colubridae	<i>Dasyplectis scabra</i>	Rhombic Egg-eater	Least Concern
Colubridae	<i>Dipsina multimaculata</i>	Dwarf Beaked Snake	Least Concern
Colubridae	<i>Telescopus beetzi</i>	Beetz's Tiger Snake	Least Concern
Cordylidae	<i>Karusasaurus polyzonus</i>	Karoo Girdled Lizard	Least Concern
Cordylidae	<i>Pseudocordylus microlepidotus fasciatus</i>	Karoo Crag Lizard	Least Concern
Elapidae	<i>Aspidelaps lubricus lubricus</i>	Coral Shield Cobra	Least Concern

Elapidae	<i>Elapsoidea sundevallii media</i>	Highveld Garter Snake	Least Concern
Elapidae	<i>Naja nivea</i>	Cape Cobra	Least Concern
Gekkonidae	<i>Chondrodactylus angulifer</i>	Giant Ground Gecko	Least Concern
Gekkonidae	<i>Chondrodactylus bibronii</i>	Bibron's Gecko	Least Concern
Gekkonidae	<i>Pachydactylus capensis</i>	Cape Gecko	Least Concern
Gekkonidae	<i>Pachydactylus latirostris</i>	Quartz Gecko	Least Concern
Gekkonidae	<i>Pachydactylus mariquensis</i>	Marico Gecko	Least Concern
Gekkonidae	<i>Pachydactylus oculatus</i>	Golden Spotted Gecko	Least Concern
Gekkonidae	<i>Pachydactylus purcelli</i>	Purcell's Gecko	Least Concern
Gekkonidae	<i>Ptenopus garrulus garrulus</i>	Common Barking Gecko	Least Concern
Lacertidae	<i>Meroles suborbitalis</i>	Spotted Desert Lizard	Least Concern
Lacertidae	<i>Nucras intertexta</i>	Spotted Sandveld Lizard	Least Concern
Lacertidae	<i>Nucras livida</i>	Karoo Sandveld Lizard	Least Concern
Lacertidae	<i>Pedioplanis laticeps</i>	Karoo Sand Lizard	Least Concern
Lacertidae	<i>Pedioplanis lineoocellata lineoocellata</i>	Spotted Sand Lizard	Least Concern
Lacertidae	<i>Pedioplanis lineoocellata pulchella</i>	Common Sand Lizard	Least Concern
Lacertidae	<i>Pedioplanis namaquensis</i>	Namaqua Sand Lizard	Least Concern
Lamprophiidae	<i>Atractaspis bibronii</i>	Bibron's Stiletto Snake	Least Concern
Lamprophiidae	<i>Boaedon capensis</i>	Brown House Snake	Least Concern
Lamprophiidae	<i>Lamprophis aurora</i>	Aurora House Snake	Least Concern
Lamprophiidae	<i>Lycophidion capense capense</i>	Cape Wolf Snake	Least Concern
Lamprophiidae	<i>Prosymna sundevallii</i>	Sundevall's Shovel-snout	Least Concern
Lamprophiidae	<i>Psammophis leightoni</i>	Cape Sand Snake	Least Concern
Lamprophiidae	<i>Psammophis notostictus</i>	Karoo Sand Snake	Least Concern
Lamprophiidae	<i>Psammophylax rhombeatus</i>	Spotted Grass Snake	Least Concern
Lamprophiidae	<i>Pseudaspis cana</i>	Mole Snake	Least Concern
Leptotyphlopidae	<i>Leptotyphlops scutifrons scutifrons</i>	Peters' Thread Snake	Least Concern
Pelomedusidae	<i>Pelomedusa galeata</i>	South African Marsh Terrapin	Not evaluated
Scincidae	<i>Acontias occidentalis</i>	Western Legless Skink	Least Concern
Scincidae	<i>Trachylepis capensis</i>	Cape Skink	Least Concern
Scincidae	<i>Trachylepis occidentalis</i>	Western Three-striped Skink	Least Concern
Scincidae	<i>Trachylepis spilogaster</i>	Kalahari Tree Skink	Least Concern
Scincidae	<i>Trachylepis sulcata sulcata</i>	Western Rock Skink	Least Concern
Scincidae	<i>Trachylepis variegata</i>	Variegated Skink	Least Concern
Testudinidae	<i>Chersobius boulengeri</i>	Karoo Padloper	Least Concern
Testudinidae	<i>Homopus femoralis</i>	Greater Padloper	Least Concern
Testudinidae	<i>Psammobates tentorius tentorius</i>	Karoo Tent Tortoise	Least Concern
Testudinidae	<i>Psammobates tentorius verroxii</i>	Verrox's Tent Tortoise	Least Concern
Testudinidae	<i>Stigmochelys pardalis</i>	Leopard Tortoise	Least Concern
Typhlopidae	<i>Afrottyphlops schlegelii</i>	Schlegel's Beaked Blind Snake	Least Concern
Typhlopidae	<i>Rhinotyphlops lalandei</i>	Delalande's Beaked Blind Snake	Least Concern
Typhlopidae	<i>Rhinotyphlops schinzi</i>	Schinzi's Beaked Blind Snake	Least Concern
Varanidae	<i>Varanus albigularis albigularis</i>	Rock Monitor	Least Concern
Varanidae	<i>Varanus niloticus</i>	Water Monitor	Least Concern
Viperidae	<i>Bitis arietans arietans</i>	Puff Adder	Least Concern
Amphibians			
Family	Scientific name	Common name	Conservation status
Brevicipitidae	<i>Breviceps adspersus</i>	Bushveld Rain Frog	Least Concern
Bufoidea	<i>Poyntonophrynus vertebralis</i>	Southern Pygmy Toad	Least Concern
Bufoidea	<i>Sclerophrys capensis</i>	Raucous Toad	Least Concern
Bufoidea	<i>Vandijkophrynus garipeensis garipeensis</i>	Karoo Toad	Least Concern
Hyperoliidae	<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern
Pipidae	<i>Xenopus laevis</i>	Common Platanna	Least Concern
Pyxicephalidae	<i>Amietia delalandii</i>	Delalande's River Frog	Least Concern
Pyxicephalidae	<i>Amietia fuscigula</i>	Cape River Frog	Least Concern
Pyxicephalidae	<i>Amietia poyntoni</i>	Poynton's River Frog	Least Concern
Pyxicephalidae	<i>Cacosternum boettgeri</i>	Common Caco	Least Concern
Pyxicephalidae	<i>Pyxicephalus adspersus</i>	Giant Bull Frog	Least Concern
Pyxicephalidae	<i>Tomopterna cryptotis</i>	Tremelo Sand Frog	Least Concern
Pyxicephalidae	<i>Tomopterna tandyi</i>	Tandy's Sand Frog	Least Concern

Table 1.2: Summary of mammals, reptiles and amphibians associated with the proposed corridor for the Kronos/Hydra 400kV power line.

Mammals			
Family	Scientific name	Common name	Conservation status
Bathyergidae	<i>Cryptomys hottentotus</i>	Southern African Mole-rat	Least Concern
Bovidae	<i>Antidorcas marsupialis</i>	Springbok	Least Concern
Bovidae	<i>Oryx gazella</i>	Gemsbok	Least Concern
Canidae	<i>Canis mesomelas</i>	Black-backed Jackal	Least Concern
Canidae	<i>Otocyon megalotis</i>	Bat-eared Fox	Least Concern
Cercopithecidae	<i>Papio ursinus</i>	Chacma Baboon	Least Concern
Felidae	<i>Caracal caracal</i>	Caracal	Least Concern
Felidae	<i>Felis catus</i>	Domestic Cat	Introduced
Felidae	<i>Felis nigripes</i>	Black-footed Cat	Threatened
Felidae	<i>Felis silvestris</i>	Wildcat	Least Concern
Herpestidae	<i>Atilax paludinosus</i>	Marsh Mongoose	Least Concern
Herpestidae	<i>Cynictis penicillata</i>	Yellow Mongoose	Least Concern
Hyaenidae	<i>Proteles cristata</i>	Aardwolf	Least Concern
Hystricidae	<i>Hystrix africae australis</i>	Cape Porcupine	Least Concern
Leporidae	<i>Lepus saxatilis</i>	Scrub Hare	Least Concern
Molossidae	<i>Tadarida aegyptiaca</i>	Egyptian Free-tailed Bat	Least Concern
Muridae	<i>Aethomys namaquensis</i>	Namaqua Rock Mouse	Least Concern
Muridae	<i>Desmodillus auricularis</i>	Cape Short-tailed Gerbil	Least Concern
Muridae	<i>Gerbilliscus brantsii</i>	Highveld Gerbil	Least Concern
Muridae	<i>Gerbilliscus paeba</i>	Paeba Hairy-footed Gerbil	Least Concern
Muridae	<i>Mastomys coucha</i>	Southern African Mastomys	Least Concern
Muridae	<i>Mastomys natalensis</i>	Natal Mastomys	Least Concern
Muridae	<i>Otomys auratus</i>	Southern African Vlei Rat	Near Threatened
Muridae	<i>Otomys unisulcatus</i>	Karoo Bush Rat	Least Concern
Muridae	<i>Rhodomys pumilio</i>	Xeric Four-striped Grass Rat	Least Concern
Mustelidae	<i>Lepus saxatilis</i>	Striped Polecat	Least Concern
Mustelidae	<i>Mellivora capensis</i>	Honey Badger	Least Concern
Procaviidae	<i>Procavia capensis capensis</i>	Cape Rock Hyrax	Least Concern
Suidae	<i>Phacochoerus africanus</i>	Common Warthog	Least Concern
Vespertilionidae	<i>Neoromicia capensis</i>	Cape Serotine	Least Concern
Viverridae	<i>Genetta genetta</i>	Common Genet	Least Concern
Viverridae	<i>Genetta tigrina</i>	Cape Genet	Least Concern
Reptiles			
Family	Scientific name	Common name	Conservation status
Agamidae	<i>Agama aculeata aculeata</i>	Common Ground Agama	Least Concern
Agamidae	<i>Agama atra</i>	Southern Rock Agama	Least Concern
Amphisbaenidae	<i>Monopeltis capensis</i>	Cape Worm Lizard	Least Concern
Colubridae	<i>Dasypeltis scabra</i>	Rhombic Egg-eater	Least Concern
Colubridae	<i>Dipsina multimaculata</i>	Dwarf Beaked Snake	Least Concern
Colubridae	<i>Telescopus beetzi</i>	Beetz's Tiger Snake	Least Concern
Cordylidae	<i>Karusasaurus polyzonus</i>	Karoo Girdled Lizard	Least Concern
Cordylidae	<i>Pseudocordylus microlepidotus fasciatus</i>	Karoo Crag Lizard	Least Concern
Elapidae	<i>Aspidelaps lubricus lubricus</i>	Coral Shield Cobra	Least Concern
Elapidae	<i>Elapsoidea sundevallii media</i>	Highveld Garter Snake	Least Concern
Elapidae	<i>Naja nivea</i>	Cape Cobra	Least Concern
Gekkonidae	<i>Chondrodactylus angulifer</i>	Giant Ground Gecko	Least Concern
Gekkonidae	<i>Chondrodactylus bibronii</i>	Bibron's Gecko	Least Concern
Gekkonidae	<i>Pachydactylus capensis</i>	Cape Gecko	Least Concern
Gekkonidae	<i>Pachydactylus latirostris</i>	Quartz Gecko	Least Concern
Gekkonidae	<i>Pachydactylus mariquensis</i>	Marico Gecko	Least Concern
Gekkonidae	<i>Pachydactylus oculatus</i>	Golden Spotted Gecko	Least Concern
Gekkonidae	<i>Pachydactylus purcelli</i>	Purcell's Gecko	Least Concern
Gekkonidae	<i>Ptenopus garrulus garrulus</i>	Common Barking Gecko	Least Concern
Lacertidae	<i>Meroles suborbitalis</i>	Spotted Desert Lizard	Least Concern
Lacertidae	<i>Nucras intertexta</i>	Spotted Sandveld Lizard	Least Concern
Lacertidae	<i>Nucras livida</i>	Karoo Sandveld Lizard	Least Concern
Lacertidae	<i>Pedioplanis laticeps</i>	Karoo Sand Lizard	Least Concern
Lacertidae	<i>Pedioplanis lineoocellata lineoocellata</i>	Spotted Sand Lizard	Least Concern
Lacertidae	<i>Pedioplanis lineoocellata pulchella</i>	Common Sand Lizard	Least Concern
Lacertidae	<i>Pedioplanis namaquensis</i>	Namaqua Sand Lizard	Least Concern
Lamprophiidae	<i>Atractaspis bibronii</i>	Bibron's Stiletto Snake	Least Concern

Lamprophiidae	<i>Boaedon capensis</i>	Brown House Snake	Least Concern
Lamprophiidae	<i>Lamprophis aurora</i>	Aurora House Snake	Least Concern
Lamprophiidae	<i>Lycophidion capense capense</i>	Cape Wolf Snake	Least Concern
Lamprophiidae	<i>Prosymna sundevallii</i>	Sundevall's Shovel-snout	Least Concern
Lamprophiidae	<i>Psammophis notostictus</i>	Karoo Sand Snake	Least Concern
Lamprophiidae	<i>Psammophylax rhombeatus</i>	Spotted Grass Snake	Least Concern
Lamprophiidae	<i>Pseudaspis cana</i>	Mole Snake	Least Concern
Leptotyphlopidae	<i>Leptotyphlops scutifrons scutifrons</i>	Peters' Thread Snake	Least Concern
Pelomedusidae	<i>Pelomedusa galeata</i>	South African Marsh Terrapin	Not evaluated
Scincidae	<i>Acontias occidentalis</i>	Western Legless Skink	Least Concern
Scincidae	<i>Trachylepis capensis</i>	Cape Skink	Least Concern
Scincidae	<i>Trachylepis occidentalis</i>	Western Three-striped Skink	Least Concern
Scincidae	<i>Trachylepis spilogaster</i>	Kalahari Tree Skink	Least Concern
Scincidae	<i>Trachylepis sulcata sulcata</i>	Western Rock Skink	Least Concern
Scincidae	<i>Trachylepis variegata</i>	Variiegated Skink	Least Concern
Testudinidae	<i>Chersobius boulengeri</i>	Karoo Padloper	Endangered
Testudinidae	<i>Homopus femoralis</i>	Greater Padloper	Least Concern
Testudinidae	<i>Psammobates tentorius tentorius</i>	Karoo Tent Tortoise	Least Concern
Testudinidae	<i>Psammobates tentorius verroxii</i>	Verrox's Tent Tortoise	Least Concern
Testudinidae	<i>Stigmochelys pardalis</i>	Leopard Tortoise	Least Concern
Typhlopidae	<i>Afrotyphlops schlegelii</i>	Schlegel's Beaked Blind Snake	Least Concern
Typhlopidae	<i>Rhinotyphlops lalandei</i>	Delalande's Beaked Blind Snake	Least Concern
Typhlopidae	<i>Rhinotyphlops schinzi</i>	Schinz's Beaked Blind Snake	Least Concern
Varanidae	<i>Varanus albigularis albigularis</i>	Rock Monitor	Least Concern
Varanidae	<i>Varanus niloticus</i>	Water Monitor	Least Concern
Viperidae	<i>Bitis arietans arietans</i>	Puff Adder	Least Concern
Amphibians			
Family	Scientific name	Common name	Conservation status
Brevicipitidae	<i>Breviceps adspersus</i>	Bushveld Rain Frog	Least Concern
Bufoidea	<i>Poyntonophrynus vertebralis</i>	Southern Pygmy Toad	Least Concern
Bufoidea	<i>Sclerophrys capensis</i>	Raucous Toad	Least Concern
Bufoidea	<i>Vandijkophrynus gariiepensis gariiepensis</i>	Karoo Toad	Least Concern
Hyperoliidae	<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern
Pipidae	<i>Xenopus laevis</i>	Common Platanna	Least Concern
Pyxicephalidae	<i>Amietia delalandii</i>	Delalande's River Frog	Least Concern
Pyxicephalidae	<i>Amietia fuscigula</i>	Cape River Frog	Least Concern
Pyxicephalidae	<i>Amietia poyntoni</i>	Poynton's River Frog	Least Concern
Pyxicephalidae	<i>Cacosternum boettgeri</i>	Common Caco	Least Concern
Pyxicephalidae	<i>Pyxicephalus adspersus</i>	Giant Bull Frog	Least Concern
Pyxicephalidae	<i>Tomopterna cryptotis</i>	Tremelo Sand Frog	Least Concern
Pyxicephalidae	<i>Tomopterna tandyi</i>	Tandy's Sand Frog	Least Concern

There is a possibility of finding the following red data species in the study area:

***Felis nigripes* (Threatened)**

Felis nigripes is a solitary, secretive and nocturnal felid endemic to the south-west arid zone of southern Africa. It is the smallest wild African cat and the second smallest cat in the world and adapted to hunting in short vegetation as it is predominantly a ground dweller and does not readily take to trees like other felids. The cat has large energy requirements (250 to 300 grams) and it would travel longer distances to actively search for food at night (4.5 to 16 km). This predator would either stalk or ambush prey in the dry, open savannah, grasslands and Karoo semi-deserts with sparse shrub and tree cover (mean annual rainfall of between 100 to 500 mm). The black-footed cat is endemic to the dry grassland or dwarf shrub, and savanna of the Karoo and Kalahari in southern Africa. During the day the cat uses termite mounds or unoccupied burrows of springhare (*Pedetes capensis*), aardvark (*Orycteropus afer*) and Cape porcupine (*Hystrix africaeaustralis*) as dens. Additionally, they often use occupied dens of aardwolf (*Proteles cristatus*). The cat has a strong preference for open dens that are

surrounded by short grasses and where there is high abundance of rodents or ground roosting birds (Mkhize and Zondi, 2022).

Otomys auratus – grassland type (Near Threatened)

The species is associated with the dryer Karoo Biomes where it is associated with well vegetated habitat with build nesting areas in dense bush. They are diurnal and would actively forage during the day. This makes them vulnerable to many predators, including raptors. There adaptations in the Karoo contribute to survival due to the lower fire incidence (i.e. lower threat to loss of nests).

Chersobius boulengeri (Endangered)

Chersobius boulengeri occurs in association with dolerite ridges and rocky outcrops of the southern Succulent and Nama Karoo biomes. Annual rainfall in its distribution range is low (approximately 150 to 400 mm) and relatively unpredictable with a coefficient of variation between 35 and 40% (Schulze, 1997). Most of the range receives late summer rains and temperatures are mild to hot and the incidence of frost is high in the interior. The species occurs in dwarf shrubland that often contains succulent and grassy elements and they take shelter under rocks in vegetated areas or in rock crevices (Boycott and Bourquin, 2000), but few rocky sites over the range offer suitable retreats for the species (Loehr and Hofmeyr, pers. obs., 2017). Females nest in summer and have single-egg clutches (Boycott and Bourquin, 2000).

1.5 Sensitive species

The Environmental Impact Assessment Regulations, 2014 (as amended) require that a Screening Tool Report (STR) is generated to identify important aspects for evaluation. The screening report assigned a high sensitivity to the animal theme due to the Ave species, which is classified as avifauna (separate study). The only terrestrial animal flagged in the report was the *Chersobius boulengeri*, assigned a medium sensitivity (Table 1.3 and Figure 1.3) however this species was not observed during the site survey. Table 1.4 gives an overview of the sensitivity of the different themes that may impacted by the powerline and associated infrastructure.

Table 1.3: Red data species listed in the Screening Tool Report (STR) (DEA, 2023). The information show the sensitivity of the species listed, the names of expected species and the presence or absence during this survey.

Sensitivity	Feature(s)	Present/Absent
Medium	<i>Chersobius boulengeri</i>	None observed, yet suitable habitat is present

Table 1.4: Sensitivity of the different themes as indicated in the Screening Tool Report (2023).

Theme/sensitivity	Very High	High	Medium	Low
Agriculture Theme			X	
Animal Species Theme		X		
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme		X		
Defence Theme	X			
Palaeontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

1.6 Sensitivity Assessment

It is required to assess each identified potential impact according to the following Impact Assessment Methodology described below. It has been formalised to comply with Regulation 31(2)(l) of the National Environmental Management Act (Act 107 of 1998) (NEMA), which states the following:

An environmental impact assessment report must contain all information that is necessary for the competent authority to consider the application and to reach a decision and must include:

- an assessment of each identified potentially significant impact, including:
 - **cumulative** impacts
 - the **nature** of the impact
 - the **extent** and **duration** of the impact
 - the **probability** of the impact occurring
 - the **degree** to which the **impact can be reversed**
 - the **degree** to which the impact may **cause irreplaceable loss of resources**
 - the **degree** to which the **impact can be mitigated**

Based on the above, the EIA Methodology will require that each potential impact identified is clearly described (providing the nature of the impact) and be assessed in terms of the following factors:

- **Extent (spatial scale)** - will the impact affect the national, regional or local environment or only that of the site?
- **Duration (temporal scale)** - how long will the impact last?
- **Magnitude (severity)** - will the impact be high, moderate or low?
- **Probability (likelihood of occurring)** - how likely is it that the impact may occur?

A numerical value has been linked to each factor to enable a scientific approach for determining the environmental significance (importance) of each identified potential impact.

Table 1.5: The ranking scales applicable for the environmental significance (importance) of each identified potential impact with the numerical value linked to each factor.

Occurrence	Duration:	Probability:
	5 – Permanent	5 – Definite/don't know
	4 - Long-term (ceases with the operational life)	4 – Highly probable
	3 - Medium-term (5-15 years)	3 – Medium probability
	2 - Short-term (0-5 years)	2 – Low probability
	1 – Immediate	1 – Improbable
	0 – None	
Severity	Extent/scale:	Magnitude:
	5 – International	10 - Very high/uncertain
	4 – National	8 – High
	3 – Regional	6 – Moderate
	2 – Local	4 – Low
	1 – Site only	2 – Minor
0 – None		

Table 1.6: The degree to which the potential impact can cause irreplaceable loss of resources is expressed in the classes as a percentage (%) of change.

Class	Change expressed as a percentage
-------	----------------------------------

5	100% - Permanent loss
4	75% - 99% - significant loss
3	50% - 74% - moderate loss
2	25% - 49% - minor loss
1	0% - 24% - limited loss

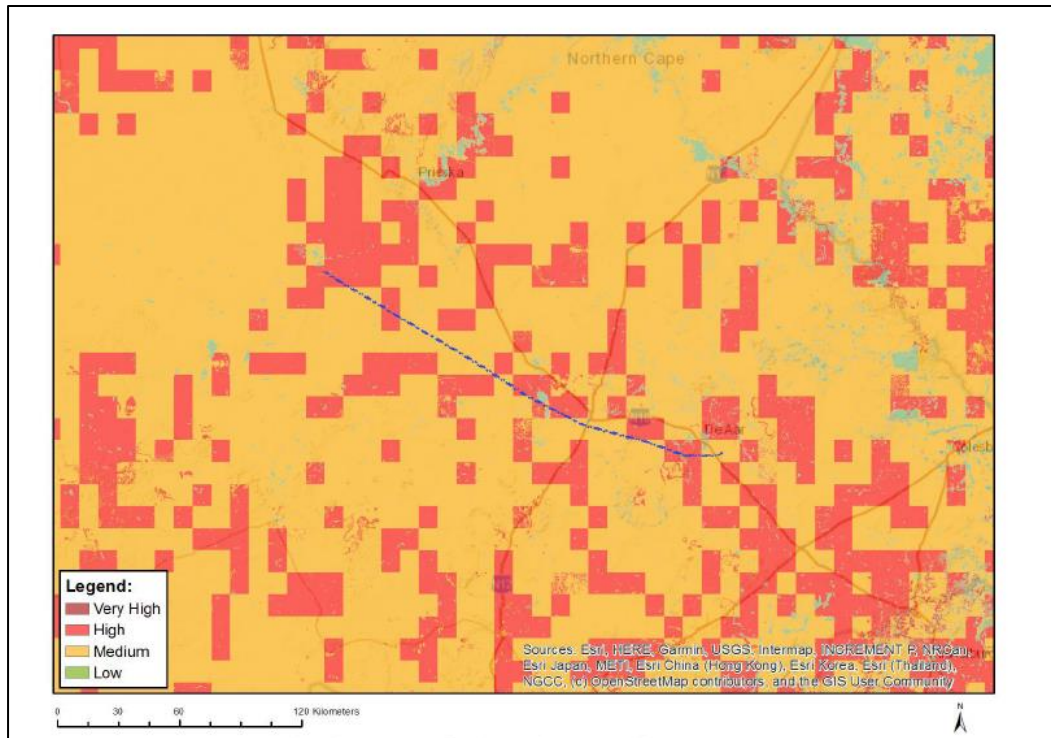


Figure 1.3: Map from the STR for the Animal Theme.

2 METHODOLOGY

A desktop assessment preceded the field survey to determine what animals (mammals, reptiles and amphibians) are associated with the study area. During May 2023, the field survey walk-down was conducted in the study area (Figures 1.1 and 1.2), and all of the possible impacted areas were visited. The photographs depict the general habitat associated with the study site.

During the survey, the corridor for the proposed 2nd 400 kV power line (Hydra/Kronos) were assessed and the animals or signs of activity were noted. It is important to note that the late summer survey and cooler conditions limited animal activity, especially the reptiles and amphibians.

3 RESULTS and DISCUSSION

3.1 General Survey

The study was conducted during a physical site walk-down on 12 – 22 May 2023. The team did the survey with vehicle support to cover the entire 187 km. During the survey, late rain had occurred but had no direct negative impact on the survey.

A general list of animals observed during the survey were compiled and include *Tragelaphus strepsiceros*, *Herpestes sanguineus*, *Cynictis penicillata*, *Raphicerus campestris*, *Oreotragus oreotragus*, *Procavia capensis*, *Pelea capreolus*, *Canis mesomelas*, *Otocyon megalotis*, *Oryx gazella*, *Antidorcas marsupialis*, *Psammobates tentorius tentorius*, *Cryptomys hottentotus* (mole hills), *Orycteropus afer* (feeding activity and dens), *Hystrix africae australis* (quills, feeding activities and dens), *Lepus saxatilis*, *Lepus saxatilis*, *Nucras intertexta* and *Pedioplanis lineoocellata pulchella*. It must be noted that low numbers were observed, however a family group of nine *Otocyon megalotis* was a highlight during the survey.

3.1.1 Summary of Protected Species

Habitat for the three (3) red data species are present. Regarding *Felis nigripes*, the larger study area presents suitable habitats (foraging and burrows) and potential food sources (e.g. rodents and birds). It must be noted that the animals are shy and will move away from the area during construction. Once construction is complete, there is a high probability that the small cats will return to the area.

The presence of *Otomys auratus* was not confirmed. The habitat, especially near drainage lines, will likely have some specimens present. The animals will move from the area during construction but return during the operational phase.

Chersobius boulengeri is associated with dolerite ridges and rocky outcrops and is only active for a short period, very early in the morning and late in the afternoons (generally). They are small animals and will not easily migrate from the activity zone. The chance of these animals being impacted is, therefore higher.

3.1.2 Habitat assessment

- The rocky areas (low outcrops, koppies and low mountains) are considered low to moderate sensitive areas related to the animals, including the farm Holput assessment (Farm 91).
 - All the rocky areas are considered to be sensitive habitats.
 - These areas are important habitats for birds, reptiles, mammals and bats with regard to habitation and foraging.
 - The streams and rivers (e.g. Dassiefontein se Leegte and Elandsfontein on the farm Brandfontein, the Ongers River at the Smaartt Irrigation Scheme, the Brulleegte on the farm Zoutaar and the Carnavonleegte on the farm Jonkwater) are important habitat (vegetation diversity) for the animals, including the amphibians.
 - This importance applies to all the smaller but not insignificant ephemeral and intermittent streams and drainage lines along the corridor for the new 400 kV power line.
 - The streams are also important migration corridors for animals and birds to the larger rivers draining to the Brak, Hartbees and Orange rivers.
- The current impacts associated with the habitat along the proposed new power line corridor vary marginally related to the intensity of activities.
 - Near settlements, the impacts are higher and are related to the settlement development, infrastructure, roads and pollution (mostly dumping of various types of refuse).

- On the farms, the impacts are primarily grazing and trampling, infrastructure (roads, fences, water points and livestock-keeping areas).
- The impacts along the proposed new corridor are related to the existing power line (i.e. the 1st Kronos/Hydra 400 kV line) as it is used by farmers (varying on the properties) for access to their livestock, windmills and water points).
- Some erosion was observed along the corridor – mostly at stream crossings and on the steeper slopes on koppies and low mountains (varying between the different farms).

3.1.3 Potential impacts on all animals

- A concern is poaching, where people can actively hunt or collect slower-moving animals (e.g. the tortoises) or by snaring (small mammals and birds).
- The higher traffic associated with construction can increase the potential for road kills.
- During construction, animals (mammals and reptiles) can be trapped in deep excavate holes.
 - It will be important to monitor all open pits daily.
 - It is recommended that where possible, holes for construction must be dug only when the teams are ready for construction.

3.1.4 Sensitivity Assessment and Compliance Statement

The sensitivity assessment (Appendix 1) summarises the most important aspects of the project and should be included with other specialist recommendations and assessments in the EMPr. The cumulative assessment focuses on the impacts related to the power line and excludes the existing land-use impacts associated with the corridor.

The impacts of the "operational phase" are in addition to the impacts and mitigations of the construction phase. As an example, the impacts of travel and maintenance will add to the impacts after the construction and therefore the significance before mitigation is valued as a new impact related to the operational phase.

In total, the loss of habitat will have the largest impact on the receiving environment. The animal community will be impacted during construction (moving away from the area and loss of life), but will return to the area once the construction is completed. The rate of return is difficult to predict (no studies to compare too), but it will depend on population densities and the habits of the species (some more shy than other).

If the existing access road for the 1st powerline is used, the loss of vegetation and habitat will be lower. It will be important that future maintenance access will be along the original access road. During maintenance, there is always a chance of animal loss (road kills and poaching), but the incidence will be low.

Terrestrial Animal Species Compliance Statement: The assessment regarding the animal species is captured in this report and will be appended to the Basic Assessment Report or Environmental Impact Assessment Report. The **medium sensitivity** data "represents suspected habitat for SCC based on occurrence records for these species collected prior to 2002 or is based on habitat suitability modelling". This assessment therefore, resulted in an investigation through a site inspection by the

compiling specialist. As required the assessment was undertaken within the study area. A follow-up survey will be conducted during the final walk down once the corridor is confirmed and the layout of the pylons are confirmed by the client (Eskom Holdings).

The site survey was done to determine the presence or likely presence of *Chersobius boulengeri* and other possible rare or red data species not listed in the STR.

After the assessment, it is possible to confirm the likely presence of *Chersobius boulengeri*, as suitable habitat in the rocky areas was observed. There was no evidence of any of the SCC i.e. a sighting or shells observed during the assessment. One can, **therefore confirm the "medium" sensitivity** as reflected in the screening tool report.

4 GENERAL COMMENTS and RECOMMENDATIONS

- The vegetation over the larger study corridor is in fair to moderately good condition.
- The corridor has a diverse habitat pattern.
 - It forms a mosaic pattern with patches of drainage lines, open shrubland, rocky outcrops, low hills and mountains.
 - This diversity is important in supporting the plants and animals in the semi-arid/arid areas.
- The denser vegetation associated with the drainage lines (especially the seasonal streams) is an important habitat for all animals – for habitation, food resources, and migration corridors.
- The rocky habitats are important for small birds, reptiles and small mammals (habitation) and are therefore considered sensitive areas.
- In order to limit impacts on the larger ecosystem, it is recommended that the existing corridor (1st power line) is used as access during construction and maintenance for the 2nd 400 kV power line.
- Placement of pylons must as far as possible avoid rocky outcrops, low hills and drainage lines. It will not be possible to avoid all areas, but with planning, the impacts can be limited.
- It is recommended that no travelling must be done under the new power line – access to construction sites must be from the existing corridor and road.
- Where possible, limit travel over outcrops, hills and low mountains. Use access from either side during construction to limit the negative impacts on the sloped areas. This will lower damage to the sensitive areas and the risk of slope erosion.
- A concern is poaching, where people can actively hunt or collect slower-moving animals (e.g. the tortoises) or by snaring (small mammals and birds).
- The higher traffic associated with construction can increase the potential for road kills.
- During construction, animals (mammals and reptiles) can be trapped in deep excavated holes.
 - It will be important to monitor all open pits daily.
 - It is recommended that where possible, holes for construction must be dug only when the teams are ready for construction.
- No lights are to be left on at the sites at night, as this will attract animals to these areas – e.g. increased insect activity and this will attract bats, snakes and small mammals feeding on the

insects, resulting in a higher incidence of snakes on the construction areas and animals being trapped in the open excavation pits.

- Pollution during construction relates to oil and diesel spills, solid waste pollution (construction material, plastic bottles and bags).

5 REFERENCES

Boycott R.C. and Bourquin O. (2000). *The Southern African Tortoise Book: A Guide to Southern African Tortoises, Terrapins and Turtles*. O. Borquin, 2000.

IUCN (2000). *IUCN Red List Categories*. Prepared by the IUCN Species Survival Commission. Gland, Switzerland.

Loehr, V. and Hofmeyr, M.D. pers. obs. (2017).

Northern Cape Department of Environment and Nature Conservation. 2016. *Northern Cape Critical Biodiversity Areas [Vector] 0*. Available from the Biodiversity GIS website, downloaded on 07 December 2022.

Mkhize, N and Zondi, Z. (2022). *Felis nigripes*. SANBI. <https://www.sanbi.org/animal-of-the-week/black-footed-cat/>

Schulze, R.E. (1997). In: *Vegetation of Southern Africa*, Cambridge University Press: 21–42.











Nature of the impact	Significance of potential impact BEFORE mitigation								Mitigation Measures	Significance of potential impact AFTER mitigation						Degree of mitigation (%)	
	Probability	Duration	Extent	Magnitude	Loss of Resources (%)	Significance	Probability	Duration		Extent	Magnitude	Loss of Resources (%)	Significance				
Construction Phase																	
Loss of habitat - total levelling of site	-	5	5	1	8	2	70	High	Small footprint for pylons - limit levelling and clearing of rocky areas.	5	5	1	4	1	50	Moderate	28.6
Light pollution	-	3	2	2	2	1	18	Low	Light pollution	2	2	1	2	1	10	Low	44.4
Loss - deep excavations	-	5	2	1	6	3	45	Moderate	Limit open pits, clear daily	5	2	1	4	1	35	Moderate	22.2
Poaching and road kills	-	5	2	2	4	1	40	Moderate	Limit driving, no activities outside footprint, monitoring and education.	4	2	1	4	1	28	Low	30.0
Pollution	-	5	2	1	4	1	35	Moderate	Limit impacts of spills and solid waste	5	2	1	2	1	25	Low	28.6
CUMULATIVE IMPACT RATING	-	5	2	1	6	2	45	Moderate		4	3	1	4	1	32	Moderate	28.9
Operational Phase																	
Loss of habitat	-	3	5	1	4	2	30	Moderate	Avoid driving outside and keep track of maintenance	2	5	1	2	1	16	Low	46.7
Light pollution	-	5	5	1	2	2	40	Moderate	No lights during the operational phase, except at substations. Limit lighting if possible.	5	5	1	2	1	40	Moderate	0.0
Loss - deep excavations	-	2	5	2	2	2	18	Low	Ensure all deep holes are closed after construction.	1	5	0	2	1	7	Low	61.1
Poaching and road kills	-	5	5	2	2	1	45	Moderate	Limit any activity during maintenance	2	5	2	2	1	18	Low	60.0
Pollution	-	1	5	1	4	2	10	Low	Ensure the team don't spill oil/diesel and solid waste	1	5	1	2	1	8	Low	20.0
CUMULATIVE IMPACT RATING	-	4	5	1	4	2	40	Moderate		2	5	1	2	1	16	Low	60.0