AVIFAUNA SITE SENSITIVITY VERIFICATION REPORT FOR PROPOSED BATTERY ENERGY STORAGE SYSTEM (BESS) PROJECT

Avifauna Theme

Booysendal South, Thaba Chweu Local Municipality, Ehlanzeni District Municipality in the Mpumalanga Province, South Africa

16/03/2026

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Report Name	**AVIFAUNA SITE SENSITIVITY VERIFICATION REPORT FOR PROPOSED BATTERY ENERGY STORAGE SYSTEM (BESS) PROJECT**
Specialist Theme	Avifauna Site Sensitivity Verification
Project Reference	Booysendal South BESS
Report Version	16/03/2026
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Declaration	The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, Amended. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principals of science.

Table of Contents

List of Tables

List of Figures

Table of Abbreviations and Units of Measure

Acronym	Full Term / Definition
BESS	Battery Energy Storage System
BN	Booysendal North
DFFE	Department of Forestry, Fisheries and the Environment
EAP	Environmental Assessment Practitioner
EA	Environmental Authorisation
EMPr	Environmental Management Programme
GIS	Geographic Information System
IUCN	International Union for Conservation of Nature
NEMA	National Environmental Management Act
PAOI	Project Area of Influence
SACNASP	South African Council for Natural Scientific Professions
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SSV	Site Sensitivity Verification
SEI	Site Ecological Importance
SABAP2	Southern African Bird Atlas Project 2
VU	Vulnerable (IUCN Red List category)
EN	Endangered (IUCN Red List category)
NT	Near Threatened (IUCN Red List category)
LC	Least Concern (IUCN Red List category)
CR	Critically Endangered (IUCN Red List category)

Executive Summary

Objectives:
The assessment was conducted to verify the environmental sensitivity ratings provided by the Department of Forestry, Fisheries and the Environment (DFFE) National Web-Based Environmental Screening Tool for the proposed project. The primary goal was to determine whether the site qualifies for development under the relevant exclusion norms, potentially allowing the project to proceed without a full Environmental Authorisation, provided that specific conditions are met.

Main Findings:

Site Context:

The proposed facility will be located within an area already subject to significant anthropogenic disturbance, minimizing the likelihood of additional environmental impacts.

Habitat Assessment:

The site comprises predominantly disturbed or modified habitats, with limited ecological value. No Species of Conservation Concern (SCC) were observed during the assessment, and the probability of their occurrence is considered low.

Species of Conservation Concern:

While several SCC are known from the broader region, none were detected within the project footprint. The site does not offer suitable breeding or foraging habitat for these species.

Sensitivity Verification:

Although the **DFFE Screening Tool** may classify the site as having "High" sensitivity for certain environmental themes, the specialist assessment indicates that actual sensitivity is "Low" to "Very Low" due to the degraded nature of the habitats and absence of SCC.

Cumulative Impacts:

Given the already disturbed environment and the implementation of recommended mitigation measures, cumulative impacts are expected to be minimal.

Recommendations:

- The site is suitable for development under the applicable exclusion norm, provided that all recommended mitigation and monitoring measures are implemented.
- Key mitigation actions include:
    - Clear demarcation of development areas
    - Environmental induction for all personnel
    - Pre-construction walk-throughs to check for SCC or sensitive features
    - Installation of appropriate deterrents or protective devices
    - Use of environmentally sensitive lighting
    - Proper management of infrastructure during and after the project
    - Ongoing monitoring and compliance with the Environmental Management Programme (EMPr)

Conclusion:
No SCC were observed within the Project area, and the likelihood of their occurrence is low due to the disturbed habitat. The site does not trigger sensitivities that would preclude development under the relevant exclusion Norm. The project may proceed, subject to the implementation of the recommended mitigation and monitoring measures to minimize potential environmental impacts.

1 Introduction

1.1 Background

The Biodiversity Company was appointed to conduct a Site Sensitivity Verification (SSV) for the for the proposed Booysendal South (BS) Battery Energy Storage System (BESS) Project. The proposed Project is located on Portion 8 of Farm Sterkfontein No. 53, near Mashishing, within the Thaba Chweu Local Municipality, Ehlanzeni District Municipality in the Mpumalanga Province, South Africa (Figure 1-1). The proposed Project entails the construction, operation and eventual decommissioning of a utility-scale, behind-the-meter BESS with an installed capacity of up to 15 megawatts (MW) and an energy storage capacity of 30 megawatt-hours (MWh). The provided project boundary is considered as the Project Area of Influence (PAOI) (Figure 1-2). This report only pertains to the Booysendal South BESS.

The approach was informed by the Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The approach has taken cognisance of the recently published Government Notices 320 (20 March 2020) in terms of NEMA, dated 20 March and 30 October 2020: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation” (Reporting Criteria).

This report, after considering the findings and recommendations provided by the specialist herein, should inform and guide the Environmental Assessment Practitioner (EAP) and regulatory authorities, enabling informed decision making.

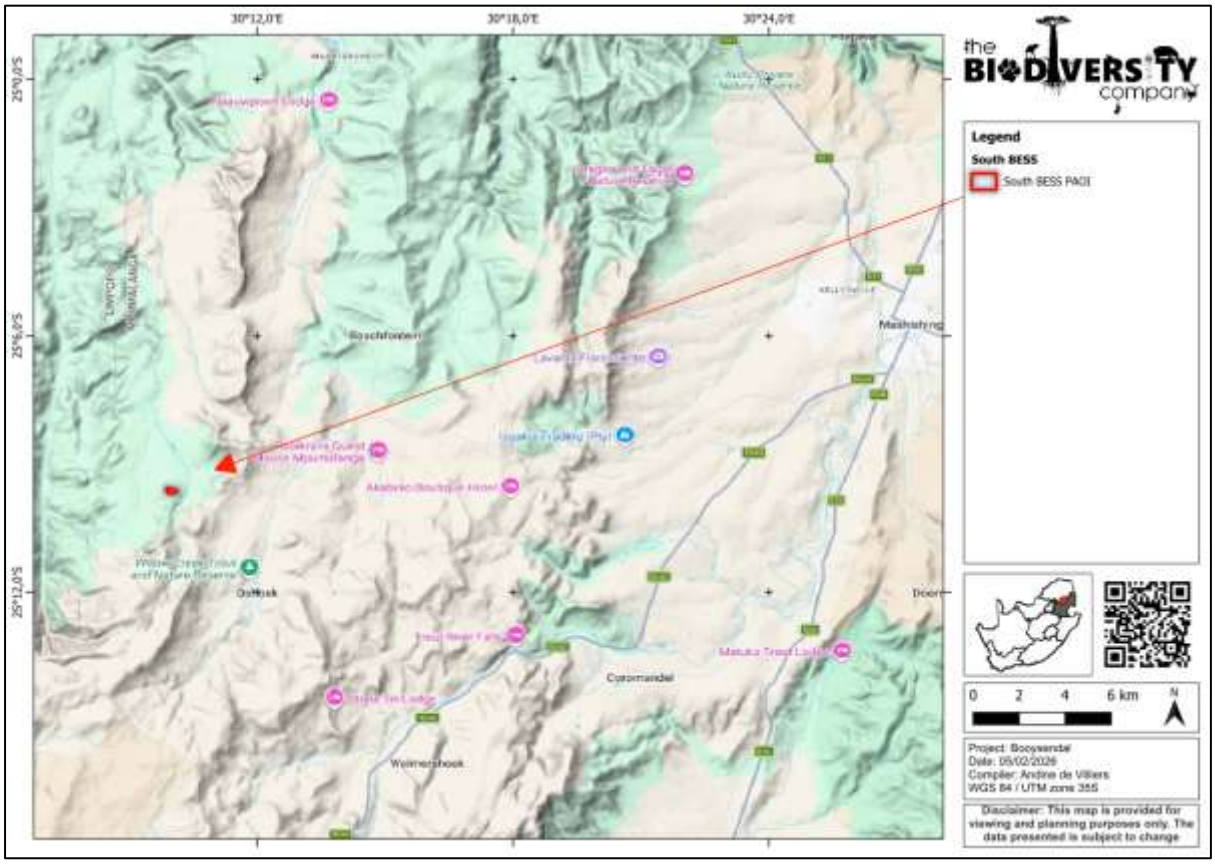


Figure 1-1 Proposed location of the Project area in relation to the nearby towns

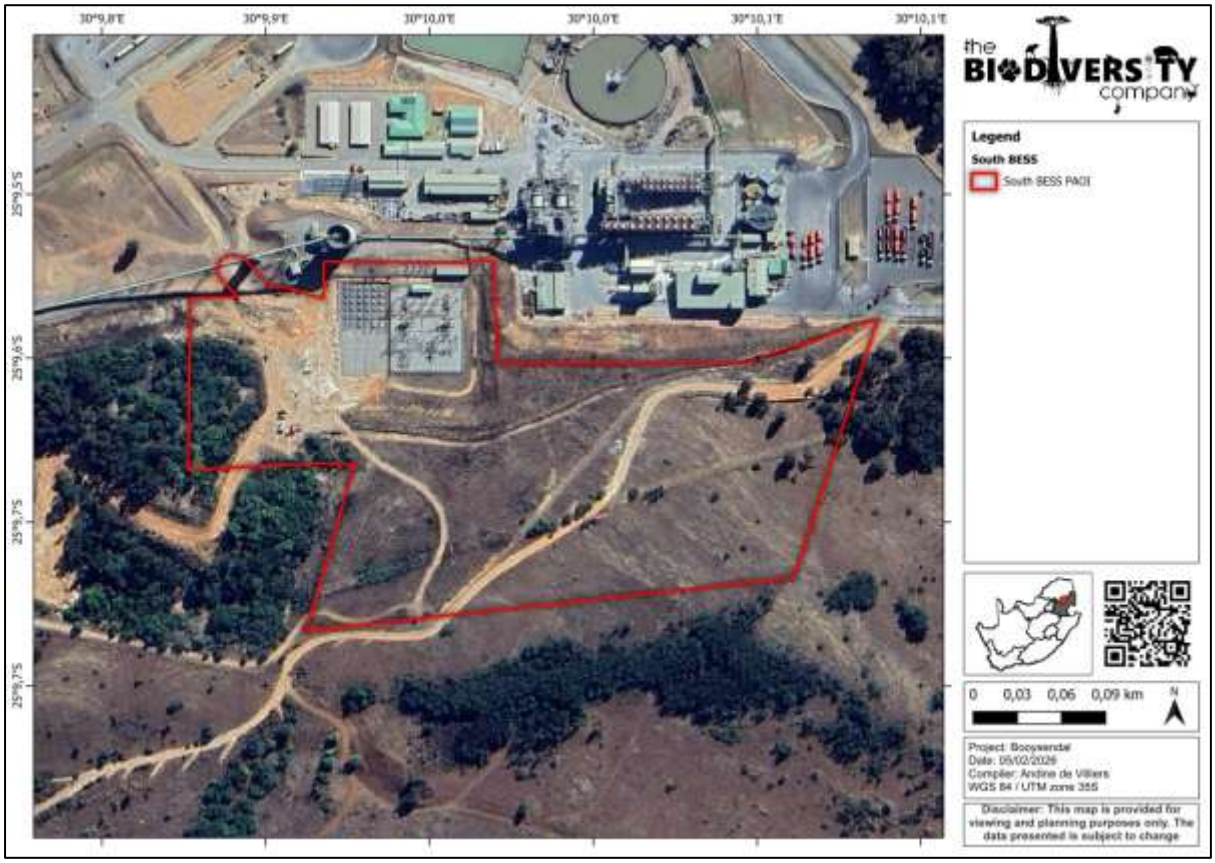


Figure 1-2 Proposed assessment area and Project area of the Booysendal South Battery Energy Storage System

1.2 Legal Framework

1.2.1 National Environmental Management Act, 1998

This assessment was conducted in accordance with the amendments to the Environmental Impact Assessment (EIA) Regulations 2014 (Government Notice Regulation (GNR) 982, of 4 December 2014, as amended) of the NEMA. The assessment also considered the Department of Forestry, Fisheries and the Environment (DFFE) Environmental Screening Tool (2025) (Screening Tool).

The approach further took cognisance of GN 320 of 20 March 2020, published in terms of NEMA, titled *"Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation."* (Reporting Criteria) These procedures outline the required assessment protocols and minimum reporting criteria for environmental themes identified by the Screening Tool.

1.2.2 Battery Energy Storage Exclusion Norm, 2024

This report has been compiled with consideration of the BESS Exclusion Norm, which provides for the exclusion of identified activities associated with the development and expansion of battery storage facilities in areas of low or medium environmental sensitivity from the requirement to obtain an EA.

The Exclusion Norm establishes the rules under which activities associated with the development and expansion of battery storage facilities, identified in terms of Section 24(2)(a) and (b) of the NEMA and listed in EIA Regulations Listing Notices 1, 2, or 3 of 2014, promulgated under Section 24(5) of NEMA, may be excluded from the requirement to obtain EA prior to commencement, while still meeting the objectives and principles of NEMA.

1.2.3 Department of Forestry, Fisheries and the Environment Screening Tool

The Screening Tool, developed by the DFFE, is prescribed in terms of the EIA Regulations, 2014, and is used to identify environmental sensitivities associated with a proposed development site. The Screening Tool provides a spatially based sensitivity rating (Very High or Low) based on the presence or absence of watercourse features. These sensitivity ratings inform the scope of specialist assessments required and the applicable regulatory pathway, including the potential applicability of exclusion norms. For projects seeking to rely on the BESS Exclusion Norm, the Screening Tool outputs form the baseline sensitivity classification that must be independently verified through a Site Sensitivity Verification undertaken by suitably qualified specialists.

1.2.4 Government Notice 320 and 1150: Assessment and Reporting Requirements

The approach adopted for this assessment has taken cognisance of GN 320, published in terms of NEMA, titled “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation.”

In addition, this assessment has been undertaken with due regard to GN 1150 which prescribes the “Procedures for the Assessment and Minimum Criteria for Site Sensitivity Verification for the purposes of exclusion” in terms of Section 24(2)(d) of NEMA. [Note this only applied to the terrestrial animal and plant species themes.]

Although this assessment is undertaken in support of a potential exclusion process, the principles, methodologies, and reporting standards set out in GN 320 and GN 1150 have been applied to ensure that the assessment is robust, transparent, and defensible. This includes adherence to the prescribed requirements relating to specialist independence, methodology, impact identification, sensitivity assessment, and the provision of clear conclusions and recommendations.

1.3 Scope of Work

In accordance with the procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Sections 24(5)(a) and (h) and 44 of the NEMA, 1998, when applying for environmental authorisation the current use of the land and the environmental sensitivity of the site under consideration as identified by the national web-based environmental screening tool, must be confirmed by undertaking a site sensitivity verification.

The outcome of this site sensitivity verification is to:

- Confirm or dispute the current use of the land and the environmental sensitivity as identified by the screening tool; and
- Motivate and provide evidence of either the verified or different use of the land and environmental sensitivity of the site.

1.4 Project Description

1.5 Project Description

The following information was provided by GCS Environment South Africa (Pty) Ltd and pertains to the proposed BS South BESS Project:

Northam proposes the development of the BS BESS Project at the existing Booysendal Platinum Mine (the Mine) in the Mpumalanga Province of South Africa. The proposed Project entails the construction, operation and eventual decommissioning of a utility-scale, behind-the-metre BESS with an installed capacity of up to 25 MW and an energy storage capacity of 50 MWh. The BS BESS Project will store

electrical energy during periods of lower electricity demand and release stored energy during periods of peak demand or grid instability.

The proposed BS BESS Project is intended to enhance electricity supply reliability and operational resilience at the BS Mine, while reducing reliance on, and pressure upon, the national electricity grid. The development will be located entirely within the existing mining footprint and will connect directly to established electrical infrastructure associated with the BS Mine.

1.5.1 Project Location and Area Context

The proposed BS BESS Project is located on Portion 8 of Farm Sterkfontein No. 53, near Mashishing, within the Thaba Chweu Local Municipality, which forms part of the Ehlanzeni District Municipality in the Mpumalanga Province, South Africa. The proposed Project area lies approximately 30 kilometres (km) west of Mashishing and is accessed via the R577 regional road, followed by established Mine access roads.

1.5.2 Overview of the Facility

The proposed BS BESS Project comprises the development of a containerised battery energy storage facility located within the existing operational footprint of the Mine. The facility will occupy a total fenced development area of approximately 2900 square metres (m²) and has been designed to integrate fully with the Mine's established electrical and operational infrastructure.

The proposed BS BESS Facility will operate as a behind-the-metre energy storage installation, providing electrical storage capacity for exclusive on-Area use. Stored electrical energy will be discharged directly to Mine infrastructure through a dedicated medium-voltage electrical connection to the existing BS consumer substation.

The Project has been purposefully designed to minimise environmental disturbance through the use of modular, containerised infrastructure and by situating the development entirely within an established industrial mining area. This approach limits additional land transformation, avoids encroachment into undeveloped or environmentally sensitive areas, and enables efficient construction, operation and eventual decommissioning of the facility.

1.5.3 Installed Capacity

The proposed Project will have an installed power capacity of up to 25 MW and an energy storage capacity of up to 50 MWh.

The BESS will supply electricity during peak demand periods to reduce the Mine's reliance on expensive Eskom peak Time-of-Use tariffs. In addition, the system will manage short-term load fluctuations and provide reliable backup capacity during periods of grid instability or electricity supply interruption.

1.5.4 Battery Technology

The proposed BS BESS Project will utilise Lithium Iron Phosphate (LFP) battery technology. This battery chemistry has been selected based on its proven performance, operational reliability and enhanced safety characteristics when compared with alternative lithium-ion technologies.

LFP batteries are characterised by high thermal stability and a significantly reduced risk of thermal runaway, which is a critical consideration for large-scale stationary energy storage applications. The chemistry exhibits strong resistance to overheating and fire propagation, thereby reducing potential safety risks to personnel, infrastructure and the surrounding environment.

In addition to its safety advantages, LFP technology offers a longer operational cycle life, high charge–discharge efficiency and stable performance under frequent cycling conditions. These attributes make LFP batteries particularly suitable for behind-the-metre industrial applications where daily load shifting, peak shaving and backup power functions are required.

LFP battery systems are widely deployed internationally in utility-scale and industrial energy storage facilities, including mining operations, due to their durability, predictable performance characteristics and reduced environmental risk profile over the Project lifecycle.

The proposed Project area is indicated in Figure 1-3 below.

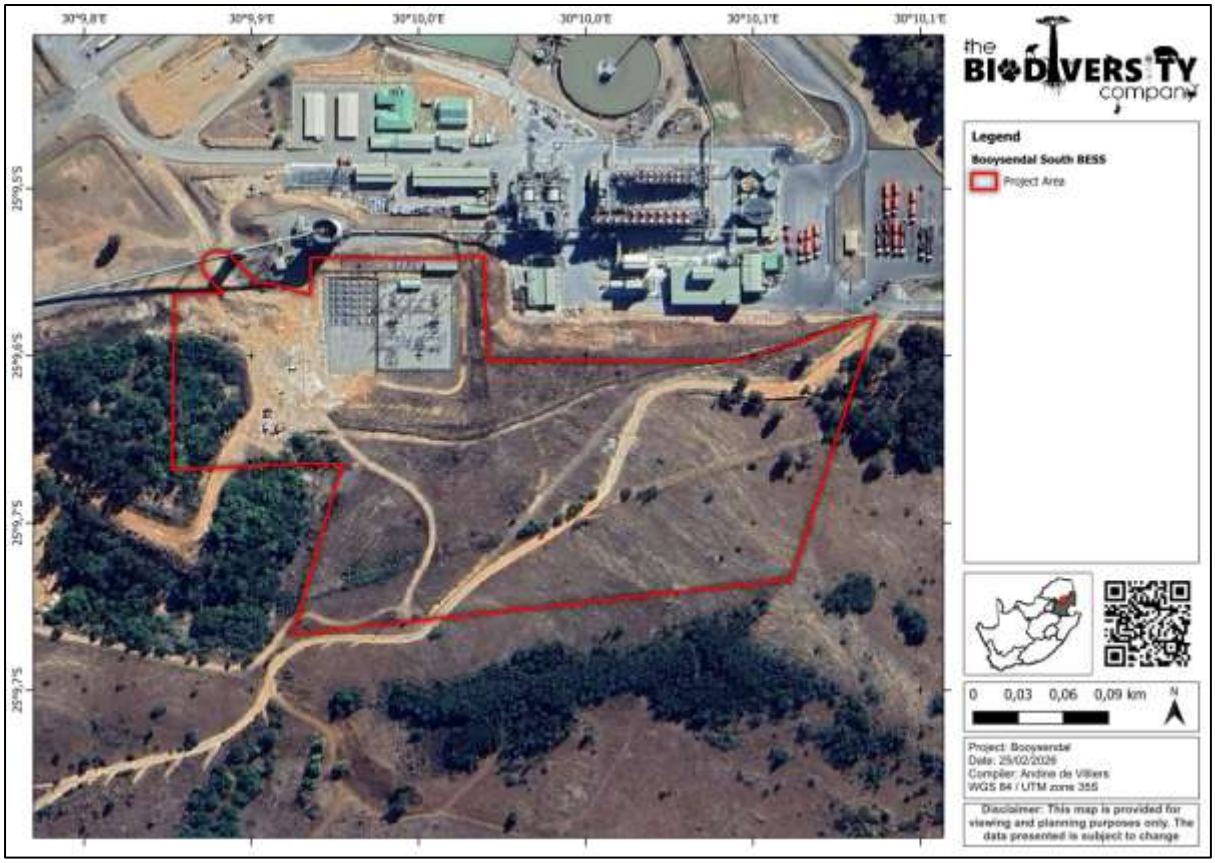


Figure 1-3 Assessment area and proposed Project area of the Booysendal South Battery Energy Storage System

1.6 Assumptions and Limitations

The following limitations and assumptions are relevant to the assessment:

- The field assessment was conducted from the 26th to the 30th of January 2026, which constitutes a wet season survey (Figure 1-4). This is deemed sufficient for the nature of the development and no further fieldwork is required;
- The PAOI was based on the assessment area as provided by the client. Any alterations to the area and/or missing GIS information pertaining to the assessment area would have affected the area surveyed, hence the results of this assessment;
- Whilst every effort was made to cover as much of the PAOI as possible, it is possible that some species that are present within the PAOI were not recorded during the field investigation due to their secretive behaviour;
- The entire assessment area was evaluated, but access around the area was mostly restricted; and

- The GPS used in the assessment has an accuracy of 5 m, and consequently, any spatial features delineated may be offset by up to 5 m.

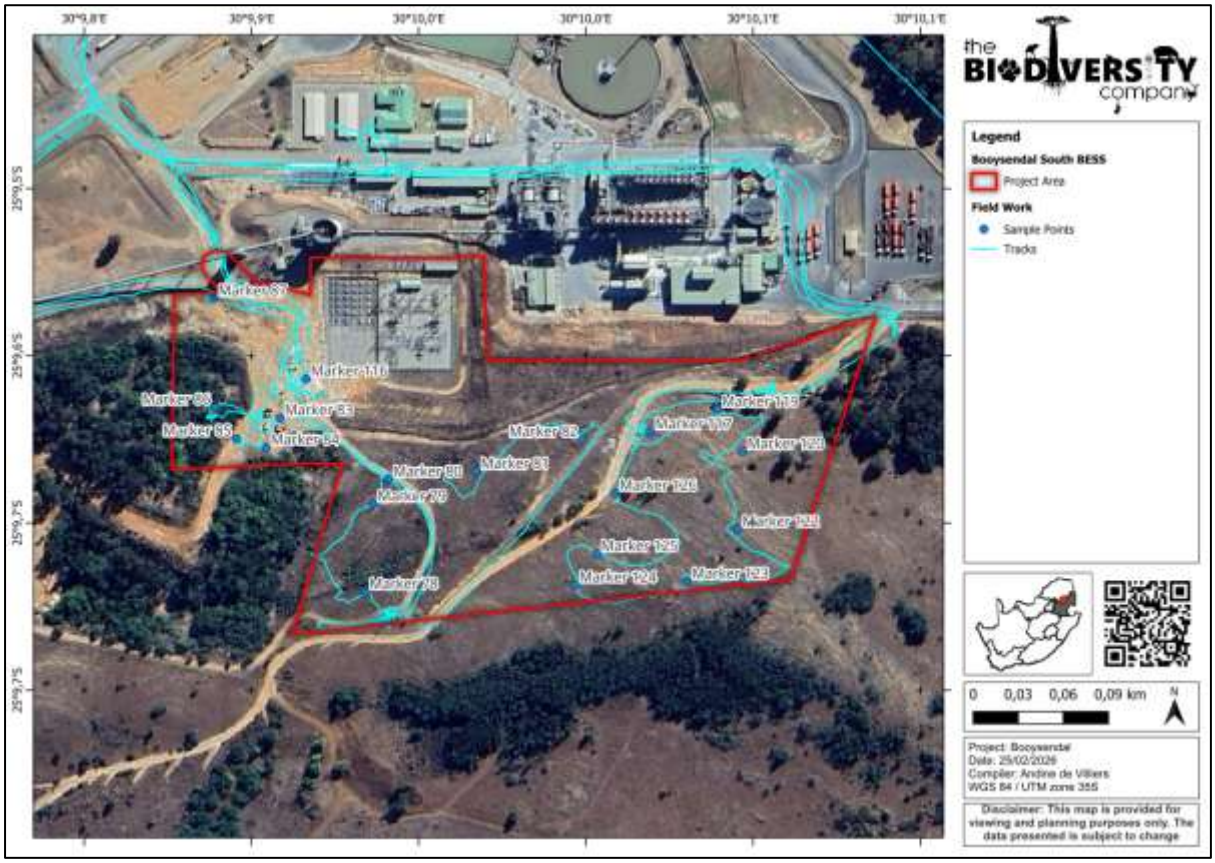


Figure 1-4 Map illustrating the Global Positioning System tracks of the specialist during the field survey

2 Results of Site Sensitivity Verification

2.1 Species of Conservation Concern

SABAP2 data indicate that 354 avifauna species are expected for the PAOI and surrounding areas. Of these 40 are considered specialist conservation concern SCC, but no SSC were observed on site (Table 2-1). The likelihood of occurrence within the POAI is indicated below.

Table 2-1 Threatened avifauna species that are expected to occur within the PAOI.

Scientific Name	Common Name	Regional *	Global (IUCN)+	Likelihood of occurrence
Alcedo semitorquata	Half-collared Kingfisher	VU	LC	Low
Anas erythrorhyncha	Red-billed Teal	NT	LC	Low
Anas undulata	Yellow-billed Duck	NT	LC	Low
Anhinga rufa	African Darter	NT	LC	Low
Anthropoides paradiseus	Blue Crane	VU	VU	Low
Anthus brachyurus	Short-tailed Pipit	VU	LC	Low
Anthus chloris	Yellow-breasted Pipit	VU	VU	Low
Aquila rapax	Tawny Eagle	EN	VU	Moderate

Aquila verreauxii	Verreaux's Eagle	VU	LC	Moderate
Ardea alba	Great Egret	NT	LC	Low
Ardea brachyrhyncha	Yellow-billed Egret	NT	LC	Low
Asio capensis	Marsh Owl	NT	LC	Moderate
Balearica regulorum	Grey Crowned Crane	VU	EN	Low
Ciconia nigra	Black Stork	EN	LC	Low
Circus ranivorus	African Marsh Harrier	VU	LC	Low
Elanus caeruleus	Black-winged Kite	NT	LC	High
Eupodotis senegalensis	White-bellied Bustard	VU	LC	Moderate
Falco biarmicus	Lanner Falcon	NT	LC	Moderate
Falco naumanni	Lesser Kestrel	VU	LC	Low
Geocolaptes olivaceus	Ground Woodpecker	NT	NT	Low
Geronticus calvus	Southern Bald Ibis	NT	NT	Low
Gorsachius leuconotus	White-backed Night Heron	VU	LC	Low
Grus carunculata	Wattled Crane	EN	VU	Low
Gyps africanus	White-backed Vulture	CR	CR	Low
Gyps coprotheres	Cape Vulture	VU	VU	Low
Monticola explorator	Sentinel Rock Thrush	LC	NT	Low
Neotis denhami	Denham's Bustard	VU	NT	Low
Netta erythrophthalma	Southern Pochard	NT	LC	Low
Nycticorax nycticorax	Black-crowned Night Heron	NT	LC	Low
Polemaetus bellicosus	Martial Eagle	EN	EN	Low
Promerops gurneyi	Gurney's Sugarbird	LC	NT	Low
Sagittarius serpentarius	Secretarybird	VU	EN	Low
Sarkidiornis melanotos	Knob-billed Duck	NT	LC	Low
Scopus umbretta	Hamerkop	NT	LC	Moderate
Stephanoaetus coronatus	Crowned Eagle	VU	NT	Low
Sylvia nigricapillus	Bush Blackcap	VU	VU	Low
Thalassornis leuconotus	White-backed Duck	NT	LC	Low
Turnix nanus	Black-rumped Buttonquail	EN	LC	Low
Tyto capensis	African Grass Owl	VU	LC	Low
Zapornia pusilla	Baillon's Crake	NT	LC	Low

*(Lee *et al.* 2025), + (IUCN 2025). CR = Critically Endangered, EN = Endangered, LC = Least Concern, NA = Not Applicable, NT = Near Threatened and VU = Vulnerable

2.2 Habitat Assessment

The following sections discuss the results from the field survey that was conducted for the proposed Project. Select sample points are described in Table 2-2.

Four (4) terrestrial habitat types were identified in the Project Area, namely Rocky Grassland (Ridge), Alien Stand, Disturbed Grassland, and Modified.

Table 2-2 Sensitivity summary of the survey points and habitat types delineated within the Project area

Survey Point	Habitat	Photographs
Site GPS Reference: **Marker 83** Date: 28/01/2026 GPS Coordinates: 25° 9'37.34"S 30° 9'54.62"E	**Modified** This habitat has been completely transformed from the natural state due to the ongoing disturbances related to the mining operations. It consists of cleared areas and roads. Very little to no natural vegetation remains, thus the ecological functioning is greatly reduced. No avifauna SCC observed, and none are expected.	 
Site GPS Reference: **Marker 86** Date: 28/01/2026 GPS Coordinates: 25° 9'37.11"S 30° 9'53.22"E	**Alien Stand** This habitat is dominated by alien and invasive flora species, mostly by *Acacia mearnsii.* Some ecological functioning remains and this habitat may support common fauna species. No avifauna SCCs observed, and none are expected.	 
Site GPS Reference: **Marker 81** Date: 28/01/2026 GPS Coordinates: 25° 9'38.49"S 30° 9'58.84"E	**Disturbed Grassland** This habitat consists of Sekhukhune Grassland that has been degraded over time due to ongoing disturbances, including edge effects from the nearby mine, widespread alien and invasive flora species, and ingress. Ecological functioning remains, and this habitat supports common indigenous fauna and flora species.	

	No avifauna SCCs were observed. Some avifauna SCC could occur within this habitat.	
Site GPS Reference: **Marker 78** Date: 28/01/2026 GPS Coordinates: 25° 9'41.08"S 30° 9'56.45"E	**Disturbed Grassland** This habitat consists of Sekhukhune Grassland that has been degraded over time due to ongoing disturbances, including edge effects from the nearby mine, widespread alien and invasive flora species, and ingress. No avifauna SCCs were observed. Some avifauna SCC could occur within this habitat.	 
Site GPS Reference: **Marker 120** Date: 28/01/2026 GPS Coordinates: 25° 9'38.06"S 30°10'4.58"E	**Rocky Grassland (Ridge)** This habitat consists of rocky outcrops and rocky areas nestled in the Degraded Grassland habitat. No avifauna SCCs were observed. Some avifauna SCC could occur within this habitat.	 

Site GPS Reference: **Marker 123** Date: 28/01/2026 GPS Coordinates: 25° 9'40.86"S 30°10'3.39"E	**Rocky Grassland (Ridge)** This habitat consists of rocky outcrops and rocky areas nestled in the Degraded Grassland habitat. . No avifauna SCCs were observed. Some avifauna SCC could occur within this habitat.	 

2.3 Site Ecological Importance

The different habitat types within the PAOI were delineated and identified based on observations during the field assessment, and available satellite imagery. These habitat types were assigned Site Ecological Importance (SEI) categories based on their ecological integrity, conservation value, the presence of species of conservation concern.

Three habitat types were delineated within the assessment area, namely Alien Stand, Degraded Grassland and Modified habitat. Their respective SEI and the corresponding mitigation guidelines are summarised in Table 2-3.

Table 2-3 Summary of habitat types delineated within the field assessment area

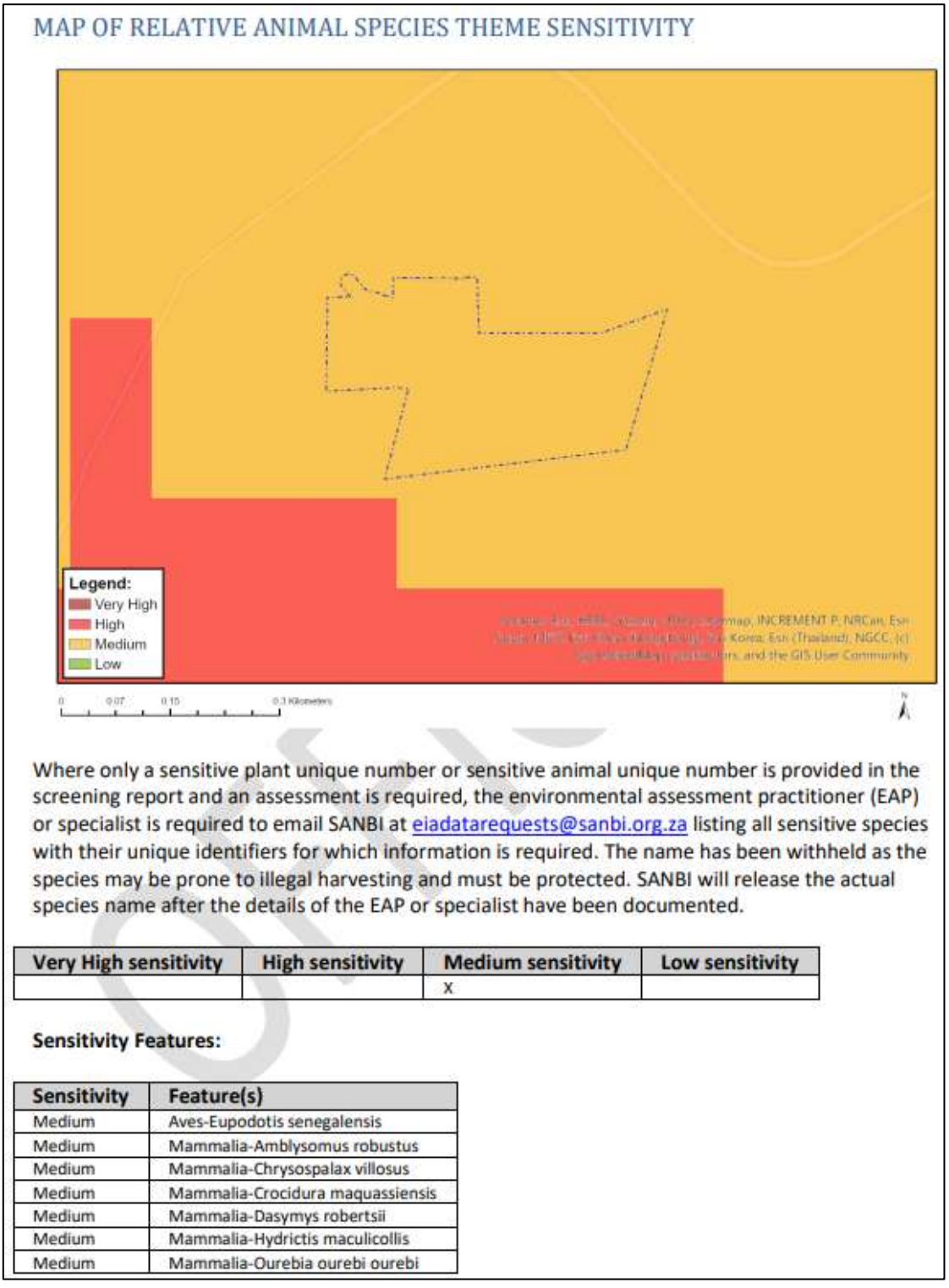
Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
Alien Stand	**Medium** Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals	**Low** Several minor and major current negative ecological impacts.	**Low**	**Medium** Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.	Low Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Rocky Grassland	**Medium** Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU)	**Medium** Mostly minor current negative ecological impacts with some major impacts and a few	**Medium**	**High** Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or	Low Minimisation and restoration mitigation – development activities of medium to high

	listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals	signs of minor past disturbance. Moderate rehabilitation potential.		species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed.	impact acceptable followed by appropriate restoration activities.
Disturbed Grassland	**Medium** Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals	**Medium** Mostly minor current negative ecological impacts with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.	**Medium**	**High** Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed.	Low Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Modified	**Very Low** No natural habitat remaining.	**Very Low** Several major current negative ecological impacts.	**Very Low**	**Very High** Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed.	**Very Low** Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

2.3.1 Desktop Ecological Sensitivity

The following is derived from the National Web-based Environmental Screening Tool Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended):

- Animal Species Theme sensitivity is 'Medium' for the PAOI, with the possibility of Avifauna SCC being present (Figure 2-1).



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Aves-Eupodotis senegalensis
Medium	Mammalia-Amblysomus robustus
Medium	Mammalia-Chrysospalax villosus
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Dasymys robertsii
Medium	Mammalia-Hydrictis maculicollis
Medium	Mammalia-Ourebia ourebi ourebi

Figure 2-1 Animal Species Theme Sensitivity

2.3.2 Screening Tool Comparison

The allocated sensitivities for each of the relevant themes are either disputed or validated for the assessed areas in Table 2-4 below. A summary explanation for each result is provided as relevant. The specialist-assigned sensitivity ratings are based largely on the SEI process followed in the previous section, and consideration is given to any observed or likely presence of SCC or protected species. The sensitivities delineated for the assessment area are illustrated in Figure 2-2.

Table 2-4 Summary of the Screening Tool vs specialist assigned sensitivities

Screening Tool Theme	Screening Tool	Habitat	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Animal Theme	Medium	Alien Stand	Low	Disputed – Habitat has been severely altered but still has the potential to support avifauna. Any SCC presence would be transient or temporary, but would not be considered an important habitat for the mentioned SSC.
		Rocky Grassland	Low	Disputed – Habitat has been severely altered but still has the potential to support avifauna, including SCCs, but would not be considered an important habitat for the mentioned SSC.
		Disturbed Grassland	Low	Disputed – Habitat has been severely altered but still has the potential to support avifauna, including SCCs, but would not be considered an important habitat for the mentioned SSC.
		Modified	Very Low	Disputed – Habitat has been severely altered and has limited potential to support SCC.

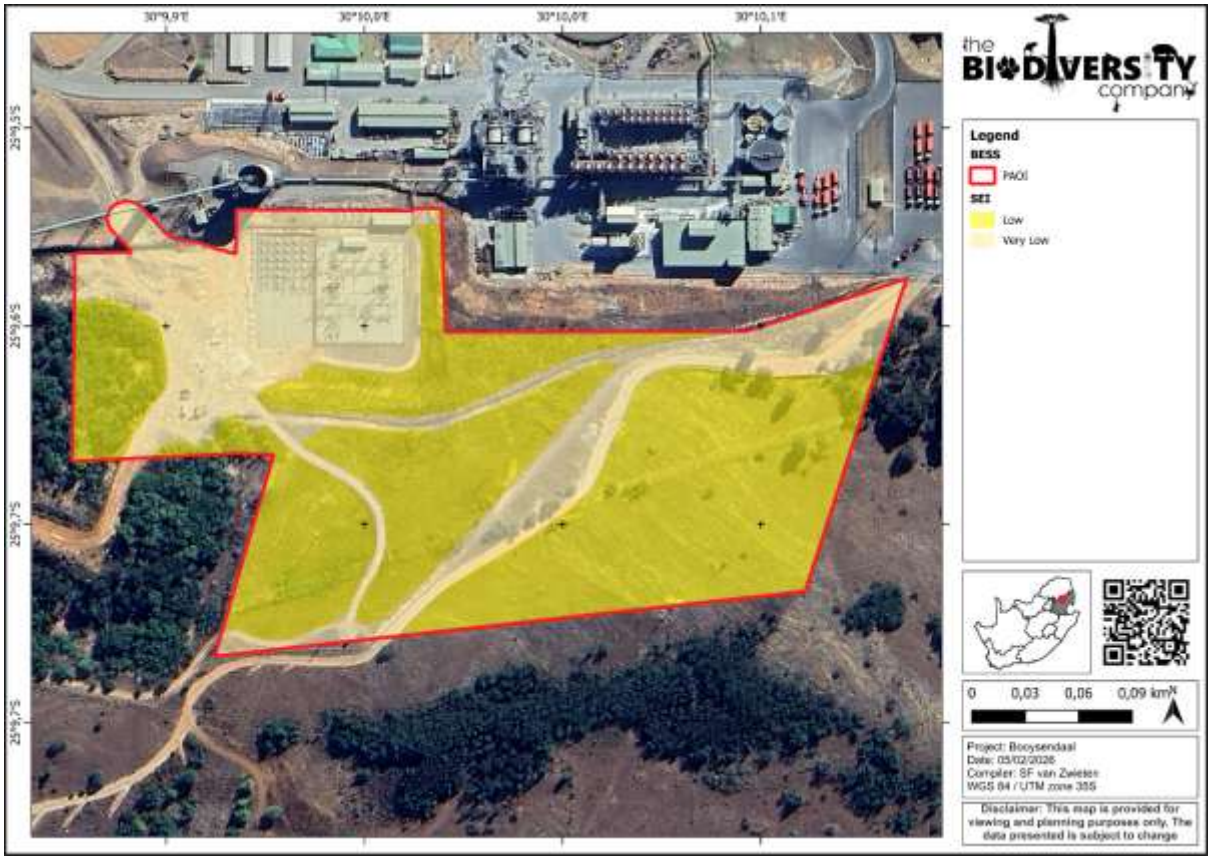


Figure 2-2 Site Ecological Importance of the assessment area

3 Avifauna Impact Management Actions

3.1 Impact Management

The purpose of the biodiversity impact management actions are to present mitigation in such a way that they can be incorporated into the Environmental Management Programme (EMPr), allowing for more successful implementation and auditing of the mitigations and monitoring measures.

Table 3-1 details the mitigation measure necessary for implementation, while

Table 3-2 provides recommended mitigation measures for the EAP to consider, aimed at minimising the overall impact on avifauna. Both tables include corresponding timeframes, targets, and performance indicators specific to the avifaunal component.

Table 3-1 Specific avifauna management outcomes pertaining to impacts to avifauna and their habitats

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
All personnel should undergo environmental induction with regards to avifauna and in particular awareness about not harming, collecting, or hunting terrestrial species, and owls, which are often persecuted out of superstition. Signs must be put up to enforce this.	Life of operation	Contractor/ Project Team	Evidence of trapping etc	Ongoing
The duration of the construction must be kept to a minimum to avoid disturbing avifauna.	Construction/Operational Phase	Contractor/ Project Team	Construction/Closure Phase	Ongoing
All areas to be developed must be walked through prior to any activity to ensure no nests or avifauna species are found in the area. Should any Species of Conservation Concern be found and not move out of the area, or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken.	Construction	Contractor/ Project Team	Presence of avifauna species and nests	During Phase
All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution	Planning and Construction	Contractor/ Project Team / Engineer	Presence of electrocuted birds	During phase
Outside lighting must be designed and limited to minimise impacts on fauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (red/green) lights should be used.	Construction/Operational Phase	Contractor/ Project Team / Engineer	Light pollution and period of light.	Ongoing
Security fencing must have markers placed on the fence to enhance visibility.	Life of Operation	Contractor/ Project Team / Engineer	Presence of birds stuck /dead in fences.	During phase
As far as possible power cables within the PAOI should be thoroughly insulated and where possible buried.	Construction and Operation	Contractor/ Project Team / Engineer	Exposed cables	During phase
Any exposed parts must be covered (insulated) to reduce electrocution risk	Planning and construction	Contractor/ Project Team / Engineer	Presence of electrocuted birds	During phase
All infrastructure, must be removed if the facility is decommissioned.	Closure/Rehabilitation	Contractor/ Project Team / Engineer	Infrastructure removal	During Process

Table 3-2 Generic management outcomes pertaining to impacts to avifauna and their habitats

Impact Management Actions	Implementation		Monitoring	
	Phase	**Responsible Party**	**Aspect**	**Frequency**
Management outcome: Habitats				
The areas to be developed must be specifically demarcated to prevent destruction into surrounding environments.	Life of operation	Contractor/ Project Team	Development footprint	Ongoing
Areas of indigenous vegetation, even secondary communities outside of the direct Project footprint, must under no circumstances be fragmented or disturbed further.	Life of operation	Contractor/ Project Team	Areas of indigenous vegetation	Ongoing
Cement must be mixed in a designated area on a liner away from water sources and buffers and that successful rehabilitation of the construction areas can take place.	Planning and Construction	Contractor/ Project Team	Water pollution and restricted rehabilitation	During phase
Leaking equipment and vehicles must be repaired immediately or be removed from PAOI to facilitate repair.	Life of operation	Contractor/ Project Team	Leaks and spills	Ongoing
A fire management plan needs to be complied to restrict the impact of fire.	Life of operation	Contractor/ Project Team	Fire Management	During Phase
Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all areas of construction. This includes wetting of exposed soft soil surfaces. No non-environmentally friendly suppressants may be used as this could result in the pollution of water sources.	Life of operation	Contractor/ Project Team	Dustfall	As per dust monitoring program.
Only environmentally friendly substances may be used for the cleaning/washing of the panels	Operational Phase	Project Team	Water pollution	During Phase
Management outcome: Avifauna				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	**Responsible Party**	**Aspect**	**Frequency**
All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with on site speed limits , to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited.	Life of Operation	Health and Safety Officer	Compliance to the training.	Ongoing
All project activities must be undertaken with appropriate noise mitigation measures to avoid disturbance to avifauna population in the region	Construction/Operational Phase	Environmental Officer	Noise	Ongoing

3.2 Cumulative Impacts

The quantitative impact of the proposed Project in isolation on avifauna biodiversity is anticipated to be “low” due to the expected adherence to mitigation. The cumulative impact of the proposed Project on avifauna is anticipated to be “low”. The proposed Project area has undergone historic and current disturbance, similar to the disturbances that the surrounding area has undergone.

After implementation of the mitigation measures as stipulated above the integrity and functionality of the natural habitat is not expected to deteriorate further as a result of the proposed Project and no irreplaceable loss of terrestrial biodiversity is anticipated.

Table 3-3 Cumulative Impacts associated with the proposed Project

Component Being Impacted On	Activity Which May Cause the Impact	Activity	Pre- Mitigation							Post Mitigation						
			Duration	Extent	Potential for impact on irreplaceable resources	Severity	Consequence	Probability	Significance	Duration	Extent	Severity	Potential for impact on irreplaceable resources	Consequence	Probability	Significance
Biodiversity	Construction of the Battery Energy Storage System and associated vegetation clearing, spread of alien species, habitat destruction and direct fauna mortalities	Impact in isolation	4	3	0	-3	-21	1	-21	4	2	-3	0	-18	1	-18
		Cumulative Impact	4	3	1	-3	-24	2	-48	4	3	-2	1	-16	2	-32

4 Conclusion

The avifauna site sensitivity verification for the BS BESS confirmed that no avifauna SCC were recorded within the development footprint during the field assessment. The footprint consists of disturbed habitat and was verified as Low to Very Low avifaunal sensitivity. SCC are therefore not confirmed for the footprint and are not expected to occur there on a regular or significant basis. In terms of clauses 4.8 and 4.9 of the BESS Exclusion Norm, no SCC were found or confirmed likely present on the footprint, and clause 4.9 is therefore not triggered. From an avifaunal perspective, the project remains suitable to proceed under the exclusion norm.

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6 Appendix Items

6.1 Appendix A: Specialist Declaration of Independence

DECLARATION

I, Ryno Kemp, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

Ryno Kemp

Ecologist

The Biodiversity Company

March 2026

DECLARATION

I, Lindi Steyn, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

Lindi Steyn

Ecologist

The Biodiversity Company

March 2026

DECLARATION

I, Sam Van Zwieten, declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

Sam Van Zwieten

Ecologist

The Biodiversity Company

March 2026

6.2 Appendix B: Specialist CVs

Dr Ryno KEMP

Pr Sci Nat 117462/17 +27 83 273 3488 ryno@thebiodiversitycompany.com

PROFILE SUMMARY

Avifauna and ecological specialist with 5 years' consulting experience, with international working experience. Specialist experience in project exploration, mining, hydropower, renewable energy, and private sector developments. Project management of national and international multi-disciplinary projects. Provides specialist guidance, technical support, and facilitation for compliance with in-country legislative requirements and international lender standards. Registered Pr Sci Nat with the South African Council for Natural Scientific Professions.

PERSONAL INFO

Nationality: South African

Date of birth: 09 October 1991

EXPERIENCE

Lender reporting requirements

Environmental Impact Assessments (EIA)

Environmental Management Programme (EMP)

Project Management

Avifaunal Conservation Surveys

Unit manager

SKILLS

- ✓ Habitat Modelling
- ✓ Flight path modelling
- ✓ Critical Habitat Assessments
- ✓ Avifauna, Faunal and Bat Assessments
- ✓ Long-term Monitoring (Avifauna)
- ✓ Monitoring & Management Plans
- ✓ GIS spatial analysis

LANGUAGES

English – Proficient

Afrikaans – Proficient

ACADEMIC QUALIFICATIONS

University of Pretoria, Pretoria, South Africa (2017 - 2024): PhD in Zoology
Title: Investigates the impacts of climate change on threatened arid-zone Red Lark (*Calendulauda burra*) using a mechanistic model

University of Pretoria, Pretoria, South Africa (2016): BSc Honours in Zoology
Title: Investigated the thermoregulation ability in free-ranging Ground Woodpeckers during cold winter months.

University of Pretoria, Pretoria, South Africa (2011 - 2015): BSc in Zoology

UNISA, South Africa (2020): Certificate in Environmental Law and Liabilities for the Regulated Community (Short course).

PROFESSIONAL EXPERIENCE

Nov 2022 – Present	**The Biodiversity Company** Ecologist / Avifauna Specialist/Unit Manager
Feb 2020 – Nov 2022	**VulPro** Research Manager
Sept 2021 – Nov 2022	**ZESC** Avifauna specialist

INTERNATIONAL EXPERIENCE

Angola, Zambia, South Africa

Signed: Ryno Kemp

Dr Lindi Steyn

Pr Sci Nat 119992 +27 72 129 3759 Lindi@thebiodiversitycompany.com

PROFILE SUMMARY

Environmental and Ecological Specialist with eight years of consulting experience, including work on international projects. Proven proficiency in supporting initiatives within exploration, mining, engineering, hydropower, renewable energy, and private sector development sectors. Adept at providing expert advice, technical assistance, and facilitation to achieve compliance with local regulations and international lender requirements. Registered as a Professional Natural Scientist (Pr Sci Nat) with the South African Council for Natural Scientific Professions.

PERSONAL INFO

Nationality: South African

Date of birth: 25 May 1988

EXPERIENCE

Lender reporting requirements

Environmental, Social and Health Impact Assessments (ESHIA)

Environmental Management Programmes (EMP)

Ecology

SKILLS

- ✓ Biodiversity Assessment
- ✓ Avifauna Assessment
- ✓ Monitoring & Management Plans
- ✓ GIS spatial analysis and digital cartography
- ✓ Critical Habitat Assessments

LANGUAGES

English – Proficient

Afrikaans – Proficient

INTERNATIONAL EXPERIENCE

South Africa, Swaziland. Zimbabwe, Lesotho

Signed: Lindi Steyn

ACADEMIC QUALIFICATIONS

University of Johannesburg, Johannesburg, South Africa (2018): PHILOSOPHIAE DOCTOR (PhD) – Biodiversity and Conservation
Title: *The effect of DDT on the histology, reproductive success and overall health of the House Sparrow in designated areas.*

University of Johannesburg, Johannesburg, South Africa (2013): MAGISTER SCIENTIAE (MSc)- Biodiversity and Conservation
Title: Comparative determination of the numbers of four garden bird species, the House Sparrow, *Passer domesticus*, the Cape Glossy Starling, *Lamprotornis nitens*, the Cape Turtle Dove, *Streptopelia capicola* and the Laughing Dove, *Streptopelia senegalensis* in the Johannesburg and Vaalwater areas with study into possible causes of expected declines.

University of Johannesburg, Johannesburg, South Africa (2011): BACCALAUREUS SCIENTIAE CUM HONORIBUS (Hons) – Zoology

University of Johannesburg, Johannesburg, South Africa (2010): BACCALAUREUS SCIENTIAE IN NATURAL AND ENVIRONMENTAL SCIENCES. Majors: Zoology and Botany.

Damelin, Bramley, Johannesburg: National Certificate in Field Guiding (Lodge Management) (2007)

Damelin, Bramley, Johannesburg: Field guiding FGASA level 1 certificate (2007)

Damelin, Bramley, Johannesburg: Ecotraining- Karongwe & Selati (2007)

PROFESSIONAL EXPERIENCE

May 2018 – Present	**The Biodiversity Company** Ecologist
Jan 2012 – July 2018	**University of Johannesburg** Laboratory assistant, Demonstrator, Tutor

Sam VAN ZWIETEN

Cand Sci Nat 167363 +27 72 764 5690 sam@thebiodiversitycompany.com

PROFILE SUMMARY

Avifauna and ecological specialist with 2 years' consulting experience, with international working experience. Specialist experience in project exploration, mining, renewable energy, and private sector developments. Project management of national and international multi-disciplinary projects. Provides specialist guidance, technical support, and facilitation for compliance with in-country legislative requirements and international lender standards. Registered Cand Sci Nat with the South African Council for Natural Scientific Professions.

PERSONAL INFO

Nationality: South African

Date of birth: 30 August 1995

EXPERIENCE

Lender reporting requirements

Environmental Impact Assessments (EIA)

Environmental Management Programme (EMP)

Avifaunal Conservation Surveys

Project Management

SKILLS

- ✓ Avifauna, Faunal and Bat Assessments
- ✓ Critical Habitat Assessments
- ✓ Long-term Monitoring (Avifauna)
- ✓ Monitoring & Management Plans
- ✓ GIS spatial analysis

LANGUAGES

English – Proficient

Afrikaans – Basic

Signed: Sam van Zwieten

ACADEMIC QUALIFICATIONS

University of KwaZulu-Natal, Pietermaritzburg, South Africa (2020-2022): BSc Masters in Genetics
Title: Phylogenetic diversity, host specificity and geographic distribution of avian malaria in Africa.

University of Johannesburg, Johannesburg, South Africa (2019): BSc Honours in Zoology
Title: The Presence and Prevalence of Avian Malaria in the Greater Johannesburg Region.

University of Johannesburg, Johannesburg, South Africa (2014 - 2018): BSc in Zoology and Environmental Management

PROFESSIONAL EXPERIENCE

Nov 2023 – Present	**The Biodiversity Company** Ecologist / Avifauna Specialist
Mar 2023 – Nov 2023	**MAK Analytical** Laboratory Technician
Jan 2019 – Nov 2019	**University of Johannesburg** Student Demonstrator

INTERNATIONAL EXPERIENCE

Angola, Botswana, Eswatini, South Africa