Faunal Assessment

Bundu Mining (Pty) Ltd Quarry Site

October 2023

Bundu Mining (Pty) Ltd – Proposed Mining Site (surface)

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EXECUTIVE SUMMARY

BioAssets CC was appointed by Umhlaba Environmental Consulting (on behalf of Bundu Mining (Pty) Ltd) to conduct an assessment of the faunal component associated with the study area. The survey will include the mammals and reptiles and a separate avifaunal survey by a specialist.

The objectives were:

- The desktop study prior to the site visit.
- To identify the different habitat types to ensure all sensitive areas are investigated.
- The field investigation to effectively determine the current status of the habitat associated with the area earmarked for future development.
- A rapid faunal survey of the site footprint and surrounding areas.

There are specific comments in the discussion related to the red data animals on site (Section 4).

Habitat

- It is clear that the area that will be developed, will result in a total loss of habitat for all biota.
- It is recommended that only areas near the foot of the mountain is developed and that the existing mining area must be developed in the near future.
- If possible, the development must not encroach on the crest of the mountain range. This part of the mountain will ensure a corridor for migration of all biota in the area, i.e. between populations and adjacent habitats.
- It will be important to ensure no erosion result from the proposed activity.

Faunal assessment

- As noted in the results, very little recent activity of animals were observed.
- It is assumed that the resent fire has driven most of the animals out of the area due to a lack of food and cover from predators.
- Recent activities are mostly from larger animals that travel longer distances to forage and have not necessarily re-established in the study area (lack of food and cover).
- The smaller animals (mammals and reptiles) will move back once food sources and plant cover are available.
- Some activity of rodents were noted on the northern side of the site footprint where is has a boundary with the grassland (cover and food).

Mammals

When evaluating the red data species, the following can be noted:

- No suitable habitat for the two species listed in the STR is present in the project footprint.
- For the other species listed in Table 3.1, suitable habitat is present once the vegetation has recovered to ensure cover and food resources.
- Most of the vulnerable species are not endemic to the area and are not currently present on site.

Amphibians

- The mountain slope has no suitable habitat for the amphibians and therefore it is assumed that it will not result in a direct loss of habitat.
- Other indirect impacts, e.g. pollution and siltation of water sources may result and must be addressed in management plans.

Reptiles

- Only one (1) reptile species is listed in the STR. As mentioned, there was no evidence of the presence of any specimens on the study site.
- This however doesn't exclude its presence on the site.
- Animals may move back once the vegetation has recovered (food resources and general cover from predators).
- It is recommended that an active search is conducted when development of an area commences and any animals found can then be relocated to areas outside the activity zone (consult a specialist for details on the activity).

General recommendations (Section 6):

- Limit activities on the mountain slopes (sensitive habitat for all biota, including animals and plants).
- The mountain is considered as a migration corridor for biota between populations and habitats.
- The rocky areas are important habitation areas for small mammals, birds, bats and reptiles.
- Limited activity on the higher slopes is not recommended, but rather exploit the lower slope – similar to the existing rock quarry.
- Developments must be done in small increments to allow small animals to move away from the activity zone.
- Any animals e.g. slow moving tortoises, must be moved to a similar habitat away from the mining area.
    - Consult with a specialist for detailed advice and guidance.
- All general activities must be focussed on the current activity footprint, e.g. roads.
- It is important to monitor all excavations daily to remove trapped animals.
    - These animals must be released well outside the activity zone.
- It is important to monitor all exposed areas to prevent erosion.

Declaration of Independence

The Environmental Impact Assessment Regulations (Appendix 6 of the EIA regulations R326 as amended), requires that certain information is included in specialist reports. The terms of reference, purpose of the report, methodologies, assumptions and 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 in specific 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.

Disclosure:

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

_____ 10 October 2023

Dr Wynand Vlok 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 habitat types at the site were investigated and it was therefore possible to complete a rapid survey and obtain information on the habitats that are present and the site, or that are likely to occur there.

Bio-physical constraints

Weather conditions during the period were warm with a moderate wind blowing. The region has received limited rainfall prior to the site visit and the vegetation was mostly dry as the survey was conducted towards the end of the dry season. The largest part of the site was damaged in a winter fire.

There was no standing water in the veld during the time of the survey and this will have obvious implications on the biodiversity (not applicable for 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 confidentiality constraints.

Implications for the study

All the different habitat types were observed during the field surveys. 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.

It is unlikely that more surveys would alter the outcome of this study radically.

Table of Contents

1 INTRODUCTION

Bundu Mining (Pty) Ltd is seeking an Environmental Specialist to complete the Basic Assessment studies and the environmental impact assessment reports to attain Environmental Authorisation for the relevant applications to continue with the expansion of the existing mining activities.

This scope of work include the faunal survey (separate avifaunal report) (Figure 1.1 and 1.2).

1.1 Terms of Reference

BioAssets CC was appointed by Umhlaba Environmental Consulting (on behalf of Bundu Mining (Pty) Ltd) to conduct an assessment of the faunal component associated with the study area. The survey will include the mammals and reptiles and a separate avifaunal survey by a specialist.

1.2 Objectives of the Survey

The objectives were:

- The desktop study prior to the site visit.
- To identify the different habitat types to ensure all sensitive areas are investigated.
- The field investigation to effectively determine the current status of the habitat associated with the area earmarked for future development.
- A rapid faunal survey of the site footprint and surrounding areas.

1.3 The Study Area

The locality map for the study area is depicted in Figure 1.1 and 1.2. The study site falls within the Tswane Municipality, Gauteng Province.

Figure 1.1: Broad outline of the project extent.

Figure 1.2: An aerial image of the study area.

2 METHODOLOGY

- Prior to the field survey, the desktop assessment was conducted and included:
  - The screening tool (DFFE)
  - Relevant literature searches, reports and assessments (faunal component)
- The field survey was done to determine the current state of the habitat – taking into consideration present and historic impacts
- The faunal survey consisted of a daytime assessment only
- Field work on the fauna aim to develop a broad characterisation of likely on-site faunal communities, with a particular focus on habitat suitability for species of conservation concern
- Fauna sampling will be limited to opportunistic encounters, active searches and observations of faunal tracks, scats and burrows.
- No trapping for any small mammals, retiles or scorpions were conducted
- Final layout of the project in Figurer 2.1 was used as guideline in the evaluation during the field assessment.

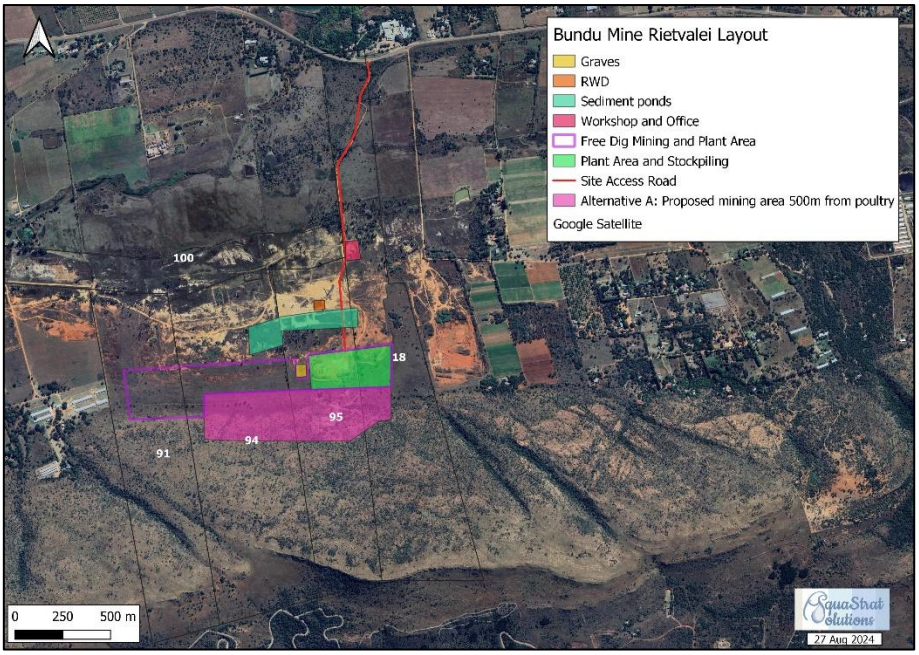

Figure 2.1: The layout plan of the proposed new mining activity on the site.

3 LITERATURE REVIEW

3.1 Screening Report Assessment

The screening tool report related to the terrestrial animal biodiversity (Figure 3.1) indicate that a portion to the east of the proposed development site is mapped as **high** sensitivity and to the west it is listed as **medium** sensitivity. The animals listed as **"medium sensitivity"** are ***Crocidura maquassiensis* (Vulnerable)** and ***Dasymys robertsii* (Vulnerable).** One reptile species, i.e. ***Kinixys lobatsiana* (Vulnerable - medium sensitivity)** and one invertebrate species, i.e. ***Clonia uvarovi* (Vulnerable - medium sensitivity)** are listed.

- ***Crocidura maquassiensis* (Vulnerable)** - This is a rare species endemic to South Africa, Swaziland and Zimbabwe, existing in moist grassland habitats in the Savannah and Grassland biomes. It is under a precautionary purview because, although the AOO estimate varies widely, very few specimens were recorded in recent surveys.

- ***Dasymys robertsii* (Vulnerable)** - African Marsh Rats are dependent on intact rivers and wetland ecosystems, as they have not been found in artificial or degraded wetlands, and are thus patchily distributed within the assessment region. Wetlands are continuing to be lost with agricultural and human settlement expansion, which in turn increases wetland degradation from overgrazing, water abstraction, pollution and invasive alien plant sprawl.

- ***Kinixys lobatsiana* (Vulnerable)** - The species is near-endemic to South Africa, extending from the north-eastern parts of the North West Province, eastwards through northern Gauteng and adjacent parts of Mpumalanga and northwards into Limpopo, south of the Soutpansberg. It is a savanna species that inhabits rocky hillsides in habitats of mixed thornveld and *Combretum* woodland, tropical Bushveld and Thornveld where vegetation ranges from dense, short shrubland to open tree savanna.

- ***Clonia uvarovi* (Vulnerable)** - It has only been recorded in five locations and the area the species inhabits are the tall woodland savannah of Gauteng and the North West Province. Little additional information apart from the area, extent and quality of its habitat are expected to be in decline due to grazing pressure, cultivation, urban development, invasive alien plants and climate change.

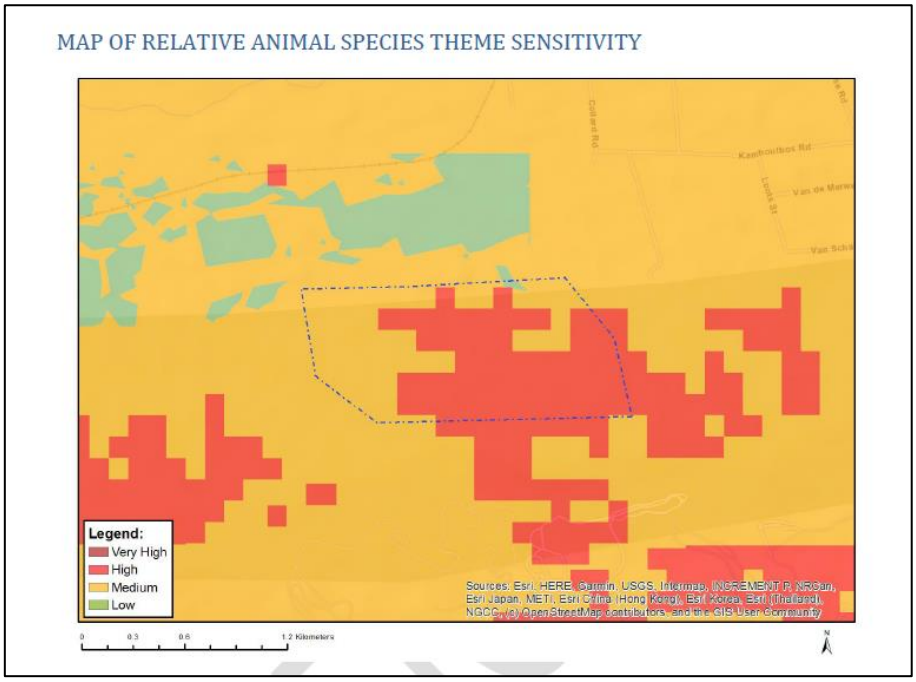

Figure 3.1: The "Animal Theme Sensitivity" map from the STR.

Table 3.1 is a summary list compiled from the data bases of all possible animals (amphibians, mammals and reptiles) of QDs 2527DB and 2528CA. It include a number of exotic (to South Africa) and translocated species (within South Africa) which are listed as "introduced" (marked purple). The conservation status is the recent assessments as reflected in the data sets. Locally translocated species (where sensitivity apply) are marked in blue.

3.2 General Animal Lists

Table 3.1: List of possible animals (amphibians, mammals and reptiles) found in the QDs 2527DB and 2528CA.

Family	*Genus and species*	Common name	Status
Amphibians			
Brevicipitidae	*Breviceps adspersus*	Bushveld Rain Frog	Least Concern
Bufonidae	*Poyntonophrynus fenoulheti*	Northern Pygmy Toad	Least Concern
Bufonidae	*Poyntonophrynus vertebralis*	Southern Pygmy Toad	Least Concern
Bufonidae	*Schismaderma carens*	Red Toad	Least Concern
Bufonidae	*Sclerophrys capensis*	Raucous Toad	Least Concern
Bufonidae	*Sclerophrys garmani*	Olive Toad	Least Concern
Bufonidae	*Sclerophrys gutturalis*	Guttural Toad	Least Concern
Bufonidae	*Sclerophrys poweri*	Power's Toad	Least Concern
Bufonidae	*Sclerophrys pusilla*	Flatbacked Toad	Least Concern

Hemisotidae	*Hemisus marmoratus*	Mottled Shovel-nosed Frog	Least Concern
Hyperoliidae	*Hyperolius marmoratus*	Painted Reed Frog	Least Concern
Hyperoliidae	*Kassina senegalensis*	Bubbling Kassina	Least Concern
Hyperoliidae	*Semnodactylus wealii*	Rattling Frog	Least Concern
Microhylidae	*Phrynomantis bifasciatus*	Banded Rubber Frog	Least Concern
Phrynobatrachidae	*Phrynobatrachus natalensis*	Snoring Puddle Frog	Least Concern
Pipidae	*Xenopus laevis*	Common Platanna	Least Concern
Ptychadenidae	*Ptychadena anchietae*	Plain Grass Frog	Least Concern
Ptychadenidae	*Ptychadena mossambica*	Broadbanded Grass Frog	Least Concern
Ptychadenidae	*Ptychadena porosissima*	Striped Grass Frog	Least Concern
Pyxicephalidae	*Amietia delalandii*	Delalande's River Frog	Least Concern
Pyxicephalidae	*Amietia fuscigula*	Cape River Frog	Least Concern
Pyxicephalidae	*Amietia poyntoni*	Poynton's River Frog	Least Concern
Pyxicephalidae	*Amietia vertebralis*	Maluti River Frog	Least Concern
Pyxicephalidae	*Cacosternum boettgeri*	Common Caco	Least Concern
Pyxicephalidae	*Pyxicephalus adspersus*	Giant Bull Frog	Least Concern
Pyxicephalidae	*Pyxicephalus edulis*	African Bull Frog	Least Concern
Pyxicephalidae	*Strongylopus fasciatus*	Striped Stream Frog	Least Concern
Pyxicephalidae	*Strongylopus grayii*	Clicking Stream Frog	Least Concern
Pyxicephalidae	*Tomopterna cryptotis*	Tremelo Sand Frog	Least Concern
Pyxicephalidae	*Tomopterna krugerensis*	Knocking Sand Frog	Least Concern
Pyxicephalidae	*Tomopterna natalensis*	Natal Sand Frog	Least Concern
Pyxicephalidae	*Tomopterna tandyi*	Tandy's Sand Frog	Least Concern
Rhacophoridae	*Chiromantis xerampelina*	Southern Foam Nest Frog	Least Concern
Mammals			
Bovidae	*Addax nasomaculatus*	Addax	Introduced
Bovidae	*Aepyceros melampus*	Impala	Least Concern
Bovidae	*Alcelaphus buselaphus*	Hartebeest	Least Concern
Bovidae	*Alcelaphus buselaphus caama*	Red Hartebeest	Least Concern
Bovidae	*Antidorcas marsupialis*	Springbok	Least Concern
Bovidae	*Cephalophus leucogaster*	White-bellied Duiker	Introduced
Bovidae	*Connochaetes gnou*	Black Wildebeest	Least Concern
Bovidae	*Connochaetes taurinus*	Blue Wildebeest	Least Concern
Bovidae	*Damaliscus lunatus*	Common Tsessebe	Least Concern
Bovidae	*Damaliscus pygargus phillipsi*	Blesbok	Least Concern
Bovidae	*Damaliscus pygargus pygargus*	Bontebok	Vulnerable
Bovidae	*Hippotragus equinus*	Roan Antelope	Endangered
Bovidae	*Hippotragus niger*	Sable Antelope	Least Concern
Bovidae	*Kobus ellipsiprymnus*	Waterbuck	Least Concern
Bovidae	*Kobus leche*	Lechwe	Introduced
Bovidae	*Litocranius walleri*	Gerenuk	Introduced
Bovidae	*Neotragus moschatus*	Suni	Introduced
Bovidae	*Oreotragus oreotragus*	Klipspringer	Least Concern
Bovidae	*Oryx dammah*	Scimitar-horned Oryx	Introduced
Bovidae	*Oryx gazella*	Gemsbok	Least Concern
Bovidae	*Ourebia ourebi*	Oribi	Endangered
Bovidae	*Pelea capreolus*	Vaal Rhebok	Least Concern
Bovidae	*Philantomba monticola*	Blue Duiker	Vulnerable
Bovidae	*Raphicerus campestris*	Steenbok	Least Concern
Bovidae	*Raphicerus melanotis*	Cape Grysbok	Least Concern
Bovidae	*Redunca arundinum*	Southern Reedbuck	Least Concern
Bovidae	*Redunca fulvorufula*	Mountain Reedbuck	Least Concern
Bovidae	*Sylvicapra grimmia*	Bush Duiker	Least Concern
Bovidae	*Syncerus caffer*	African Buffalo	Least Concern
Bovidae	*Taurotragus oryx*	Common Eland	Least Concern
Bovidae	*Tragelaphus angasii*	Nyala	Least Concern
Bovidae	*Tragelaphus scriptus*	Bushbuck	Least Concern
Bovidae	*Tragelaphus spekii*	Sitatunga	Least Concern
Bovidae	*Tragelaphus strepsiceros*	Greater Kudu	Least Concern
Camelidae	*Camelus dromedarius*	One-humped Camel	Introduced
Canidae	*Canis mesomelas*	Black-backed Jackal	Least Concern
Canidae	*Lycaon pictus*	African wild dog	Endangered
Canidae	*Otocyon megalotis*	Bat-eared Fox	Least Concern

Canidae	*Vulpes chama*	Cape Fox	Least Concern
Caviidae	*Dolichotis patagonum*	Patagonian Mara	Introduced
Cercopithecidae	*Chlorocebus pygerythrus*	Vervet Monkey	Least Concern
Cercopithecidae	*Colobus polykomos*	King Colobus	Introduced
Cercopithecidae	*Papio cynocephalus*	Yellow Baboon	Least Concern
Cercopithecidae	*Papio ursinus*	Chacma Baboon	Least Concern
Cervidae	*Dama dama*	Fallow Deer	Introduced
Chrysochloridae	*Chrysospalax villosus*	Rough-haired Golden Mole	Vulnerable
Chrysochloridae	*Neamblysomus julianae*	Juliana's Golden Mole	Endangered
Elephantidae	*Loxodonta africana*	African Bush Elephant	Vulnerable
Emballonuridae	*Taphozous (Taphozous) mauritianus*	Mauritian Tomb Bat	Least Concern
Equidae	*Equus grevyi*	Grévy's Zebra	Introduced
Equidae	*Equus quagga*	Plains Zebra	Near Threatened
Equidae	*Equus zebra hartmannae*	Hartmann's Mountain Zebra	Introduced
Erinaceidae	*Atelerix frontalis*	Southern African Hedgehog	Near Threatened
Felidae	*Acinonyx jubatus*	Cheetah	Vulnerable
Felidae	*Caracal caracal*	Caracal	Least Concern
Felidae	*Felis catus*	Domestic Cat	Introduced
Felidae	*Felis nigripes*	Black-footed Cat	Vulnerable
Felidae	*Felis silvestris*	Wildcat	Least Concern
Felidae	*Leptailurus serval*	Serval	Near Threatened
Felidae	*Panthera leo*	Lion	Least Concern
Felidae	*Panthera pardus*	Leopard	Vulnerable
Galagidae	*Galago moholi*	Mohol Bushbaby	Least Concern
Galagidae	*Galago senegalensis*	Senegal Bushbaby	Introduced
Giraffidae	*Giraffa giraffa*	South African Giraffe	Least Concern
Gliridae	*Graphiurus (Graphiurus) microtis*	Large Savanna African Dormouse	Least Concern
Gliridae	*Graphiurus (Graphiurus) murinus*	Forest African Dormouse	Least Concern
Gliridae	*Graphiurus (Graphiurus) platyops*	Flat-headed African Dormouse	Data deficient
Herpestidae	*Atilax paludinosus*	Marsh Mongoose	Least Concern
Herpestidae	*Cynictis penicillata*	Yellow Mongoose	Least Concern
Herpestidae	*Helogale parvula*	Common Dwarf Mongoose	Least Concern
Herpestidae	*Herpestes sanguineus*	Slender Mongoose	Least Concern
Herpestidae	*Ichneumia albicauda*	White-tailed Mongoose	Least Concern
Herpestidae	*Mungos mungo*	Banded Mongoose	Least Concern
Herpestidae	*Suricata suricatta*	Meerkat	Least Concern
Hippopotamidae	*Hippopotamus amphibius*	Common Hippopotamus	Least Concern
Hipposideridae	*Cloeotis percivali*	Percival's Short-eared Trident Bat	Endangered
Hipposideridae	*Hipposideros caffer*	Sundevall's Leaf-nosed Bat	Least Concern
Hominidae	*Pan troglodytes*	Common Chimpanzee	Introduced
Hyaenidae	*Crocuta crocuta*	Spotted Hyaena	Near Threatened
Hyaenidae	*Hyaena brunnea*	Brown Hyena	Near Threatened
Hyaenidae	*Proteles cristata*	Aardwolf	Least Concern
Hystricidae	*Hystrix africaeaustralis*	Cape Porcupine	Least Concern
Leporidae	*Lepus capensis*	Cape Hare	Least Concern
Leporidae	*Lepus saxatilis*	Scrub Hare	Least Concern
Leporidae	*Pronolagus randensis*	Jameson's Red Rock Hare	Least Concern
Leporidae	*Pronolagus rupestris*	Smith's Red Rock Hare	Least Concern
Macroscelididae	*Elephantulus brachyrhynchus*	Short-snouted Elephant Shrew	Least Concern
Macroscelididae	*Elephantulus edwardii*	Cape Elephant Shrew	Least Concern
Macroscelididae	*Elephantulus intufi*	Bushveld Elephant Shrew	Least Concern
Macroscelididae	*Elephantulus myurus*	Eastern Rock Elephant Shrew	Least Concern
Manidae	*Smutsia temminckii*	Ground Pangolin	Vulnerable
Molossidae	*Mops (Mops) condylurus*	Angolan Free-tailed Bat	Least Concern
Molossidae	*Mops (Mops) midas*	Midas' Free-tailed Bat	Least Concern
Molossidae	*Sauromys petrophilus*	Roberts's Flat-headed Bat	Least Concern
Molossidae	*Tadarida aegyptiaca*	Egyptian Free-tailed Bat	Least Concern
Muridae	*Acomys (Acomys) spinosissimus*	Southern African Spiny Mouse	Least Concern
Muridae	*Aethomys chrysophilus*	Red Veld Aethomys	Least Concern
Muridae	*Aethomys ineptus*	Tete Veld Aethomys	Least Concern
Muridae	*Aethomys namaquensis*	Namaqua Rock Mouse	Least Concern
Muridae	*Dasymys incomtus*	Common Dasymys	Near Threatened
Muridae	*Dasymys robertsii*	Water Rat	Vulnerable
Muridae	*Desmodillus auricularis*	Cape Short-tailed Gerbil	Least Concern
Muridae	*Gerbilliscus brantsii*	Highveld Gerbil	Least Concern
Muridae	*Gerbilliscus leucogaster*	Bushveld Gerbil	Least Concern
Muridae	*Lemniscomys rosalia*	Single-Striped Lemniscomys	Least Concern

Muridae	*Mastomys coucha*	Southern African Mastomys	Least Concern
Muridae	*Mastomys natalensis*	Natal Mastomys	Least Concern
Muridae	*Mus (Nannomys) indutus*	Desert Pygmy Mouse	Least Concern
Muridae	*Mus (Nannomys) minutoides*	Southern African Pygmy Mouse	Least Concern
Muridae	*Mus musculus musculus*		Least concern
Muridae	*Otomys angoniensis*	Angoni Vlei Rat	Least Concern
Muridae	*Otomys auratus*	Southern African Vlei Rat (Grassland type)	Near Threatened
Muridae	*Rattus rattus*	Roof Rat	Least Concern
Muridae	*Rattus tanezumi*	Oriental House Rat	Introduced
Muridae	*Rhabdomys bechuanae*	Striped Mouse	Least Concern
Muridae	*Rhabdomys dilectus*	Mesic Four-striped Grass Rat	Least Concern
Muridae	*Rhabdomys pumilio*	Xeric Four-striped Grass Rat	Least Concern
Muridae	*Thallomys paedulcus*	Acacia Thallomys	Least Concern
Mustelidae	*Aonyx capensis*	African Clawless Otter	Near Threatened
Mustelidae	*Hydrictis maculicollis*	Spotted-necked Otter	Least Concern
Mustelidae	*Ictonyx striatus*	Striped Polecat	Least Concern
Mustelidae	*Mellivora capensis*	Honey Badger	Least Concern
Mustelidae	*Poecilogale albinucha*	African Striped Weasel	Near Threatened
Nesomyidae	*Dendromus melanotis*	Gray African Climbing Mouse	Least Concern
Nesomyidae	*Dendromus mystacalis*	Chestnut African Climbing Mouse	Least Concern
Nesomyidae	*Malacothrix typica*	Large-eared African Desert Mouse	Least Concern
Nesomyidae	*Mystromys albicaudatus*	African White-tailed Rat	Vulnerable
Nesomyidae	*Saccostomus campestris*	Southern African Pouched Mouse	Least Concern
Nesomyidae	*Steatomys pratensis*	Common African Fat Mouse	Least Concern
Nycteridae	*Nycteris thebaica*	Egyptian Slit-faced Bat	Least Concern
Orycteropodidae	*Orycteropus afer*	Aardvark	Least Concern
Otariidae	*Arctocephalus pusillus pusillus*	Brown Fur Seal	Least Concern
Pedetidae	*Pedetes capensis*	South African Spring Hare	Least Concern
Procaviidae	*Procavia capensis capensis*	Cape Rock Hyrax	Least Concern
Pteropodidae	*Eidolon helvum*	African Straw-colored Fruit Bat	Least Concern
Pteropodidae	*Epomophorus wahlbergi*	Wahlberg's Epauletted Fruit Bat	Least Concern
Rhinolophidae	*Rhinolophus blasii*	Blasius's Horseshoe Bat	Near Threatened
Rhinolophidae	*Rhinolophus capensis*	Cape Horseshoe Bat	Least Concern
Rhinolophidae	*Rhinolophus clivosus*	Geoffroy's Horseshoe Bat	Least Concern
Rhinolophidae	*Rhinolophus darlingi*	Darling's Horseshoe Bat	Least Concern
Rhinolophidae	*Rhinolophus hildebrandtii*	Hildebrandt's Horseshoe Bat	Near Threatened
Rhinolophidae	*Rhinolophus simulator*	Bushveld Horseshoe Bat	Least Concern
Sciuridae	*Paraxerus cepapi*	Smith's Bush Squirrel	Least Concern
Sciuridae	*Xerus inauris*	South African Ground Squirrel	Least Concern
Soricidae	*Crocidura cyanea*	Reddish-gray Musk Shrew	Least Concern
Soricidae	*Crocidura fuscomurina*	Bicolored Musk Shrew	Least Concern
Soricidae	*Crocidura hirta*	Lesser Red Musk Shrew	Least Concern
Soricidae	*Crocidura maquassiensis*	Makwassie Musk Shrew	Vulnerable
Soricidae	*Crocidura mariquensis*	Swamp Musk Shrew	Near Threatened
Soricidae	*Crocidura silacea*	Lesser Gray-brown Musk Shrew	Least Concern
Soricidae	*Myosorex cafer*	Dark-footed Mouse Shrew	Vulnerable
Soricidae	*Myosorex varius*	Forest Shrew	Least Concern
Soricidae	*Suncus infinitesimus*	Least Dwarf Shrew	Least Concern
Soricidae	*Suncus lixus*	Greater Dwarf Shrew	Least Concern
Soricidae	*Suncus varilla*	Lesser Dwarf Shrew	Least Concern
Suidae	*Phacochoerus aethiopicus*	Desert Warthog	Introduced
Suidae	*Phacochoerus africanus*	Common Warthog	Least Concern
Suidae	*Potamochoerus larvatus*	Bush-pig	Least Concern
Suidae	*Potamochoerus porcus*	Red River Hog	Introduced
Suidae	*Sus scrofa*	Wild Boar	Introduced
Thryonomyidae	*Thryonomys swinderianus*	Greater Cane Rat	Least Concern
Vespertilionidae	*Eptesicus (Eptesicus) hottentotus*	Long-tailed Serotine	Least Concern
Vespertilionidae	*Miniopterus fraterculus*	Lesser Long-fingered Bat	Least Concern
Vespertilionidae	*Miniopterus natalensis*	Natal Long-fingered Bat	Least Concern
Vespertilionidae	*Miniopterus schreibersii*	Schreibers's Long-fingered Bat	Near Threatened
Vespertilionidae	*Myotis tricolor*	Temminck's Myotis	Least Concern
Vespertilionidae	*Myotis welwitschii*	Welwitsch's Myotis	Least Concern
Vespertilionidae	*Neoromicia capensis*	Cape Serotine	Least Concern
Vespertilionidae	*Pipistrellus (Pipistrellus) hesperidus*	Dusky Pipistrelle	Least Concern
Vespertilionidae	*Pipistrellus (Pipistrellus) rusticus*	Rusty Pipistrelle	Near Threatened
Vespertilionidae	*Pipistrellus zuluensis*	Zulu Serotine	Least Concern
Vespertilionidae	*Scotophilus borbonicus*	Réunion House Bat	Introduced

Vespertilionidae	*Scotophilus dinganii*	Yellow-bellied House Bat	Least Concern
Viveridae	*Genetta maculata*	Common Large-spotted Genet	Least Concern
Viverridae	*Civettictis civetta*	African Civet	Least Concern
Viverridae	*Genetta genetta*	Common Genet	Least Concern
Viverridae	*Genetta tigrina*	Cape Genet	Least Concern
Reptiles			
Agamidae	*Acanthocercus atricollis*	Southern Tree Agama	Least Concern
Agamidae	*Agama aculeata distanti*	Distant's Ground Agama	Least Concern
Agamidae	*Agama atra*	Southern Rock Agama	Least Concern
Amphisbaenidae	*Monopeltis infuscata*	Dusky Worm Lizard	Least Concern
Chamaeleonidae	*Chamaeleo dilepis*	Common Flap-neck Chameleon	Least Concern
Colubridae	*Crotaphopeltis hotamboeia*	Red-lipped Snake	Least Concern
Colubridae	*Dasypeltis scabra*	Rhombic Egg-eater	Least Concern
Colubridae	*Dispholidus typus viridis*	Northern Boomslang	Least Concern
Colubridae	*Philothamnus hoplogaster*	South Eastern Green Snake	Least Concern
Colubridae	*Philothamnus occidentalis*	Western Natal Green Snake	Least Concern
Colubridae	*Philothamnus semivariegatus*	Spotted Bush Snake	Least Concern
Colubridae	*Telescopus semiannulatus*	Eastern Tiger Snake	Least Concern
Cordylidae	*Chamaesaura aenea*	Coppery Grass Lizard	Near Threatened
Cordylidae	*Cordylus jonesii*	Jones' Girdled Lizard	Least Concern
Cordylidae	*Cordylus vittifer*	Common Girdled Lizard	Least Concern
Elapidae	*Aspidelaps scutatus scutatus*	Speckled Shield Cobra	Least Concern
Elapidae	*Elapsoidea sundevallii media*	Highveld Garter Snake	Least Concern
Elapidae	*Hemachatus haemachatus*	Rinkhals	Least Concern
Elapidae	*Naja annulifera*	Snouted Cobra	Least Concern
Elapidae	*Naja mossambica*	Mozambique Spitting Cobra	Least Concern
Gekkonidae	*Chondrodactylus turneri*	Turner's Gecko	Least Concern
Gekkonidae	*Hemidactylus mabouia*	Common Tropical House Gecko	Least Concern
Gekkonidae	*Lygodactylus capensis*	Common Dwarf Gecko	Least Concern
Gekkonidae	*Pachydactylus affinis*	Transvaal Gecko	Least Concern
Gekkonidae	*Pachydactylus capensis*	Cape Gecko	Least Concern
Gerrhosauridae	*Gerrhosaurus flavigularis*	Yellow-throated Plated Lizard	Least Concern
Lacertidae	*Ichnotropis capensis*	Ornate Rough-scaled Lizard	Least Concern
Lacertidae	*Meroles squamulosus*	Common Rough-scaled Lizard	Least Concern
Lacertidae	*Nucras holubi*	Holub's Sandveld Lizard	Least Concern
Lacertidae	*Nucras intertexta*	Spotted Sandveld Lizard	Least Concern
Lacertidae	*Nucras lalandii*	Delalande's Sandveld Lizard	Least Concern
Lacertidae	*Nucras ornata*	Ornate Sandveld Lizard	Least Concern
Lacertidae	*Pedioplanis lineoocellata lineoocellata*	Spotted Sand Lizard	Least Concern
Lamprophiidae	*Amblyodipsas polylepis polylepis*	Common Purple-glossed Snake	Least Concern
Lamprophiidae	*Aparallactus capensis*	Black-headed Centipede-eater	Least Concern
Lamprophiidae	*Atractaspis bibronii*	Bibron's Stiletto Snake	Least Concern
Lamprophiidae	*Atractaspis duerdeni*	Duerden's Stiletto Snake	Least Concern
Lamprophiidae	*Boaedon capensis*	Brown House Snake	Least Concern
Lamprophiidae	*Duberria lutrix lutrix*	South African Slug-eater	Least Concern
Lamprophiidae	*Homoroselaps dorsalis*	Striped Harlequin Snake	Near Threatened
Lamprophiidae	*Homoroselaps lacteus*	Spotted Harlequin Snake	Least Concern
Lamprophiidae	*Lamprophis aurora*	Aurora House Snake	Least Concern
Lamprophiidae	*Limaformosa capensis*	Common File Snake	Least Concern
Lamprophiidae	*Lycodonomorphus inornatus*	Olive House Snake	Least Concern
Lamprophiidae	*Lycodonomorphus rufulus*	Brown Water Snake	Least Concern
Lamprophiidae	*Lycophidion capense capense*	Cape Wolf Snake	Least Concern
Lamprophiidae	*Prosymna bivittata*	Two-striped Shovel-snout	Least Concern
Lamprophiidae	*Prosymna sundevallii*	Sundevall's Shovel-snout	Least Concern
Lamprophiidae	*Psammophis brevirostris*	Short-snouted Grass Snake	Least Concern
Lamprophiidae	*Psammophis crucifer*	Cross-marked Grass Snake	Least Concern
Lamprophiidae	*Psammophis leightoni*	Cape Sand Snake	Vulnerable
Lamprophiidae	*Psammophis subtaeniatus*	Western Yellow-bellied Sand Snake	Least Concern
Lamprophiidae	*Psammophylax rhombeatus*	Spotted Grass Snake	Least Concern
Lamprophiidae	*Psammophylax tritaeniatus*	Striped Grass Snake	Least Concern
Lamprophiidae	*Pseudaspis cana*	Mole Snake	Least Concern
Leptotyphlopidae	*Leptotyphlops distanti*	Distant's Thread Snake	Least Concern
Leptotyphlopidae	*Leptotyphlops incognitus*	Incognito Thread Snake	Least Concern
Leptotyphlopidae	*Leptotyphlops scutifrons scutifrons*	Peters' Thread Snake	Least Concern
Pelomedusidae	*Pelomedusa galeata*	South African Marsh Terrapin	Least Concern
Pelomedusidae	*Pelusios sinuatus*	Serrated Hinged Terrapin	Least Concern
Pythonidae	*Python natalensis*	Southern African Python	Least Concern

Scincidae	*Acontias gracilicauda*	Thin-tailed Legless Skink	Least Concern
Scincidae	*Acontias occidentalis*	Western Legless Skink	Least Concern
Scincidae	*Mochlus sundevallii*	Sundevall's Writhing Skink	Least Concern
Scincidae	*Panaspis wahlbergii*	Wahlberg's Snake-eyed Skink	Least Concern
Scincidae	*Trachylepis capensis*	Cape Skink	Least Concern
Scincidae	*Trachylepis damarana*	Damara Variable Skink	
Scincidae	*Trachylepis laevigata*	Striped Variable Skink	Least Concern
Scincidae	*Trachylepis margaritifera*	Rainbow Skink	Least Concern
Scincidae	*Trachylepis punctatissima*	Speckled Rock Skink	Least Concern
Testudinidae	*Kinixys lobatsiana*	Lobatse Hinged Tortoise	Least Concern
Testudinidae	*Stigmochelys pardalis*	Leopard Tortoise	Least Concern
Typhlopidae	*Afrotyphlops bibronii*	Bibron's Blind Snake	Least Concern
Typhlopidae	*Rhinotyphlops lalandei*	Delalande's Beaked Blind Snake	Least Concern
Varanidae	*Varanus albigularis albigularis*	Rock Monitor	Least Concern
Varanidae	*Varanus niloticus*	Water Monitor	Least Concern
Viperidae	*Bitis arietans arietans*	Puff Adder	Least Concern
Viperidae	*Causus rhombeatus*	Rhombic Night Adder	Least Concern

3.3 The Gauteng C-Plan 3.3

The main purposes of C-Plan 3.3 are:

- to serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process;
- to inform protected area expansion and biodiversity stewardship programmes in the province;
- to serve as a basis for development of Bioregional Plans in municipalities within the province (C-Plan 3.3, 2011).

Within the C-Plan the areas of concern relate to conservation and protection are the protected areas (PA), the Critical Biodiversity areas (CBA) and the Ecological Support Areas (ESA).

- CBAs (which include irreplaceable, important and protected areas). A CBA is an area considered important for the survival of threatened species and includes valuable ecosystems such as wetlands, untransformed vegetation, and ridges
- An ESA provides connectivity and important ecological processes between CBAs and is therefore important in terms of habitat conservation.

According to the assessment, the proposed study site is within an **ESA** (Figure 3.2) and is related to the mountain and ridges on the property. Within the C-Plan Assessment the importance of the site is listed as "**terrestrial biodiversity**" and will include the habitat, vegetation and the animals.

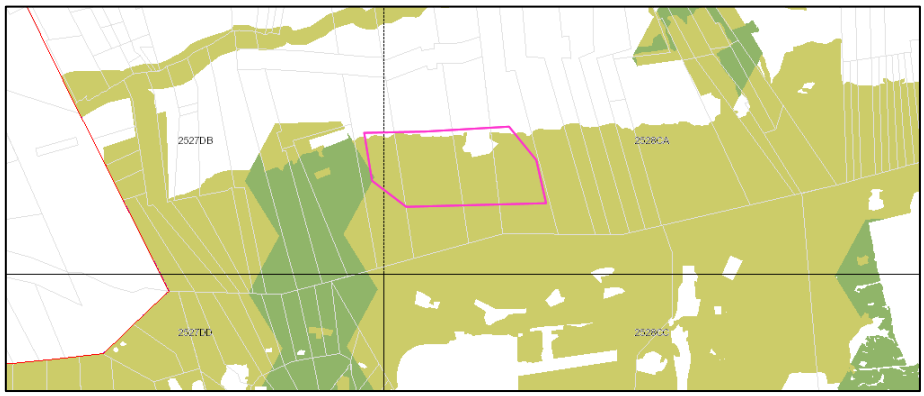

Figure 3.2: The map extracted from the C-Plan (3.3) (2011) assessment with the site marked in purple. The dark green represent the CBAs and the pale green the ESAs and depicted from the database.

4 RESULTS and DISCUSSION

The habitat that forms part of the proposed development area is on the northern aspect of the mountain range (Waterberg/Daspooort range) with its northern boundary merging with the grassland area between the mountain ranges (Waterberg/Daspooort and the Magalies Mountains to the north) (Figure 1.1 and 1.2). The lower slopes of the mountain where the current sand mining activities are taking place is modified by historic mining, the current sand mining operations, roads and old farm infrastructure (e.g. buildings, impoundments and canals).

The area above the current activities (south of operations) have been subject to a recent fire that have ravaged almost the full extent of the proposed development site. Apart from this impact, the general habitat is in a good condition. The rocky nature of the area indicate potential habitation habitat for a variety of smaller animals (i.e. reptiles, mammals (including bats) and birds). Very little recent activity of animals were observed, as the habitat is exposed after the fire and the lack of vegetation will have impacted the resident animals during the winter.

4.1 Faunal assessment

- The faunal assessment was conducted during a day-time survey, and observations and signs of animals (burrows, scat and tracks) were noted.
- The recent fire had a negative impact on the animals.
- Very little recent activity was observed i.e. fresh scat or burrowing.
    - Most of the droppings seen were very old.
    - Some fresh rodent droppings were observed near the edge between the burnt area and the grassland (not damaged by the fire).
    - Scat from a predator, possibly *Caracal caracal* was observed.
    - Droppings and digging activities of *Hystrix africaeaustralis* were noted.
    - Fresh droppings from *Tragelaphus strepsiceros* were noted – both of a mature and young animal.
    - No activity from reptiles basking in the sun were observed – one can assume that most animals have moved after the fire and will return once the summer rains have fallen and the vegetation has recovered.
    - A single *Giraffa (camelopardalis) giraffa* was observed on the boundary between the grassland area and the lower slopes on the mountain.
    - Some mole rat activity was noted on the lower slopes of the mountain in the deeper soils adjacent to the grassland.
    - Some droppings of *Papio ursinus* were observed over the larger study area.

4.1.1 Mammals – red data species listed in the STR

The following species are red data listed (STR) and a short discussion on each is given to indicate current and potential future threats if the proposed development is allowed.

- ***Crocidura maquassiensis*** **(Vulnerable** B2ab(ii,iii,iv))
  This is a rare species endemic to South Africa, Swaziland and Zimbabwe, existing in moist grassland habitats in the Savannah and Grassland biomes. It is under a precautionary purview because, although the AOO estimate varies widely, very few specimens were recorded in recent surveys.
    - No suitable habitat present on the mountain slopes of the proposed development.
    - Low probability of being present on the site.
    - Therefore no impact on the species on the site.

- ***Dasymys robertsii*** **(Vulnerable** B2ab(ii,iii,iv))
  African Marsh Rats are dependent on intact rivers and wetland ecosystems, as they have not been found in artificial or degraded wetlands, and are thus patchily distributed within the assessment region. Wetlands are continuing to be lost with agricultural and human settlement expansion, which in turn increases wetland degradation from overgrazing, water abstraction, pollution and invasive alien plant sprawl.
    - No suitable habitat present on the mountain slopes of the proposed habitat.
    - Low probability of being present on the site.
    - Therefore no impact on the species on the site.

For both of the mammal species listed in the STR, no suitable habitat in the demarcated area was observed. If any are present in the near vicinity there will be no direct impact on its habitat if the development is restricted within the proposed layout plan submitted for evaluation (Figure 1.1 and 1.2).

4.1.2 Reptiles

- ***Kinixys lobatsiana*** **(Vulnerable)**
  The species is near-endemic to South Africa, extending from the north-eastern parts of the North West Province, eastwards through northern Gauteng and adjacent parts of Mpumalanga and northwards into Limpopo, south of the Soutpansberg. It is a savanna species that inhabits rocky hillsides in habitats of mixed thornveld and *Combretum* woodland, tropical Bushveld and Thornveld where vegetation ranges from dense, short shrubland to open tree savanna.
    - There were no activity or shells observed of any tortoises during the site assessment.
    - Active searching in the rocky areas haven't revealed any specimens under the rocks.
    - As mentioned, the areas was devastated by a fire that has resulted in a total loss of vegetation.
    - If the species was present, individuals couldn't have moved outside the area that was assessed.
    - Therefore limited impact on the species on the site.

4.1.3 Insect listed in the STR

- ***Clonia uvarovi*** **(Vulnerable)**
  It has only been recorded in five locations and the area the species inhabits are the tall woodland savannah of Gauteng and the North West Province.
    - According to the literature the species occur in the woodlands of the area.
    - It is possible that it may occur on trees of the lower slopes of the mountain range.
    - With the loss of vegetation during the fire, limited habitat was left in the footprint area, but it doesn't exclude the presence of the species in the project area.
    - Therefore no impact on the species on the site.

4.1.4 Gauteng C-Plan (3.3)

The Gauteng C-Plan (2011) assessment lists the site as within the **Ecological Support Area (ESA)** (Figure 3.2). The assessment list the terrestrial biodiversity as driver for the importance listing and include the vegetation, animals and the habitat.

The mountain and associated ridges are important corridors for the migration of all biota to link adjacent populations to ensure that genetic diversity and exchange are maintained. In addition, the habitat provide shelter for numerous animals (birds, mammals (including bats) and reptiles) and also

important food resources. The outcrops are considered to be important in protecting biodiversity for the fauna and the flora.

5 GENERAL COMMENTS

5.1 Habitat

- It is clear that the area that will be developed, will result in a total loss of habitat for all biota.
- It is recommended that only areas near the foot of the mountain is developed and that the existing mining area must be developed in the near future.
- If possible, the development must not encroach on the crest of the mountain range. This part of the mountain will ensure a corridor for migration of all biota in the area, i.e. between populations and adjacent habitats.
- It will be important to ensure no erosion result from the proposed activity.

5.2 Faunal assessment (excluding bats and avifauna)

- As noted in the results, very little recent activity of animals were observed.
- It is assumed that the resent fire has driven most of the animals out of the area due to a lack of food and cover from predators.
- Recent activities are mostly from larger animals that travel longer distances to forage and have not necessarily re-established in the study area (lack of food and cover).
- The smaller animals (mammals and reptiles) will move back once food sources and plant cover are available.
- Some activity of rodents were noted on the northern side of the site footprint where is has a boundary with the grassland (cover and food).

5.2.1 Mammals

When evaluating the red data species, the following can be noted:

- No suitable habitat for the two species listed in the STR is present in the project footprint.
- For the other species listed in Table 3.1, suitable habitat is present once the vegetation has recovered to ensure cover and food resources.
- Most of the vulnerable species are not endemic to the area and are not currently present on site.

5.2.2 Amphibians

- The mountain slope has no suitable habitat for the amphibians and therefore it is assumed that it will not result in a direct loss of habitat.
- Other indirect impacts, e.g. pollution and siltation of water sources may result and must be addressed in management plans.

5.2.3 Reptiles

- Only one (1) reptile species is listed in the STR. As mentioned, there was no evidence of the presence of any specimens on the study site.
- This however doesn't exclude its presence on the site.
- Animals may move back once the vegetation has recovered (food resources and general cover from predators).
- It is recommended that an active search is conducted when development of an area commences and any animals found can then be relocated to areas outside the activity zone (consult a specialist for details on the activity).

With the impacts expected it is therefore recommended that the ridge (southern extent of the proposed development) is excluded from future mining (Figure 5.1). This will ensure that there is a corridor for migration of animals (mammals, reptiles, bats, birds and insects) to facilitate interaction between adjacent animal populations.

Figure 5.1: Recommended area for future development (shaded in orange) to ensure the sensitive ridge is protected and can function as a migration corridor for all animal groups in the larger area.

6 SITE SENSITIVITY VERIFICATION

The aim of the Site Sensitivity Verification is:

- To complete a desktop analysis using satellite imagery prior to the site visit
- Complete a preliminary on-site inspection
- Use any other available and relevant information for the assessment
- The outcome of the site sensitivity verification must be captured in a report:
    - That confirms or disputes the current use of the land and environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.
    - Give a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity as part of the documents as part of the Environmental Impact Assessment process.

For this study, specifically the faunal component (excluding the avifauna – a separate report is submitted) the sensitivity for the four (4) species flagged in the STR were all listed as **medium sensitivity**.

This included two (2) mammal species, *Crocidura maquassiensis* and *Dasymys robertsii*, one (1) reptile species, *Kinixys lobatsiana*, and one (1) invertebrate species, *Clonia uvarovi*.

The habitat required for the mammal species are not present on the site. The former needs “moist grasslands” which is to the north of the proposed development area while the second species is “dependent on intact rivers and wetland ecosystems” and this habitat is not present on the slopes of the Waterberg/Daspoort Mountains. It is therefore reasonable to **lower the sensitivity from medium to low** sensitivity for both species.

When evaluating the sensitivity for the reptile species, it is noted that potential habitat is present on the mountain slope as there are numerous rocky areas with suitable crevices and overhanging rocks that can be utilised as shelter. As noted in this report, the recent fire has destroyed the vegetation in the study area forcing animals to move away. The loss of plants have removed both the food resources and cover against predation for the smaller animals. In addition, no shells of the tortoises were observed during the survey. The active search in crevices and under rocks found no specimens in the study area and the loss of the vegetation to fire has made it easier to note any remnants of tortoises in the area. It is however possible that if there are any tortoises outside the study area, that they can migrate into the area. It is therefore reasonable to maintain the sensitivity rating related to the species as medium sensitivity (although the probability of its presence is very low), but in this case, it can be **lowered to a low sensitivity**. It is recommended that prior to development, a thorough search must be conducted to determine if any specimens are present. If found, it can be moved to areas outside the proposed development (consult with a specialist prior to development).

For the invertebrate species, the preferred habitat is “tall woodland areas in the grassland”. There are some potential habitat at the foot of the mountains (a few indigenous trees present), but the animals will move when disturbed. There is no indication that the site is one of the known areas where the invertebrates occur. Therefore it is recommended **to lower the sensitivity in this case from medium to low**.

With regards to the habitat sensitivity (ESA rating), the mountain slopes and ridges are important habitat and migration corridors and therefore limited development on the higher slopes must be avoided. If the activities are restricted to the lower slope (i.e. to the level of the existing stone quarry), the remaining corridor connectivity will have a small impact on animals that move between adjacent populations.

Current impacts lower slope of the mountain.

Habitat on the slopes – rocky areas, note burnt veld

Some signs of animal activity

7 RECOMMENDATIONS

- Limit activities on the mountain slopes (sensitive habitat for all biota, including animals and plants).
- The mountain is considered as a migration corridor for biota between populations and habitats.
- The rocky areas are important habitation areas for small mammals, birds, bats and reptiles.
- Limited activity on the higher slopes is not recommended, but rather exploit the lower slope – similar to the existing rock quarry.
- Developments must be done in small increments to allow small animals to move away from the activity zone.
- Any animals e.g. slow moving tortoises, must be moved to a similar habitat away from the mining area.
    - Consult with a specialist for detailed advice and guidance.
- All general activities must be focussed on the current activity footprint, e.g. roads.
- It is important to monitor all excavations daily to remove trapped animals.
    - These animals must be released well outside the activity zone.
- It is important to monitor all exposed areas to prevent erosion.

8 REFERENCES

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9 SHORT CV

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Tertiary qualifications: BSc. (1984), BSc. (Hons) (1985), MSc. (1986), PhD (Zoology) (1992): Rand Afrikaans University, Johannesburg, South Africa
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Experience: 30 years
BioAssets (owner of Consultancy CC) - 1/01/2007 - current
University of Limpopo (formerly University of the North)
Senior lecturer: Department of Zoology/Biology (1/10/1996 – 31/12/2006)
Lecturer: Department of Physiology (1/1/1994 - 30/9/1996)
Manager of a citrus farm (1992 – 1993)
Technikon RSA (1989 – 1991) - Lecturer: Nature Conservation

BioAssets Consultancy
Wynand has 30 years of experience in research, teaching and consulting and focus on: Environmental Impact Assessments (EIA's) and Environmental Management Plans (EMP's) with the focus on the aquatic environment and its associated biodiversity and terrestrial fauna and habitat assessments.

- Anglo American Platinum Mogalakwena Mine Expansion: Biodiversity specialist studies, wetland and river specialist studies (SRK/Anglo American – July to October 2019)
- River and wetland audit – Villiers/Windfield (Eskom) - (March – July 2020)
- Habitat Assessment Report: Expansion of the existing Blinkwater Tailings Storage Facility (TSF), Mogalakwena Platinum Mine, Anglo American Platinum (April 2015)
- Habitat Assessment Report: Establishment of a new Waste Rock Dump (WRD) Facility (Witrivier), Mogalakwena Platinum Mine, Anglo American Platinum (April 2015)
- Olifants River Water Resources Development Project Phase 2, Environmental Baseline Study (Aurecon/DWAF) – (October 2010 – April 2011)
- Basic Assessment Report – proposed new sand mining activity – Mokolo River, Lephalale, Limpopo Province (Kamekho Consulting CC/DWS/DEAT) – (February to April 2017)
- Habitat and Biodiversity Assessment: Highveld Exchange Yard Rail Siding Project (Sable Coal/Myezo EMS) (October 2020)
- Habitat, Wetlands and Biodiversity Assessment: Ingula Relocation Project (Myezo EMS/Eskom - Ingula Pumped Storage Scheme) (July to August 2020)
- Annual Water Use Licence Internal Audit – Switching Station and 88kV Powerlines, Aerorand (March 2020)
- Annual Water Use Licence Internal Audit – Grootpan Brakfontein 88kV Powerlines, March 2020
- Annual Water Use Licence External Audit – 88kV Powerlines from the United/Bosch/ Kromklip project (March 2020)
- Site Sensitivity Verification and plant biodiversity compliance statement survey - proposed construction of 132 KV Powerlines Between the Authorised Loeriesfontein 3 Pv Solar Energy

Facility and the Authorised Dwarsrug Wind Energy Facility Located Near Loeriesfontein in the Hantam Local Municipality, Namakwa District, Northern Cape Province, South Africa (SiVest/SLR, December 2020)

- Site Sensitivity Verification and plant biodiversity compliance statement survey - proposed construction of 132 KV Powerlines Between the Dwarsrug Wind Energy Facility to the Authorised Narosies Substation (BESS) Located Near Loeriesfontein in the Hantam Local Municipality, Namakwa District, Northern Cape Province, South Africa (SiVest/SLR, December 2020)
- Ecological study on the potential impacts of the proposed 3000 MW PhilCo Wind Energy Project near Richmond, Northern Cape Province (D Hoare Consulting, December 2020)
- Biological Assessment: Walk down Verification for the proposed Rietrug Wind Energy Facility (DEA Ref: 12/12/20/1782/2/AM3) near Sutherland in the Northern Cape Province.

Professional associations

- South African Society of Aquatic Scientists (SASAqS)
- SACNASP – as Chairperson for the Professional Advisory Committee (Aquatic).

Professional affiliation

Member of “The South African Council for Natural Scientific Professions” (SACNASP – registered as a “Professional Natural Scientist: Registration number - 400109/95).