

# Proposed Expansion of the Zandberg Sand Mine near Robertson, Western Cape

## Terrestrial Fauna (excluding Lepidoptera) Assessment Preliminary Report

Compiled for



By




**Cossypha**  
Ecological

In association with



## REPORT PRODUCTION

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## SPECIALIST DECLARATION OF INDEPENDENCE

I, **Robyn Phillips**, in my capacity as a specialist consultant, hereby declare that I –

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998);
- Do not have and will not have vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- 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);
- Will provide the Competent Authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- As a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member;
- Based on information provided to me by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability;
- Reserve the right to modify aspects pertaining to the present investigation should additional information become available through ongoing research and/or further work in this field; and
- Undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study for which I am registered.



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24 November 2021

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## ABBREVIATIONS

BA	Basic Assessment
CBA	Critical Biodiversity Area
CR	Critically Endangered
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries and the Environment
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EN	Endangered
ESA	Ecological Support Area
IUCN	International Union for Conservation of Nature
LC	Least Concern
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NT	Near Threatened
ONA	Other Natural Area
PA	Protected Area
QDGC	Quarter Degree Grid Cell
S&EIR	Scoping and Environmental Impact Report
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
VU	Vulnerable

## INTRODUCTION

Zandberg Sandput (Pty) Ltd (Zandberg) currently holds a Mining Right (MR) for an approved area of 17.6826 ha and proposes to expand their sand mining operations within Portion 4 of the Farm Zandberg Fontein No 97, just south of Robertson in Langeberg Local Municipality, within the Western Cape Province. Greenmined Environmental Consulting (Greenmined) was appointed to undertake the environmental process for the application for a Section 102 amendment of the Environmental Authorisation (EA) as required by the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended in 2017).

Due to the sensitive nature of the vegetation on the site and the assessment that impacts are expected to be significant (Nkurenkuru, 2020), a biodiversity offset process is proposed to compensate for negative impacts on biodiversity. As part of this process, information regarding the terrestrial faunal potentially occurring on the site is required to supplement the biodiversity information to inform the proposed biodiversity plan that will be presented to the Conservation Authorities. In addition, the National Web-Based Environmental Screening Tool developed by the Department of Forestry, Fisheries and the Environment (DFFE), previously the Department of Environmental Affairs (DEA), identified the need for an Animal Species Assessment for the proposed development due to the potential occurrence of bird, insect, and mammal species of conservation concern (SCC) on or near the site.

This report entails a preliminary assessment of terrestrial fauna of the site based on desktop assessment as well as information gathered at the brief site visit undertaken in July 2021.

## PROJECT DESCRIPTION

Zandberg would like to extend the mining footprint within Portion 4 of the Farm Zandberg Fontein No 97, from the currently approved area of 17.6826 ha to a further ~4 ha. Three alternative areas for expansion have been proposed, one immediately southwest of the approved area (alternative 1), one immediately northwest and up-slope of the approved area (alternative 2), and one immediately west of the approved area (alternative 3) (**Figure 1**). The proposed mining extension area will be reached via the existing access road from Nuwehoogte Road. No infrastructure will be established in the extension area. The mining method entails strip mining that is representative of the small-scale mining industry where the sand is loaded with one front-end-loader directly onto the trucks of clients that transport it from the site. Little to no stockpiling is required and no washing of sand will be undertaken. The MR holder removes the topsoil of a strip within which the sand is mined in blocks of approximately 10m deep x 20 m wide, to a maximum depth of 30m.



**Photo 1: The current Zandberg mine operations with front-end-loader working on the sand face**

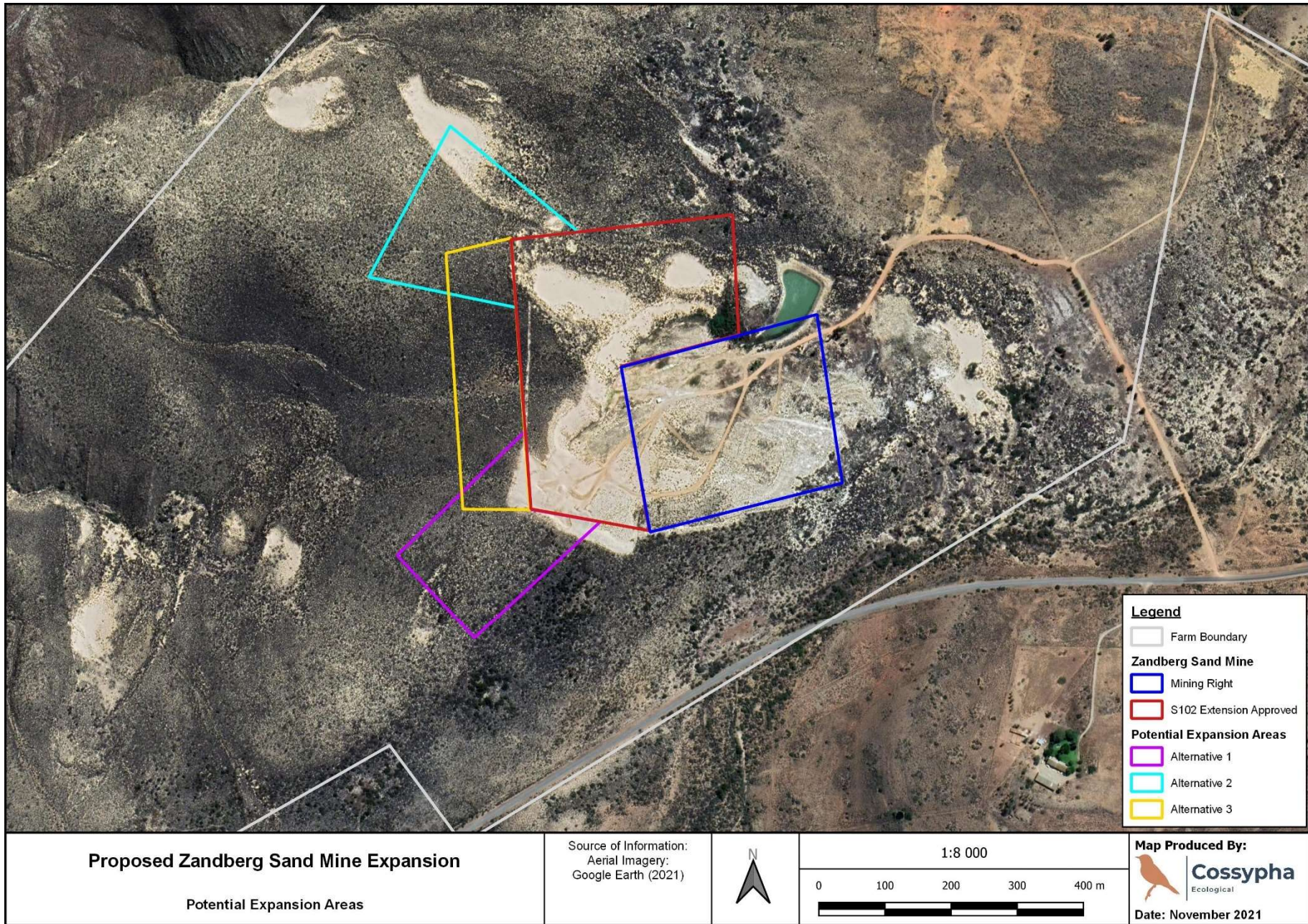


Figure 1: Proposed mining expansion areas

## PURPOSE OF THIS REPORT

A Screening Report for proposed site environmental sensitivity, as required by the EIA Regulations of 2014 (as amended in 2017) for an EA, was generated for the project on 13/01/2020 using the National Web-Based Environmental Screening Tool. The following site environmental sensitivities were identified for the proposed development:

**Table 1: Summary of site environmental sensitivities identified by the Screening Tool**

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

Based on the environmental sensitivities of the proposed development footprint, the screening tool identified the need for an Animal Species Assessment or Compliance Statement for inclusion in the EIA report due to the possibility of the following species occurring in the area:

- High: Black Harrier (*Circus maurus*) EN
- High: Black Eagle (*Aquila verreauxii*) VU
- Medium: Riverine Rabbit (*Bunolagus monticularis*) CR
- Medium: *Thestor kaplani* (butterfly) CR
- Medium: *Aloeides lutescens* (butterfly) EN

The following Report comprises a preliminary investigation of the terrestrial fauna present on the site, and includes birds, mammals, and herpetofauna (reptiles and amphibians), but excludes the Lepidoptera (butterflies), which will be evaluated in a separate specialist report.

## TERMS OF REFERENCE

The terms of reference were to provide a Preliminary Terrestrial Faunal Assessment Report based on desktop assessment as well as information gathered at the brief site visit undertaken in July 2021. The Report will cover the following aspects:

- Desktop investigation of indigenous, terrestrial fauna of the study area and including the potential occurrence of birds, mammals, and herpetofauna (reptiles and amphibians).
- Description of the endemic, threatened, rare or protected animal species, and/or potential habitats that may occur on the site for these species.
- High-level evaluation of habitat based on desk-top analysis and the brief site visit undertaken in July 2021, and description of potential corridors for movement of fauna through the landscape.
- Preliminary impacts and recommendations for inclusion the Biodiversity Offset Plan.

## APPROACH

The approach included a desktop assessment as well as a brief field visit. The methodology broadly entailed the following:

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### DESKTOP ASSESSMENT

The desktop assessment entailed the following:

- Review of all relevant literature including distribution data of avifauna expected to occur on the site, as well as the conservation status of species;
- Review of available GIS layers relating to biodiversity conservation planning e.g. vegetation types, relevant provincial spatial conservation or biodiversity plan, Important Bird Areas (IBAs), Protected Areas Database etc.; and
- Review of the site using Google Earth satellite imagery.

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### FIELD VISIT

A brief site visit was undertaken on the 28<sup>th</sup> of July 2021. During the preliminary site investigation, the following aspects pertaining to terrestrial fauna were assessed:

- Current land use of the site and immediate surrounds;
- Current ecological state of habitats on site;
- Potential presence of terrestrial fauna including SCC and/or suitable habitat for these species on the site; and
- Significant landscape features, ecological corridors, and landscape connectivity.

## ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations pertain to the current study:

- The current report serves as preliminary, desk-top assessment of terrestrial fauna and is not intended to replace the requirements for a full Animal Species Impact Assessment Report.
- Following consultation with the Conservation Authorities such as Cape Nature and depending on their requirements for reporting for the Biodiversity Offset Plan, a full Faunal Impact Assessment Report that complies with the latest Species Assessment Guidelines (SANBI, 2020)<sup>1</sup> and recently gazetted protocols<sup>2</sup>, may be required. If this is the case, then the Preliminary Report will be updated to include more rigorous evaluation of Site Ecological Importance and Sensitivity and a full assessment of impacts using accepted impact assessment methodology. This phase will include a supplementary site visit to conduct further surveys for fauna.
- This assessment does not include the Lepidoptera (butterflies), which is being evaluated separately.
- Findings, recommendations, and conclusions provided in this report are based on the authors' best scientific and professional knowledge as well as information available at the time of compilation.

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<sup>1</sup> South African National Biodiversity Institute (SANBI). 2020. *Species Environmental Assessment Guideline. Guidelines for the implementation of the Terrestrial Fauna and Terrestrial Flora Species Protocols for environmental impact assessments in South Africa*. South African National Biodiversity Institute, Pretoria. Version 2.1 2021.

<sup>2</sup> Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species (GN R1150 of 2020).



## DESKTOP ASSESSMENT RESULTS

The desktop assessment included a regional description of the study area, review of available GIS layers relating to biodiversity conservation planning, and review of online resources regarding distribution data of fauna expected to occur in the study area, including the current conservation status of species.

### STUDY AREA

#### LOCATION

Portion 4 of the Farm Zandberg Fontein 97 (the study area) is located just south of the Breede River, approximately 7 km southwest of the town of Robertson within Langeberg Local Municipality, in the Cape Winelands District, Western Cape Province. The study area falls within Quarter Degree Grid Cell (QDGC) 3319DD, and lies between 33°49'44.7" and 33°52'28.8" south and 19°46'45.7" and 19°49'33.9" east (**Figure 2**). The sand mine is located on a sand deposit within the farm portion of approximately 148 ha in extent. The site is undulating and rises steeply up the mountain side, occurring at an altitudinal gradient of between 164m and 440m above mean sea level (a.m.s.l).

#### CLIMATE

Robertson has a Mediterranean climate receiving a mean of 345 mm of rain per year, falling mostly in winter. The highest rainfall occurs between May and August and the lowest in January. The average daily maximum (midday) temperatures for Robertson range from 16.7°C in July to 29°C in February. The region is the coldest during July when temperatures drop to 4.2°C on average during the night, with frost occurring occasionally (Mucina and Rutherford, 2006; saexplorer, 2021).

#### SURROUNDING LAND USES

The study area is rural in nature, with the natural sand deposit occurring on the sides of the Zanberg Mountain. The existing sand mine incorporates the active mining area (exposed sand), an access road, small dam, and works area. The main road (Nuwehoogte Road) borders the site on the south side, while the Breede River forms the north-eastern border, and the summit of the Zandberg Mountain forming the north-western border. The site is mostly surrounded by natural vegetation occurring on the sand deposit, the rest of the mountain side, and extensively across the road to the south. A degraded area covered with alien vegetation occurs at the entrance to the mine and along the access road. Farming activities (grapes, citrus, and livestock) occur in the broader landscape to the north, east, and west, and the town of Robertson occurs approximately 7 km to the northeast (**Figure 3**).

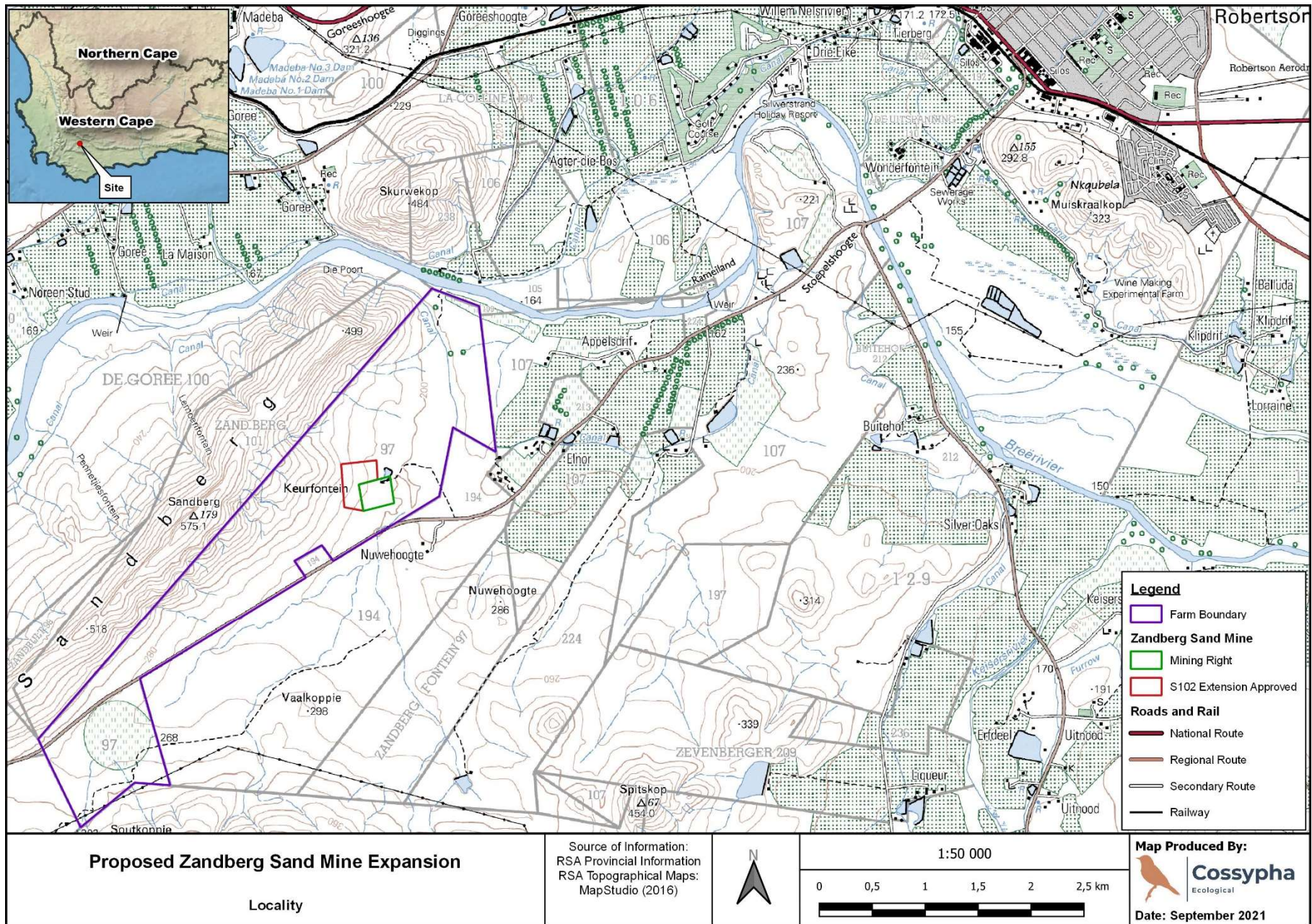


Figure 2: Locality of the study area

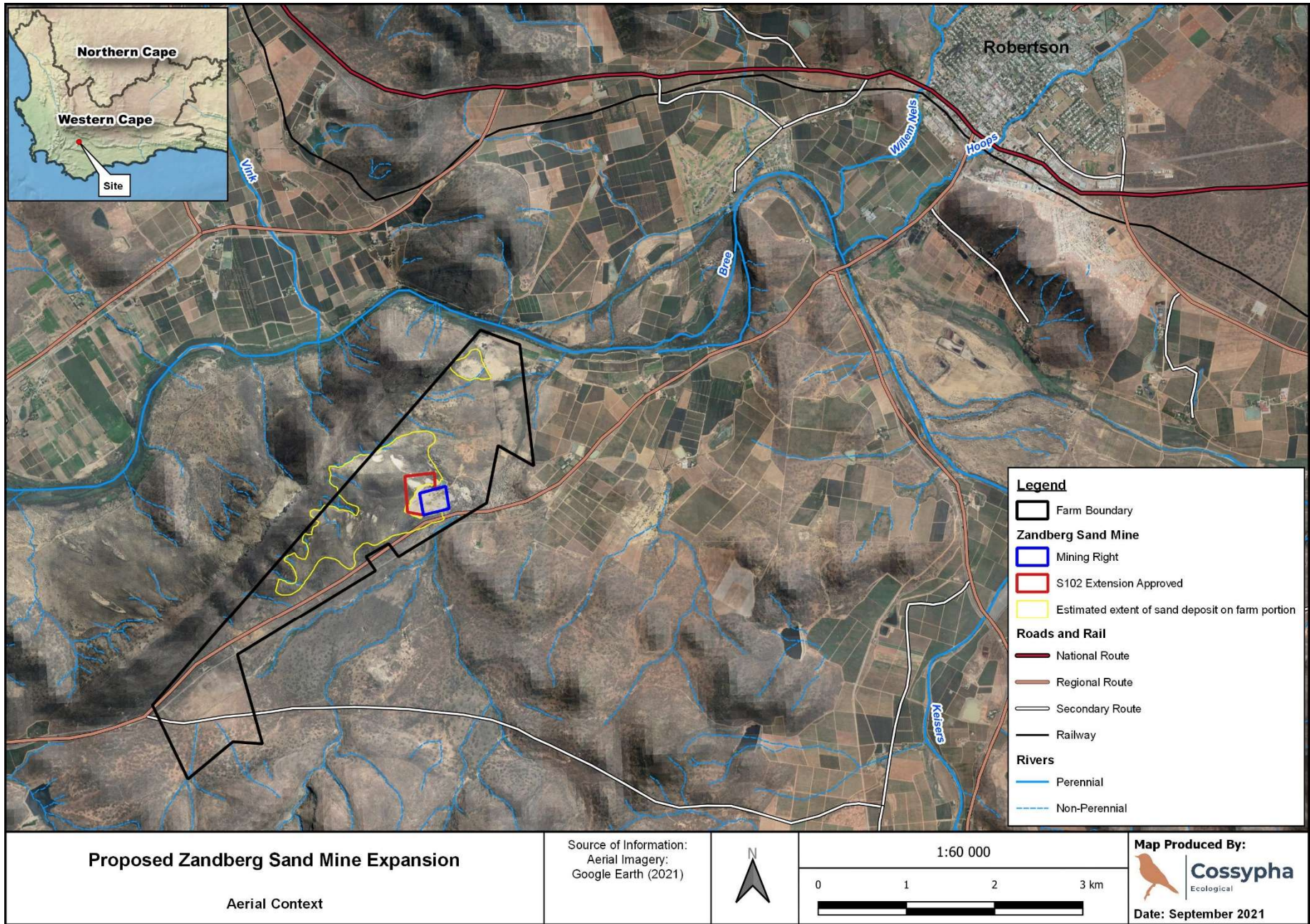


Figure 3: Aerial overview of the study area and surrounds

## REGIONAL BIODIVERSITY SETTING

The study area is located mostly within the East Coast Renosterveld Bioregion, which forms part of the Fynbos Biome, and is interspersed with areas forming part of the Rainshadow Valley Karoo Bioregion, which is part of the Succulent Karoo Biome (Rutherford and Westfall, 1994). The majority of the site falls within the original extent of the Breede Sand Fynbos (FFd 8) vegetation type, which has established on the wind-blown sand deposit covering the mountain side, with North Sonderend Sandstone Fynbos (FFs 13) occurring on the remainder of the mountain slopes towards the western boundary. Robertson Karoo (SKv 7) vegetation occurs across the road to the south (**Figure 4**).

Breede Sand Fynbos is a fragmented vegetation type with very limited extent, comprising only about 97 km<sup>2</sup> of land area and is classified as Vulnerable (Mucina and Rutherford, 2006). Its conservation target is 30%, but none of the unit is conserved in statutory conservation areas, while only 2% is protected in the Hawequas and Quaggas Berg Private Nature Reserves. Furthermore, some 45% of the area has been transformed, mainly for agriculture and by building of the Brandvlei and Kwaggaskloof Dams (Mucina and Rutherford, 2006; Nkurenkuru Ecology and Biodiversity, 2020).

According to the Western Cape Biodiversity Sector Plan (WCBSPP) (Pool-Stanvliet *et al.*, 2017), the entire area proposed for expansion is located within a Critical Biodiversity Area 1 (CBA1) (**Figure 5**). Areas classified as CBA1 are regarded as "areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure" (Pool-Stanvliet *et al.*, 2017). The desired outcome for such areas is to maintain them "in a natural or near natural state, with no further loss of habitat", and only "low-impact, biodiversity-sensitive land uses" are appropriate.

According to the currently gazetted National List of Threatened Terrestrial Ecosystems (DEA, 2011), the Breede Sand Fynbos Ecosystem (FFd 8) is listed as Vulnerable in terms of Section 52 of NEMBA (DEA, 2011). The ecosystem threat status assessments conducted for the WCBSPP (Pool-Stanvliet *et al.*, 2017) and those conducted for the 2018 National Biodiversity Assessment (NBA) (Skownow *et al.*, 2019) also list it as Vulnerable (**Figure 6**), however, current evaluation by SANBI suggests that the Breede Sand Fynbos Ecosystem will be classified as Critically Endangered due to its limited extent (D. Macfarlane per. comm. with A. Skownow, August 2021).

## DISTRIBUTION OF TERRESTRIAL FAUNAL SCC

### AVIFAUNA

Approximately 263 bird species are expected to occur in QDGC 3319DD (SA Birding, 2011). While this total is low in comparison to other parts of the country, such as the diverse east coast, a high level of endemism exists in the region. Of the total, approximately 70 species are endemic to southern Africa. Only 25 bird species occurring in the QDGC are of conservation concern nationally (Taylor *et al.*, 2015) and 11 globally (International Union for Conservation of Nature (IUCN) Red List of Threatened Species, 2021).

According to the Southern African Bird Atlas Project (SABAP2) data, 125 species have been recorded in the pentad<sup>3</sup> in which the site falls (pentad 3350\_1945), seven of which are SCC. SABAP2, which has been collecting data since 2007 and includes the previous SABAP1 data (1987-1991), aims to map the distribution and relative abundance of birds in southern Africa. SABAP2 data is recorded per pentad and reporting rates are expressed as a percentage of the number of times a species was seen in a pentad divided by the number of times the pentad was surveyed. **Table 2** lists the avifaunal SCC that have been recorded within the QDGC, and includes threat

<sup>3</sup> 5 minute x 5 minute coordinate spatial grid reference. One QDGC comprises of 9 pentads.

status, likelihood of occurring on the site, and SABAP2 reporting rate for those species recorded in pentad 3350\_1945. Note that for this table, the site is considered the sand deposit and associated vegetation.

**Table 2: Avifaunal SCC likely to occur within QDGC 3319DD, including Reporting Rate (RR) for the site's pentad 3350\_1945. Birds listed in green are endemic to southern Africa, while those in blue are non-breeding migrants to the region**

Family	Common Name	Scientific Name	Threat Status (RSA/IUCN)	SABAP2 RR%	Likelihood of Occurring on site
Accipitridae	Black Harrier	<i>Circus maurus</i>	EN/VU		Medium
Accipitridae	Cape Vulture	<i>Gyps coprotheres</i>	EN/VU		Medium
Accipitridae	Martial Eagle	<i>Polemaetus bellicosus</i>	EN/VU	7.7	Medium
Turnicidae	Hottentot Buttonquail	<i>Turnix hottentottus</i>	EN/LC		Medium
Accipitridae	African Marsh-Harrier	<i>Circus ranivorus</i>	EN/LC		Low
Otididae	Southern Black Korhaan	<i>Afrotis afra</i>	VU/VU	23.1	Medium-low
Sagittariidae	Secretarybird	<i>Sagittarius serpentarius</i>	VU/VU	7.7	Medium-low
Otididae	Denham's Bustard	<i>Neotis denhami</i>	VU/NT		Low
Sarothruridae	Striped Flufftail	<i>Sarothrura affinis</i>	VU/LC		Low
Rostratulidae	Greater Painted-snipe	<i>Rostratula benghalensis</i>	VU/LC		Low
Accipitridae	Verreaux's Eagle	<i>Aquila verreauxii</i>	VU/LC	15.4	Medium
Falconidae	Lanner Falcon	<i>Falco biarmicus</i>	VU/LC	7.7	Medium
Pelecanidae	Great White Pelican	<i>Pelecanus onocrotalus</i>	VU/LC		Low
Ciconiidae	Black Stork	<i>Ciconia nigra</i>	VU/LC		Low
Gruidae	Blue Crane	<i>Anthropoides paradiseus</i>	NT/VU	30.8	Medium
Picidae	Knysna Woodpecker	<i>Campethera notata</i>	NT/NT		Low
Anatidae	Maccoa Duck	<i>Oxyura maccoa</i>	NT/NT		Low
Phoenicopteridae	Lesser Flamingo	<i>Phoeniconaias minor</i>	NT/NT		Low
Coraciidae	European Roller	<i>Coracias garrulus</i>	NT/NT		Low
Chaetopidae	Cape Rockjumper	<i>Chaetops frenatus</i>	NT/LC		Low
Motacillidae	African Rock Pipit	<i>Anthus crenatus</i>	NT/LC		Low
Alcedinidae	Half-collared Kingfisher	<i>Alcedo semitorquata</i>	NT/LC		Low
Otididae	Karoo Korhaan	<i>Eupodotis vigorsii</i>	NT/LC		Medium-low
Phoenicopteridae	Greater Flamingo	<i>Phoenicopterus roseus</i>	NT/LC		Low
<b>Alaudidae</b>	<b>Agulhas Long-billed Lark</b>	<b><i>Certhilauda brevirostris</i></b>	<b>NT/NR</b>	<b>15.4</b>	<b>High</b>

EN = Endangered; VU = Vulnerable; NT = Near Threatened; LC = Least Concern; NR = Not Recognised

The National Web-Based Environmental Screening Tool identified the possibility of *Circus maurus* (Black Harrier) and *Aquila verreauxii* (Verreaux's Eagle) occurring in the area. These species (highlighted in **Table 2**) are classified as Endangered (EN) and Vulnerable (VU) at a national level, respectively. The Black Harrier has not been recorded within the pentad by SABAP2, while Verreaux's Eagle has been encountered 15% of the total times the pentad has been surveyed. These species and certain other SCC occurring in the region were given a medium or medium-low likelihood of occurring on the site. Such species are mostly associated either with Karoo habitat (such as that occurring across the road to the south of the site), or rocky habitats such as the mountain slopes within the study area and other mountainous regions within the pentad. While these species may be encountered within the study area, it's unlikely that the site provides critical habitat for these species. Some of these species are also wide-ranging, such as *Polemaetus bellicosus* (Martial Eagle) and may come within the study area at times.

Only *Certhilauda brevirostris* (Agulhas Long-billed Lark), endemic to the region and currently classified as Near Threatened (NT), was given a **high** likelihood of occurring on the site. This species occurs in Renosterbos shrubland and favours open habitats with scattered bush cover and low structurally diverse vegetation. According to Taylor *et al.* (2015), although this species is not under immediate threat, it has a small range and population that makes it vulnerable to natural or anthropogenic changes to its habitat.

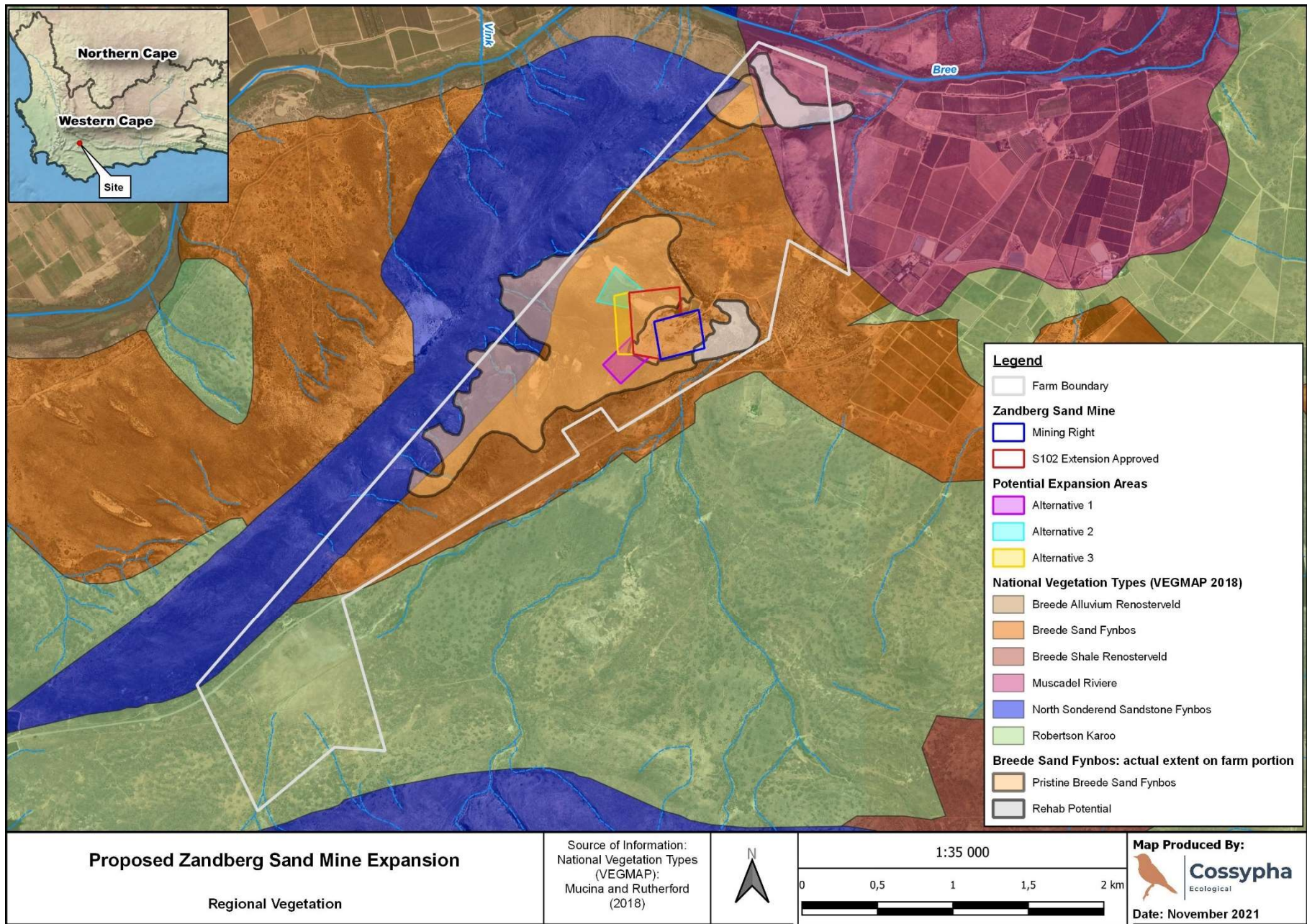


Figure 4: The study area in relation to regional vegetation types

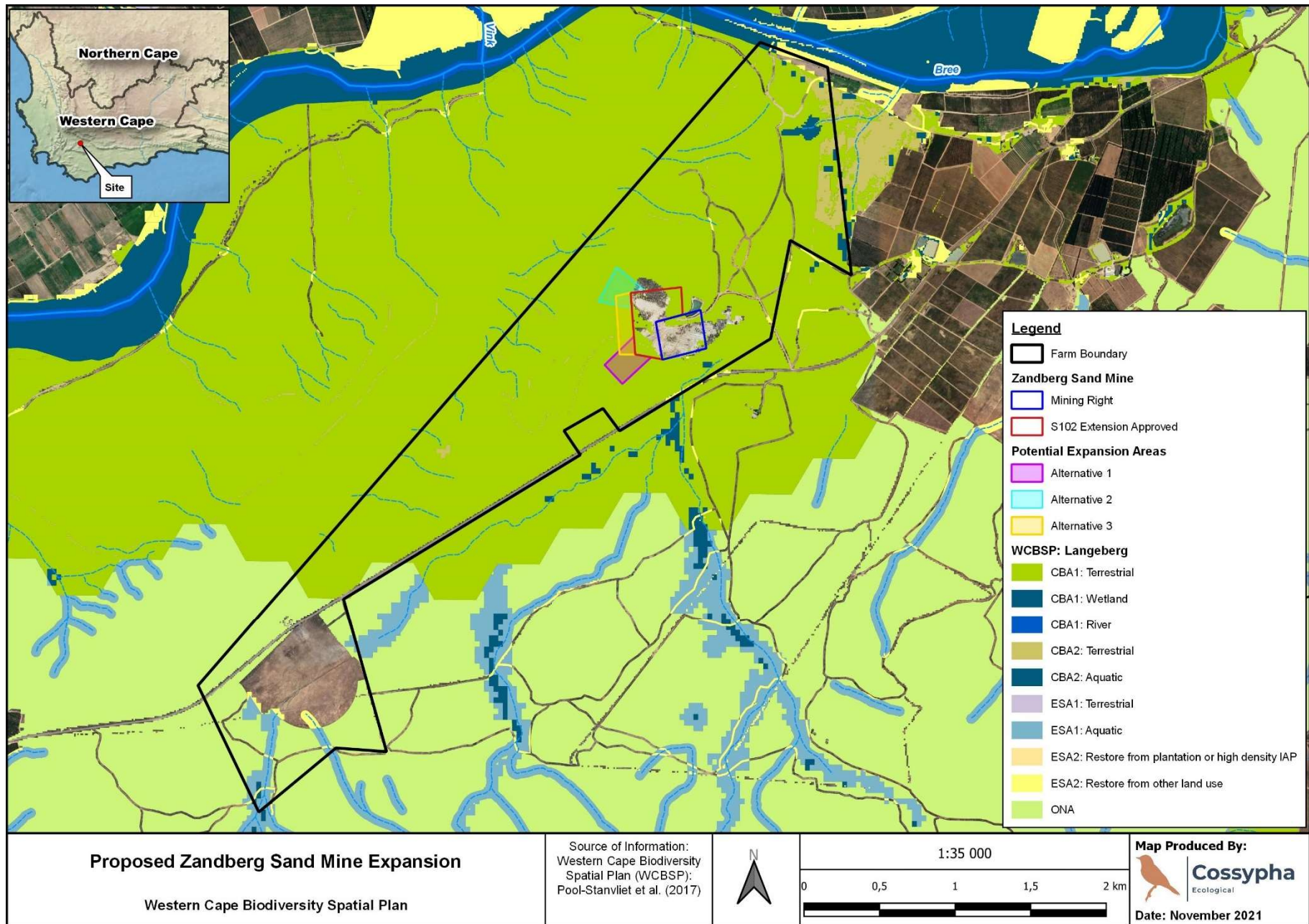


Figure 5: The study area in relation to the Critical Biodiversity Areas of the Western Cape

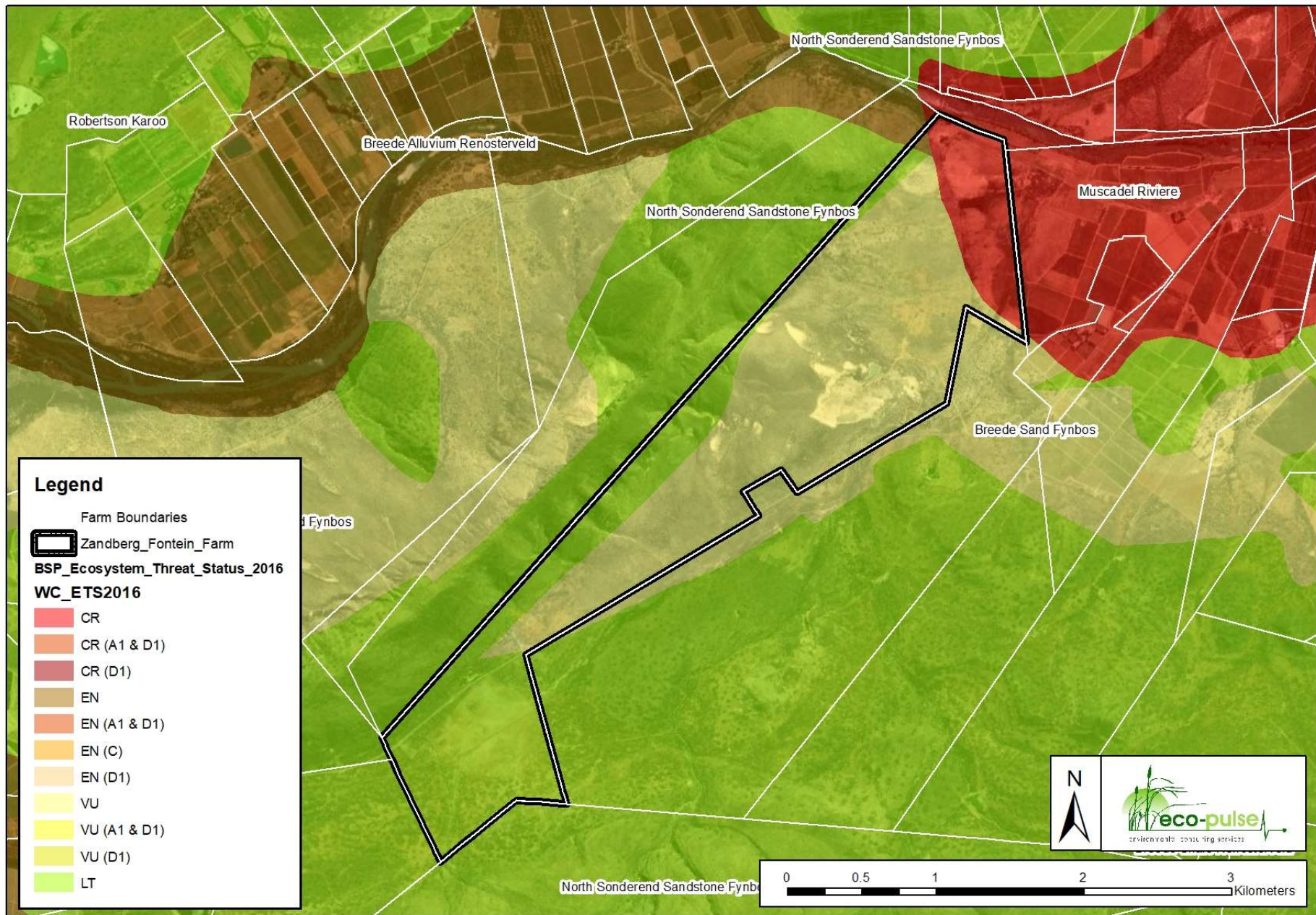


Figure 6: The study area in relation to the threatened ecosystems



## MAMMALS

According to the MammalMAP project, approximately 50 mammal species have been reported to occur within QDGC 3319DD (since 1990) (ADU, 2021). Of this total, six species are of conservation concern nationally (Child *et al.*, 2016) and four globally (IUCN, 2021). **Table 3** lists the mammal SCC that have been recorded within the QDGC and includes threat status and likelihood of occurring on the site. While *Bunolagus monticularis* (Riverine Rabbit), currently listed as Critically Endangered (CR), has not been recorded within the QDGC by the MammalMap project, it was flagged by the The National Web-Based Environmental Screening Tool as possibility occurring in the study area and has been included in the table.

**Table 3: Mammal SCC likely to occur within QDGC 3319DD**

Family	Common Name	Scientific Name	Threat Status (RSA/IUCN)	Likelihood of Occurring on site
Leporidae	Riverine Rabbit	<i>Bunolagus monticularis</i>	CR/CR	Low
Felidae	Cheetah	<i>Acinonyx jubatus</i>	VU/VU	Low
Felidae	Leopard	<i>Panthera pardus</i>	VU/VU	Low
Bovidae	Bontebok	<i>Damaliscus pygargus pygargus</i>	VU/LC	Low
Bovidae	Grey Rhebok	<i>Pelea capreolus</i>	NT/NT	Low
Mustelidae	African Clawless Otter	<i>Aonyx capensis</i>	NT/NT	Low
Mustelidae	African Striped Weasel	<i>Poecilogale albinucha</i>	NT/LC	Low

CR = Critically Endangered; VU = Vulnerable; NT = Near Threatened; LC = Least Concern

The Riverine Rabbit inhabits dense riparian growth on alluvial soils adjacent to seasonal rivers and occurs mainly in the central Karoo (Nama-Karoo shrubland), with a small sub-population occurring in the Breede Valley (Collins *et al.*, 2016). It is unlikely therefore that the site provides suitable habitat for this species, and it and the other mammal SCC were given a low likelihood of occurring on the site.

## HERPETOFAUNA

According to FrogMAP (ADU, 2021), the continuation of the Southern African Frog Atlas Project (SAFAP), only ten amphibian species are likely to occur within QDGC 3319DD. One of these, *Cacosternum platys* (Flat Caco), is of conservation concern (currently listed as NT) both nationally (Measey, 2011) and globally (IUCN, 2021). This species is endemic to the winter-rainfall region of the Western Cape where it is restricted to altitudes below 280 m where it inhabits flat or gently undulating low-lying areas with poorly drained loamy to clay soils. It breeds in shallow, temporary, rain-filled pools and pans that form during the winter months (Minter *et al.*, 2004; FrogMap, 2021). Most of its distribution range is situated in the lowlands west of the Cape fold mountains, with a small population occurring in the Breede River valley, between Worcester and Tulbagh (Minter *et al.*, 2004; FrogMap, 2021). It is therefore unlikely that that species will occur on the site.

According to ReptileMAP (Bates *et al.*, 2014; ADU, 2021), only 13 terrestrial reptile species have been confirmed to occur within QDGC 3319DD. None of these are of conservation concern either nationally (Bates *et al.*, 2014) and globally (IUCN, 2021).

## SITE VISIT RESULTS

This section is based on a review of the botanical assessment report (Nkurenkuru, 2020) and a brief site visit to confirm the current land use of the site and immediate surrounds and observe the current ecological state and potential habitats on site. No formal field surveys or sampling for fauna was undertaken.

## SITE DESCRIPTION

The areas surrounding the current mining footprint were covered with natural vegetation typical of the Breed Sand Fynbos vegetation type. The botanical assessment conducted by Nkurenkuru (2020) reported the vegetation to resemble pristine Breede Sand Fynbos throughout most of the site, with pristine North Sonderend Sandstone Fynbos occurring on the rocky remainder of the mountain slope and adjacent to drainage lines. The Breede Sand Fynbos has established on natural historic wind-blown sand deposits, known as climbing dunes or dune plumes, which are aeolian sand accumulations of riverine origin (in this case the Breede River) deposited over many millennia (Tyson, 1999; Mucina and Rutherford, 2006). The two vegetation types provide habitat heterogeneity to the landscape as a whole.

The habitats on the sand deposit ranged from mobile dunes with sparse vegetation cover due to the scouring effect of the wind, progressing to semi-mobile dunes with moderate vegetation cover, to stabilised sands with more well-established vegetation cover (Nkurenkuru, 2020). The vegetation was relatively uniform with a tall proteoid shrub layer, with an open to medium dense restioid undergrowth. The sandy soils provide important burrowing habitat for fossorial animals.



**Photo 2: Well established vegetation on the sand deposit providing structural habitat for fauna on the site**



**Photo 3: Mobile portions of the dune with sparse vegetation cover**

The rocky habitat on the surrounding mountain is likely to support a slightly different suite of species due to the change in altitude, substrate, and vegetation type. The continuous habitat also provides an important corridor for movement through the landscape. The sandy habitat is however more fragmented due to the nature of the deposit and certain species that rely on this substrate may be confined to this habitat. Species with more diverse habitat requirements and more mobile species will be able to move through / over the dune.



**Photo 4: Breede Sand Fynbos on the sand deposit in the foreground with North Sonderend Sandstone Fynbos on the rocky slopes in the background**

**OCCURRENCE OF FAUNA ON THE SITE**

While no formal sampling for fauna was undertaken, evidence of faunal occurrence on the site was recorded as it was encountered. Species recorded during the site visit are listed in **Table 4** along with their national and global conservation status. While it is evident that the site supports an array of terrestrial fauna, no species of conservation concern were recorded during the preliminary site visit. However, as described in the previous section, it is possible that *Certhilauda brevirostris* (Agulhas Long-billed Lark), endemic to the region and currently classified as NT, could occur on the site.

**Table 4: Fauna recorded in the study area and surrounds during the site visit**

Scientific Name	Common Name	Conservation Status	
		National	Global (IUCN)
<i>Chrysochloris asiatica</i>	Cape Golden Mole	LC	LC
<i>Sylvicapra grimmia</i>	Common Duiker	LC	LC
<i>Raphicerus campestris</i>	Steenbok	LC	LC
<i>Canis mesomelas / Vulpes chama</i>	Black-backed Jackal / Cape Fox	LC	LC
<i>Genetta sp.</i>	Genet sp.	LC	LC
<i>Georychus capensis</i>	Cape Mole-rat	LC	LC
<i>Gerbilliscus afra</i>	Cape Gerbil	LC	LC
<i>Rhabdomys pumilio</i>	Four-striped Grass Mouse	LC	LC
<i>Hystrix africaeaustralis</i>	Porcupine	LC	LC
<i>Lepus saxatilis</i>	Cape/Scrub Hare	LC	LC
<i>Felis silvestris</i>	African Wild Cat	LC	LC
<i>Oreotragus oreotragus</i>	Klipspringer (on higher rocky slopes)	LC	LC

LC = Least Concern



**Photo 5: Field signs of faunal species occurring on the site. Top left to right: Common Duiker (droppings and spoor); Genet sp. (spoor and dropping). Bottom left to right: Cape Golden Mole (feeding track); Cape/Scrub Hare (droppings); Four-striped Grass Mouse (droppings)**

## PRELIMINARY IMPACTS

The site is currently in a natural condition and provides suitable habitat for an array of terrestrial faunal species. Habitat heterogeneity and connectivity is provided by both habitat types in the landscape (Breede Sand Fynbos on sandy substrate and North Sonderend Sandstone Fynbos on the higher rocky slopes). Current impacts include the existing mining footprint, mining activities, and associated infrastructure such as haul/access road. The current footprint does not completely fragment the habitat of the sand fynbos as it is confined to the lower slopes of the sand deposit. The following potential impacts to terrestrial fauna may be imposed by the proposed expansion of the mining activities. Note that this excludes the butterflies, which will be covered in a separate assessment.

- Destruction/removal of habitat including vegetation and sandy substrate.
- Displacement of fauna due to habitat loss.
- Death or injury to fauna, especially fossorial species, caused by the excavator.
- Death or injury to fauna, due to collisions on the access road.
- Fragmentation of habitat.
- Additional disturbance of noise, vibrations, and light.
- Increased potential for establishment of alien vegetation on disturbed soils leading to habitat degradation.

## RECOMMENDATIONS FOR IMPACT MANAGEMENT

Impacts to terrestrial fauna (excluding butterflies), including SCC can be minimised through reducing the mining footprint, careful placement of the expanded area, phasing mining activities, and ensuring effective rehabilitation of mined areas.

- The amount of habitat provided by the sand fynbos is already limited (on site and regionally) due to the fragmented nature of the deposits. A large mining footprint is therefore not acceptable but limiting the proposed mining footprint expansion to 4 ha or less is considered more acceptable. The proposed biodiversity offset is therefore supported and must be made a condition should authorisation be granted.
- The placement of the new proposed area to be mined is important to avoid fragmenting the habitat. Placing the new footprint up the slope from the currently authorised area will increase the potential for fragmenting the dune vegetation. Placing the footprint to the side and/or lower down the slope of the current mining area (i.e. Alternatives 1 and 3) will ensure connectivity is maintained on the upper regions of the slope. Removing the vegetation and sand on the upper slope will not fragment the habitat completely but will limit movement of fauna through a narrow band of vegetation and sand compared to the removal of vegetation and sand on the lower slope. The latter will maintain the current amount of vegetation and burrowing habitat above the current mining area. Alternatives 1 and 3 are therefore preferred to Alternative 2.
- Placing the proposed new area further down the slope where it is not as steep will help minimise the height of the cut face to be exposed during and after mining operations. It will also allow more easy access compared to the areas higher up the slope, where a new access routh would likely be required.
- While Alternatives 1 and 3 are equivalent in area, the configuration of **Alternative 3 is preferred**. With its position being a narrow band along the length of the western border of the approved mining area, it expands the mining footprint in a uniform and consolidated block, as opposed to an additional piece projecting out further into the natural areas, as with Alternative 1.
- Phasing of development through strip mining and restoring previously disturbed areas will also help minimise impacts and increase recovery.
- Rehabilitation is a critical element on the mitigation hierarchy, and opportunities to strengthen rehabilitation should be actively explored. Significant considerations for fauna include the characteristics of the substrate and presence of water. Preliminary observations on site suggest that areas with reasonable sand cover become colonised with indigenous vegetation more easily. Reinstatement of a 30-50cm sand layer above the rocky substrate may be sufficient to facilitate natural

recovery of dune vegetation and would also provide habitat for animal species currently making use of sandy dune deposits.

If the above-mentioned conditions are met, the significance of impacts on terrestrial animal species (excluding butterflies) could therefore be rated as **Low-moderate**, and the offset proposed for vegetation and plant species, i.e. habitat, would be sufficient to cover the terrestrial fauna (excluding butterflies) and would not trigger the need for any additional species offset requirements. The offset proposed for vegetation and plant species would also serve to improve the regional conservation of faunal species in Breede Sand Fynbos. **Note:** The potential impacts for threatened butterfly species will be verified by the butterfly specialist in a separate assessment.

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## APPENDICES

### APPENDIX A: ABRIDGED CV OF THE SPECIALIST

Name and Surname	:	Robyn Phillips
Date of Birth	:	28 08 1975
Company Name	:	Cossypha Ecological
Field of Expertise	:	Terrestrial Ecologist and Avifaunal Specialist
SACNASP Registration	:	<i>Pr.Sci.Nat.</i> 400401/12 (Zoological and Ecological Sciences)
Highest Qualification	:	MSc (Zoology) <i>cum laude</i>
Years of Experience	:	20
Contact Number	:	084 695 1648
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The first half of my professional career was spent working in ecological research at the University of KwaZulu-Natal. Since starting in consulting in 2011, I have been involved in many projects requiring biodiversity surveys and ecological assessments as part of the legislated requirements for the Environmental Impact Assessment (EIA) process. These studies include field assessment of habitat, species occurrence (especially those of conservation concern), assessment of ecological importance and sensitivity of floral and faunal communities and habitat, as well as assessment of impacts. Tasks also include making recommendations and prescribing mitigation measures after applying the mitigation hierarchy, aimed at minimising impacts.

Following is a selection of similar projects undertaken:

- Faunal and Avifaunal Impact Assessment for the Vanrhynsdorp Mining Right Application near Vanrhynsdorp, Western Cape (Praxos 373) – 2020 to 2021.
- Faunal and Avifaunal Impact Assessment for the Vanrhynsdorp Prospecting Right Application near Vanrhynsdorp, Western Cape (Praxos 373) – 2020 to 2021.
- Avifaunal Monitoring and Impact Assessment for the Waterkloof Solar Project, North West Province (Royal Bafokeng Platinum Mines) – 2020 to 2021.
- Ecological and Avifaunal Assessment for the Kalagadi Manganese Mining Right Amendment, Hotazel, Northern Cape (Kalagadi Manganese) – 2018 to 2019.
- Faunal and Avifaunal Impact Assessment for the Proposed Kangala Coal Mine Extension, Eloff, Mpumalanga (Licebo Environmental and Mining (Pty) Ltd) – 2014 to 2017.
- Faunal and Avifaunal Impact Assessment for the Doornfontein Calcrete Mine, Zeerust, North West Province (SA Lime) – 2016.
- Faunal and Avifaunal Impact Assessment for the Elandspruit Opencast Mine, Middleburg, Mpumalanga (Cabanga Concepts) – 2014.
- Faunal and Avifaunal Impact Assessment for the Mbila Underground and Msebe Opencast Mining Project, Nongoma, KZN (Prime Resources) – 2014.
- Biodiversity Assessment and Biodiversity Action Plan (BAP) For Khutala Colliery Mining Rights Area, Ogies, Mpumalanga (South 32) – 2013 to 2014.
- Faunal and Avifaunal Impact Assessment for the Proposed Brakfontein Opencast Mine, Delmas, Mpumalanga (Cabanga Concepts) – 2013.
- Faunal and Avifaunal Impact Assessment for the Proposed Canyon Springs Opencast Mine, Loding, Mpumalanga (Prime Resources) – 2012 to 2013.
- Faunal and Avifaunal Impact Assessment for the Proposed Opencast Coal Mines at Paardekop and Amersfoort, Mpumalanga (Xstrata Coal South Africa) – 2011 to 2013.
- Faunal and Avifaunal Impact Assessment for the Proposed Kangwane South Anthracite Mine, Kimatipoort, Mpumalanga (Prime Resources) – 2012.



- Faunal and Avifaunal Assessments for the Middleburg Mines Pan Assessments and Monitoring, Middleburg, Mpumalanga (BHP Billiton) – 2011 to 2012.
- Faunal and Avifaunal Impact Assessment for the Proposed Boschmanskrans Colliery Expansion and Canal Construction, Emalahleni, Mpumalanga (BHP Billiton) – 2011 to 2012.
- Faunal and Avifaunal Impact Assessment for the Proposed opencast mine on Portion 9 of the farm Twyfelaar, Carolina, Mpumalanga (World Wide Coal) – 2011 to 2012.
- Faunal and Avifaunal Assessments for the Carolina Mines Wetland Biodiversity Assessment, Carolina, Mpumalanga – 2011 to 2012.