



AVIFAUNA COMPLIANCE STATEMENT FOR THE PROPOSED DELPHI SUBSTATION EXPANSION PROJECT

**Enoch Mgijima Local Municipality, Chris Hani
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Report Name	AVIFAUNA COMPLIANCE STATEMENT FOR THE PROPOSED DELPHI SUBSTATION EXPANSION PROJECT	
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Declaration	<p>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.</p>	

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1 Introduction

1.1 Background

The Biodiversity Company was appointed to undertake an avifauna assessment for the proposed Delphi Substation Expansion project. The proposed project (project area) is located approximately 14 km south west of the town Komani, within the Enoch Mgijima Local Municipality, Chris Hani District Municipality, Eastern Cape Province (Figure 1-1). The project area of interest (PAOI) consists of the project area provided (Figure 1-2).

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 taking into consideration 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.

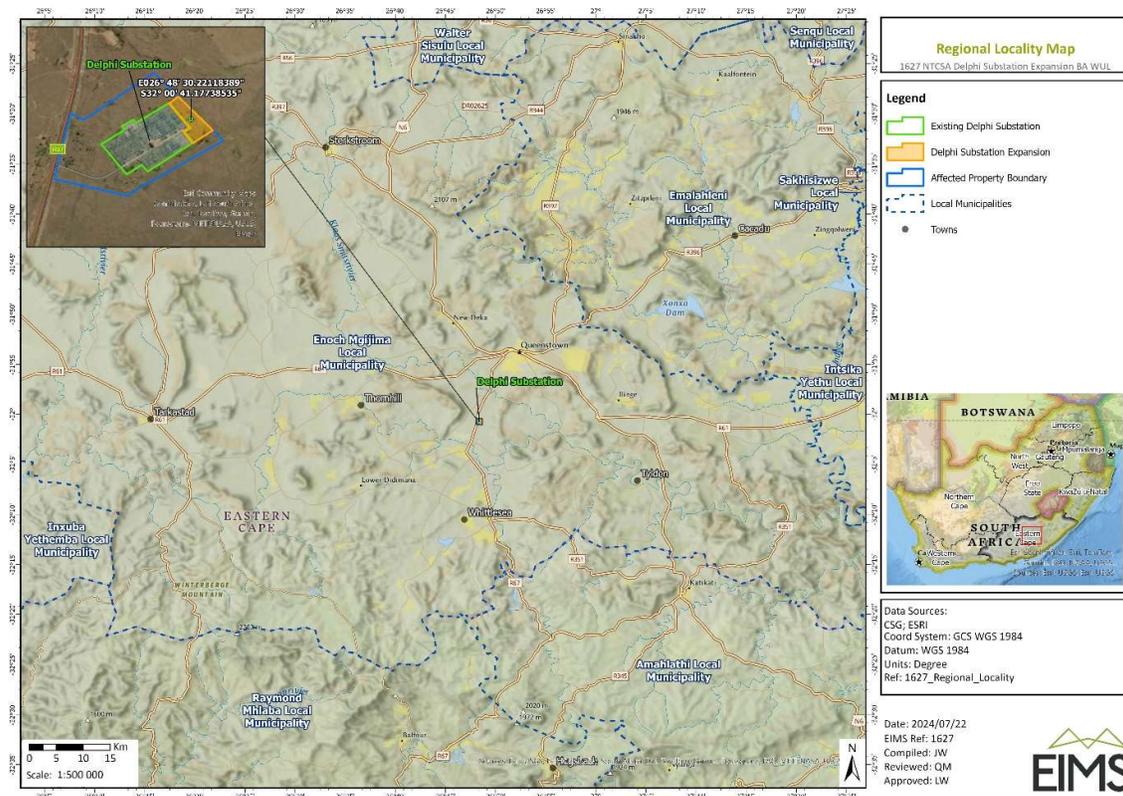


Figure 1-1 Proposed location of the project area in relation to the nearby towns as provided by EIMS

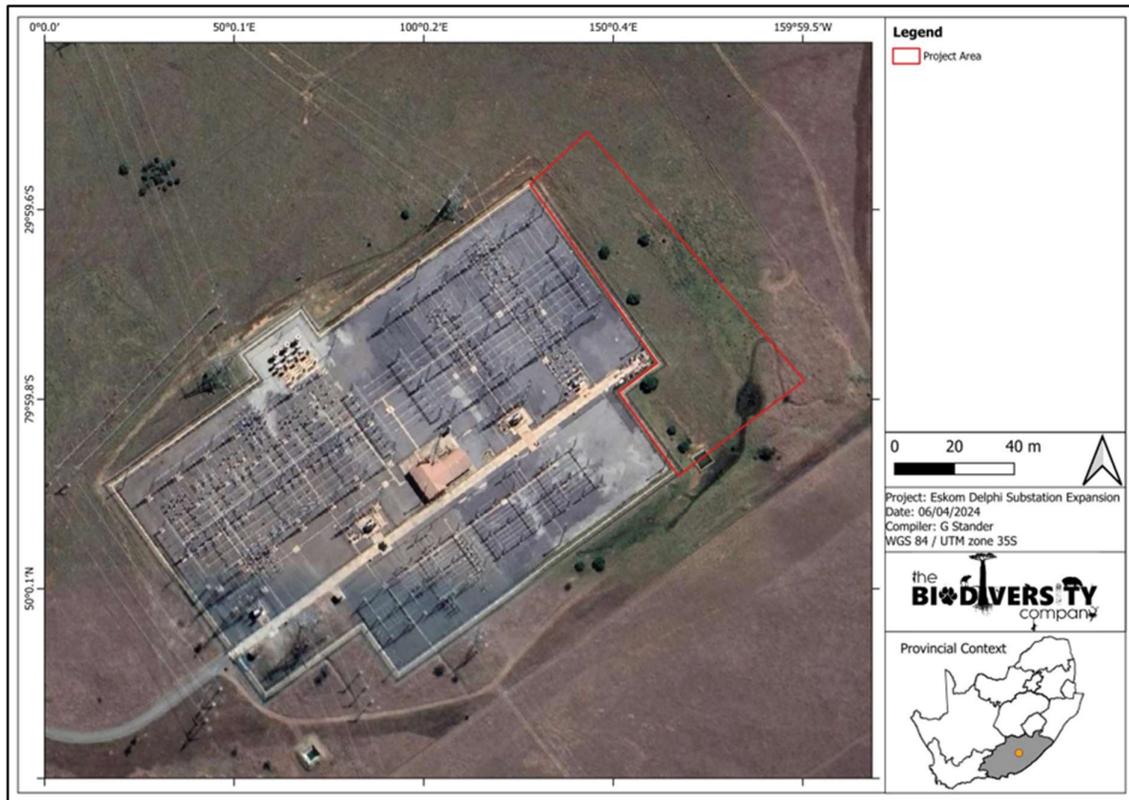


Figure 1-2 Project area of relevance

1.2 Project Description

Details pertaining the proposed project, as received from Environmental Impact Management Services (EIMS, June 2024), is listed below:

The proposed works to be undertaken by Eskom Holdings SOC Ltd entails the expansion of Delphi substation.

400 kV Yard:

- Extend the 400 kV in the north easterly (NE) direction by one bay.
- Equip 1 x 400 kV transformer bay.
- Install 1 x 400/132 kV 500 MVA transformer.
- Equip 400 kV B/B 1 B/S 1.
- Equip 400 kV B/C B.

132 kV Yard:

- Extend the 132 kV B/B in the NE by 7 bays.
- Equip 1 x 132 kV transformer bay.
- Equip 132 kV B/B 1 B/S 1.

- Equip 132 kV B/C B in a new position.

Civil/Structural Requirements:

- Fence, yard terrace and road extension.
- Oil dam relocation.
- Special earthworks.
- Deviation of the existing storm water drainage.

1.3 Scope of Work

The assessment was achieved according to the above-mentioned legislation and the best-practice guidelines and principles for Avifaunal Impact Assessments within the context of BESF as outlined by BirdLife South Africa (2017). The scope of the Avifaunal Impact Assessment included the following:

- Desktop assessment to identify the relevant ecologically important geographical features within the Project Area of Influence (PAOI) and surrounding landscape
- Desktop assessment to compile an expected species list and possible avifauna Species of Conservation Concern (SCC) that potentially occur within the PAOI;
- Fieldwork to determine the density and composition of species in the PAOI;
- Description of the baseline avifauna species and Functional Feeding Guild (FFG) composition assemblage within the PAOI;
- Delineate site sensitivity or sensitivities i.e., the Site Ecological Importance (SEI) within the context of the avifauna species assemblage of the PAOI; and
- Provide mitigation measures to prevent or reduce the possible impacts.

1.4 Assumptions and Limitations

The following assumptions and limitations are applicable for this assessment:

- The PAOI was based on the project footprint 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 and hence the results of this assessment;
- The field survey was completed on 23 May 2024 for 1 day, this constitutes an early dry season survey. This assessment is deemed sufficient and no additional field assessments are required;
- 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 investigations due to their secretive behaviour; 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.

1.5 Key Legislative Requirements

The legislation, policies and guidelines listed below in Table 1-1 are applicable to the current project. The list below, although extensive, may not be complete and other legislation, policies and guidelines may apply in addition to those listed below.

Table 1-1 A list of key legislative requirements

Region	Legislation / Guideline	Comment
National	NEMA	Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017), Appendix 6 requirements
	The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA), Threatened or Protected Species Regulations	The protection of species and ecosystems that warrant protection
	Assessment Protocol (March 2020)	The minimum criteria for reporting.
	Assessment Protocol (October 2020)	Protocol for the specialist assessment and minimum report content requirements.
	NEMWA;	The regulation of waste management to protect the environment.
	NWA	The regulation of water uses.
	GN 1003 of GG 43726 of 18 Sept 2020	The regulation and management of alien invasive species.
Provincial	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA)	To provide for control over the utilisation of the natural agricultural resources, including the vegetation and the combating of weeds and invader plants.
	Eastern Cape Environmental Management Bill, in terms of Rule 147 (2019)	Protection of biodiversity

In line with the protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity, as per Government Notice 320 published in terms of NEMA, dated 20 March 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" – section 3, subsection 1:

- Where the information gathered from the site sensitivity verification differs from the designation of 'Very High' terrestrial animal sensitivity on the screening tool and it is found to be of a 'Low' sensitivity, then a Terrestrial Animal Compliance Statement must be submitted.

The information obtained from a site sensitivity verification, which involved both a desktop assessment as well as a field survey, confirmed that the proposed footprint area is of a 'Low' sensitivity. Therefore, this report constitutes a Terrestrial Animal Compliance Statement.

As per sections 2 and 3 of the protocol discussed above, a Terrestrial Animal Compliance Statement must contain the information as presented in Table 1-2 below.

Table 1-2 Terrestrial Animal Compliance Statement information requirements as per the relevant protocol, including the location of the information within this report

Information to be Included (as per GN 320, 20 March 2020)	Report Section
Statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment	2.1
A description of the methodology used to undertake the site survey and prepare the compliance statement, including equipment and modelling used where relevant;	2
The mean density of observations/ number of samples sites per unit area	2.1
Where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMPr;	4
A description of the assumptions made and any uncertainties or gaps in knowledge or data;	1.4
Any conditions to which the compliance statement is subjected.	N/A

A signed statement of independence by the specialist	8.3
Specialist details, including a CV	8.4

A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.

2 Fieldwork

2.1 Avifauna Field Assessment

The avifaunal field survey was completed on 23 May 2024 for 1 day. Sampling consisted of random diurnal incidental surveys as a result of the size of the PAOI. The horizontal detection limit was set to 150 m. The observer would document the date, habitat, numbers of each species, detection method (seen or heard), behaviour (perched or flying) and general notes on habitat and nesting suitability for conservation important species. Effort was made to cover all the different habitat types within the limits of time and access, nearby water sources were also assessed. Figure 2-1 shows the locations of the point counts conducted.

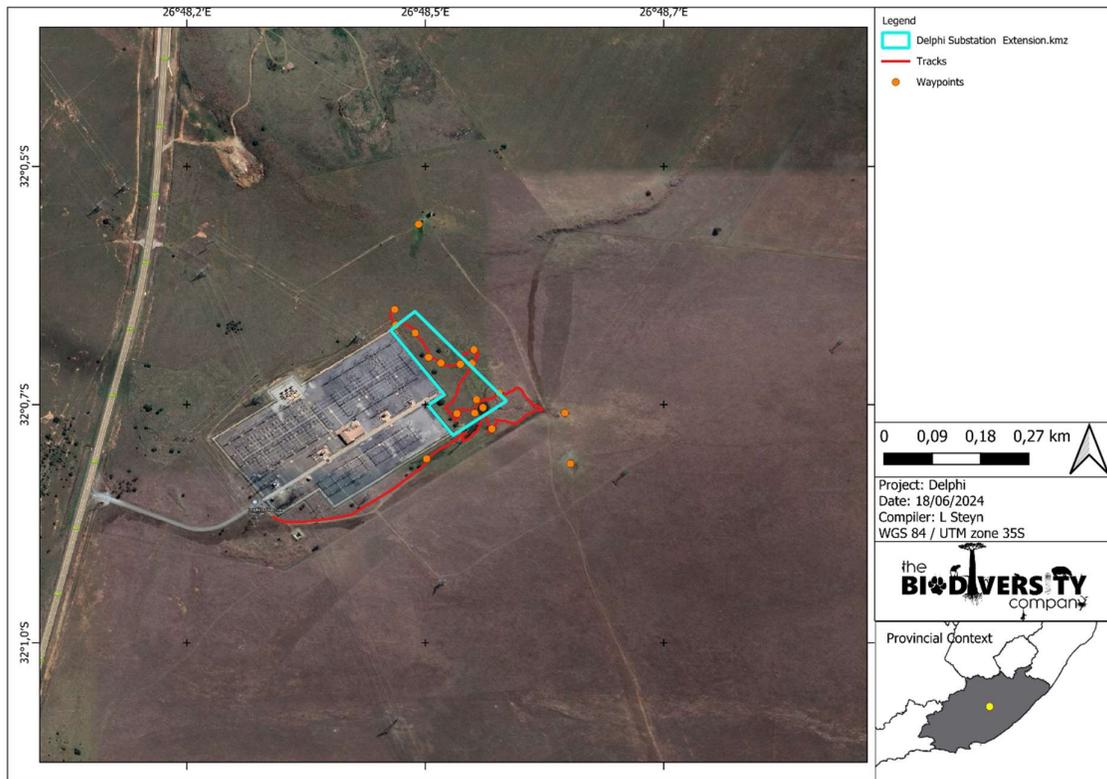


Figure 2-1 Map illustrating the field coverage

3 Results & Discussion

3.1 Ecologically Important Landscape Features

The GIS analysis pertaining to the relevance of the proposed project to ecologically important landscape features is summarised in Table 3-1.

Table 3-1 Summary of relevance of the proposed project to ecologically important landscape features

Desktop Information Considered	Relevant/Irrelevant
Ecosystem Threat Status	Relevant – Project Area overlaps with a 'Least Concern' Ecosystem (RLE, 2021).
Ecosystem Protection Level	Relevant – Project Area overlaps with a 'Not Protected' Ecosystem.
Provincial Conservation Plan	Relevant – Project Area overlaps areas classified as Critical Biodiversity Area 2 (CBA 2) and Other.
SAPAD & SACAD	Irrelevant – Project Area does not overlap with any SAPAD and SACAD areas. The closest protected area is Lawrence de Lange Nature Reserve, ~16 km north of the Project Area.
National Protected Areas Expansion Strategy	Irrelevant – Project Area does not overlap any Priority Focus Areas (NPAES, 2018). The closest NPAES is ~26 km east of the Project Area.
Important Bird and Biodiversity Areas	Irrelevant – Project Area does not overlap with any IBAs. The closest IBA is ~49 km south of the Project Area (Amatola – Katberg Mountain).
South African Inventory of Inland Aquatic Ecosystems (SAIIAE)	Irrelevant – No SAIIAE river or wetland systems overlap with the Project Area or the 500 m Freshwater Regulated area.
National Freshwater Priority Area	Irrelevant – Project Area and the 500 m regulated area overlaps with NFEPA wetlands.
Coordinated Water Bird Count	Irrelevant – Project area does not overlap with any CWAC sites
Coordinated Avifaunal Road Count	Irrelevant - Project area does not overlap with any CAR routes

3.2 Avifauna Expected Species

SABAP2 data indicate that 250 avifauna species are expected for the PAOI and surrounding areas. Of these, 16 are considered SCC (Table 3-2). The likelihood of occurrence within the POAI are included here. There is not sufficient habitat, or the adjacent disturbance is too extensive for the species to nest in the POAI, they can however still forage in the PAOI. No SCC were recorded in the PAOI. During the assessment only general species were recorded.

Table 3-2 Threatened avifauna species that are expected to occur within the PAOI. EN = Endangered, LC = Least Concern, NT = Near Threatened and VU = Vulnerable

Common Name	Scientific Name	Family Name	Regional *	Global +	Likelihood of occurrence	Screening tool
African Finfoot	<i>Podica senegalensis</i>	Heliornithidae	VU	LC	Low	
Black Harrier	<i>Circus maurus</i>	Accipitridae	EN	EN	Low	
Blue Bustard	<i>Eupodotis caerulescens</i>	Otididae	LC	NT	Moderate	
Cape Vulture	<i>Gyps coprotheres</i>	Accipitridae	EN	VU	Moderate	
Denham's Bustard	<i>Neotis denhami</i>	Otididae	VU	NT	Moderate	High
Grey Crowned Crane	<i>Balearica regulorum</i>	Gruidae	EN	EN	Low	
Ground Woodpecker	<i>Geocolaptes olivaceus</i>	Picidae	LC	NT	Low	
Knysna Woodpecker	<i>Campethera notata</i>	Picidae	NT	NT	Low	
Lanner Falcon	<i>Falco biarmicus</i>	Falconidae	VU	LC	Moderate	
Martial Eagle	<i>Polemaetus bellicosus</i>	Accipitridae	EN	EN	Low	

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Mountain Pipit	<i>Anthus hoeschi</i>	Motacillidae	NT	NT	Low
Secretarybird	<i>Sagittarius serpentarius</i>	Sagittariidae	VU	EN	Moderate
Tawny Eagle	<i>Aquila rapax</i>	Accipitridae	EN	VU	Low
Verreaux's Eagle	<i>Aquila verreauxii</i>	Accipitridae	NA	LC	Low
White-bellied Korhaan	<i>Eupodotis senegalensis</i>	Otididae	VU	LC	Moderate
Yellow-tufted Pipit	<i>Anthus crenatus</i>	Motacillidae	NT	NT	Low

*(Taylor *et al.* 2015), + (IUCN 2021)

3.3 Habitat Assessment

Fine-scale habitats within the landscape are important in supporting a diverse avifauna community as they provide differing nesting, foraging and reproductive opportunities.

The main habitat types identified across the PAOI were initially delineated largely based on aerial imagery, and these main habitat types were then refined based on the field coverage and data collected during the survey. Three (3) habitats were delineated (Figure 3-1), a full description is provided below.

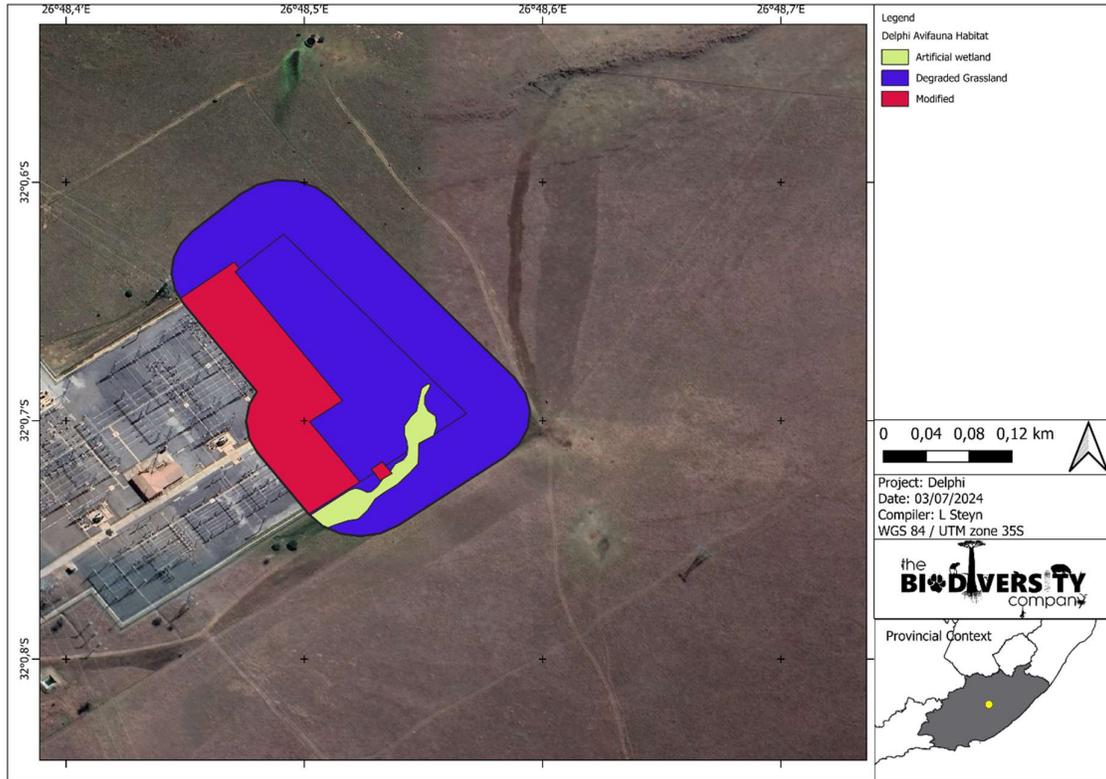


Figure 3-1 Habitats identified within the assessment areas

3.3.1 Degraded Grassland

This habitat consists of a grass cover that has been disturbed by both edge effects as well as human infringement. SCC that could possibly use this habitat as foraging area are: Blue Bustard, Cape Vulture, Denham's Bustard, Lanner Falcon, Secretarybird and White-bellied Korhaan.



Figure 3-2 *Examples of the Degraded Grassland habitat*

3.3.2 Modified

This habitat consists of holding dam, the dam has a covering net to avoid bird interaction with the dam. No SCC are expected in this habitat.



Figure 3-3 *Modified habitat*

3.3.3 Artificial Wetland

This habitat consists of an artificial wetland as per the TBC Wetland (2024) report. The area is covered with wetland plants, but does not appear to have a constant water source, reducing the likelihood of supporting SCC. No SCC are expected in this habitat.



Figure 3-4 *Artificial wetland habitat*

3.4 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 PAOI, namely Modified, Degraded Grassland and Artificial Wetland. The respective SEI and the corresponding mitigation guidelines are summarised in Table 3-3.

Table 3-3 Summary of habitat types delineated within the PAOI.

Habitat Type	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
Modified	<u>Medium</u> 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.	<u>Very Low</u> Several major current negative ecological impacts.	Very Low	<u>Very High</u> Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition	<u>Very Low</u> Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.
Degraded Grassland	<u>Medium</u> 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.	<u>Medium</u> Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.	Medium	<u>High</u> Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	<u>Low</u> Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Artificial Grassland	<u>Medium</u> 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.	<u>Medium</u> Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance.	Medium	<u>High</u> Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	<u>Low</u> Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.

3.4.1 Desktop Ecological Sensitivity

The following is deduced 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 'High' for the PAOI, with one Avifauna Species of Conservation Concern (SCC) likely to be present (Figure 3-5).

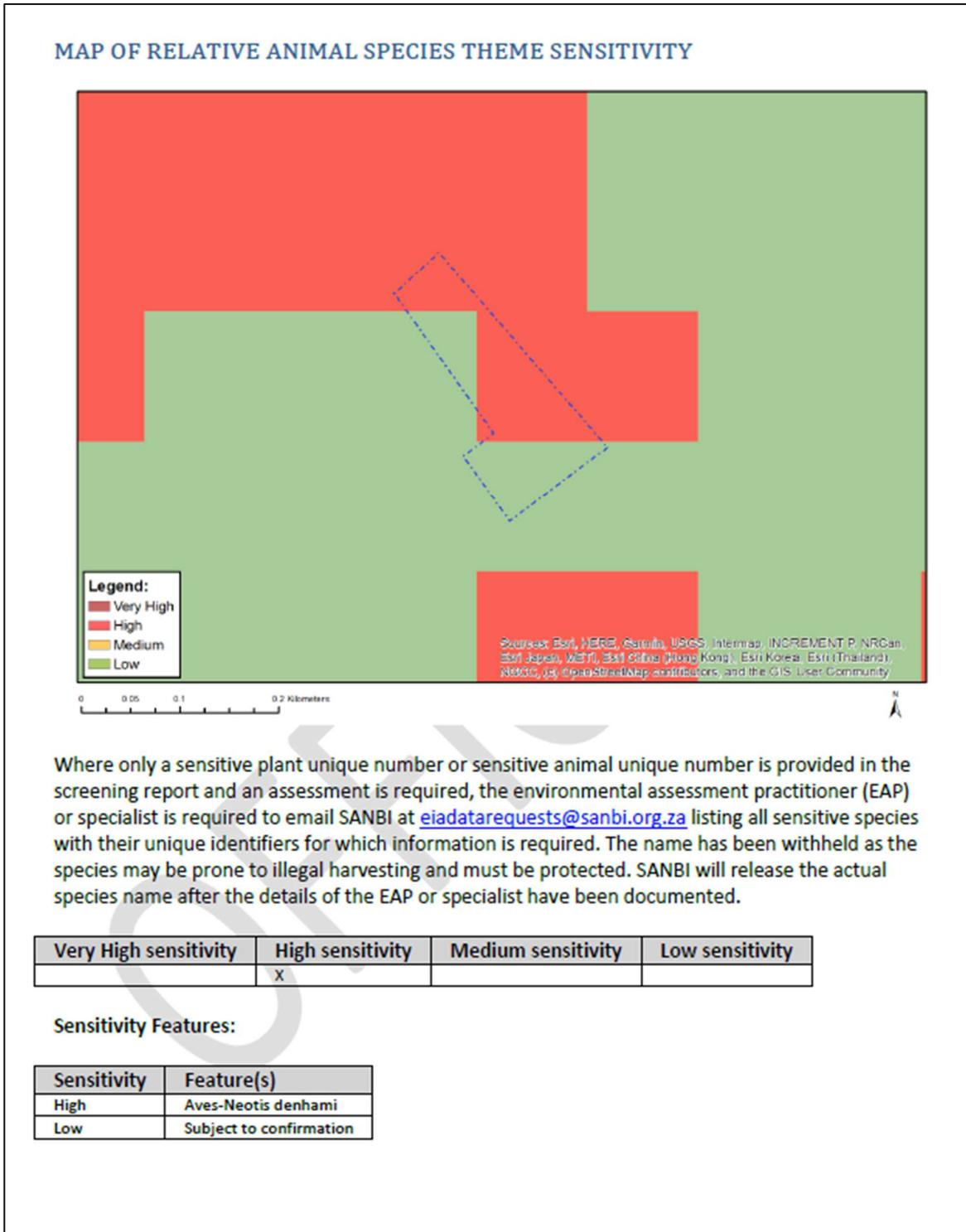


Figure 3-5 Animal Species Theme Sensitivity

3.4.2 Screening Tool Comparison

The allocated sensitivities for each of the relevant themes are either disputed or validated for the assessed areas in Table 3-4 below. A summative 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 project area are illustrated in Figure 3-6.

Table 3-4 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	High	Modified	Very Low	Disputed – All of the habitat is modified or disturbed and is unlikely to hold SCC.
		Degraded Grassland	Low	Disputed – Habitat is disturbed and based on the proximity to the existing substation is unlikely to support and SCC apart from species that could forage there
		Artificial Wetland	Low	Disputed – Habitat is disturbed and based on the proximity to the existing substation is unlikely to support and SCC apart from species that could forage there

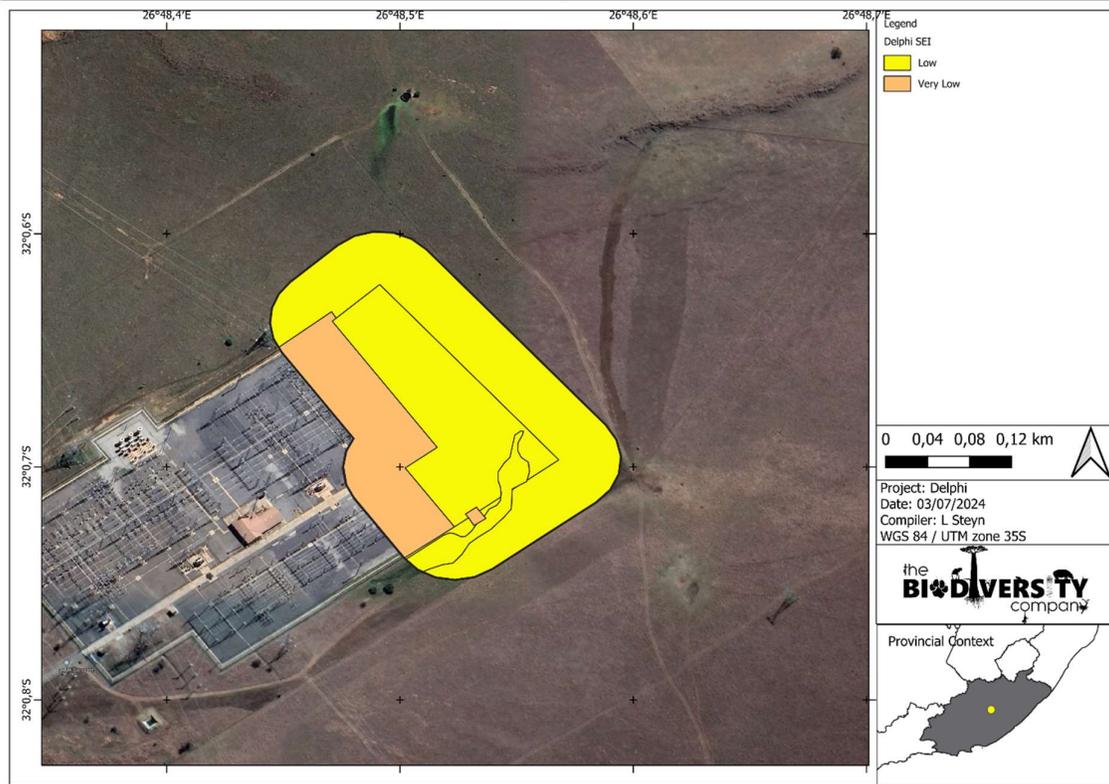


Figure 3-6 Site ecological importance, with mitigation measures applied

4 Avifauna Impact Management Actions

The purpose of the Biodiversity Impact Management Actions of is to present the mitigations 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 guidelines. This mitigation table must be read in conjunction with the Generic Environmental Management Programme (EMPR) for the development and expansion of substation infrastructure for the transmission and distribution of electricity as per No. 42323 GOVERNMENT GAZETTE, 22 MARCH 2019.

Table 4-1 presents the recommended mitigation measures and the respective timeframes, targets, and performance indicators pertaining to the avifaunal component.

Table 4-1 Summary of 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 movement into surrounding environments.	Life of operation	Project Manager Environmental Officer	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	Project Manager Environmental Officer	Areas of indigenous vegetation	Ongoing
Management outcome: Avifauna				
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	Environmental Officer	Evidence of trapping etc	Ongoing
The duration of the construction must be kept to a minimum to avoid disturbing avifauna.	Construction/Operational Phase	Project Manager Environmental Officer	Construction/Closure Phase	Ongoing
Outside lighting must be designed and limited to minimize impacts on avifauna. 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	Project Manager Environmental Officer Design Engineer	Light pollution and period of light.	Ongoing
All project activities must be undertaken with appropriate noise mitigation measures to avoid disturbance to avifauna population in the region	Construction/Operational Phase	Project Manager Environmental Officer	Noise	Ongoing
Infrastructure must be consolidated where possible in order to minimise the amount of ground and air space used.	Planning and Construction	Project Manager Environmental Officer Contractor Engineer	Presence of bird collisions	During phase
Infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution	Planning and Construction	Environmental Officer Contractor Engineer	Presence of electrocuted birds	During phase
All infrastructure, must be removed if the facility is decommissioned.	Closure/Rehabilitation	Project Manager Environmental Officer	Infrastructure removal	During Process

5 Cumulative Impacts

The quantitative impact of the proposed project in isolation on avifauna is anticipated to be “medium” due to the expected adherence to mitigation. The cumulative impact of the proposed project on avifauna is anticipated to be “low”. The project area has undergone historic and current disturbance, like the disturbances that the local 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 development and no irreplaceable loss of avifauna and their habitats is anticipated (Table 5-1).

Table 5-1 Cumulative impact assessment of the project

Status		Extent	Probability	Reversibility	Irreplaceability	Duration	Cumulative Effect	Magnitude	Impact Significance	Impact Rating
Impact in isolation	Negative	1	3	2	1	4	2	2	26	Low (6-28)
Cumulative impact	Negative	2	3	2	2	4	3	2	32	Medium (29-50)

6 Conclusion

Based on the SABAP2 data 250 avifauna species are expected for the PAOI and surrounds. Of these, 16 are considered SCC. The avifaunal field survey was completed on 23 May 2024 for 1 day. During the assessment no SCC species were recorded.

Three habitats were delineated, namely Modified, Degraded Grassland and Artificial Wetland. The project area was found to be either low or very low sensitivity. This rating is based on the resource resilience and the overall disturbed state of the habitat and the edge effect that is caused by the adjacent substation.

6.1 Impact Statement

Mitigation measures, as described in this report, can be implemented to reduce the significance of the risk, but impacts are still possible. This is especially pertinent to electrocutions with the infrastructure.

6.2 Specialist Opinion

The specialist believes that the development can be favourably considered if the mitigation measures and management actions are implemented.

7 References

Bird Atlas Project (SABAP2). (2022). <http://vmus.adu.org.za/>

BirdLife International. 2021. The IUCN Red List of Threatened Species 2021

Birdlife South Africa (2022). Important Bird and Biodiversity Areas. <https://www.birdlife.org.za/what-we-do/important-bird-and-biodiversity-areas/>

BirdLife South Africa. 2015. Fences & birds, minimising unintended impacts. <https://www.birdlife.org.za/what-we-do/landscape-conservation/what-we-do/birds-and-fences/>

BirdLife South Africa. 2017. Birds and Solar Energy Best Practice Guidelines. <https://www.birdlife.org.za/wp-content/uploads/2020/03/BLSA-Guidelines-Solar-and-Energy.pdf>

BirdLife South Africa. (2017). Important Bird Areas Factsheet. <http://www.birdlife.org>

Buckland, S., Anderson, D., Burnham, K.P. and Laake, J. 1993. Distance Sampling: Estimating Abundance of Biological Populations. 440 pgs., Chapman and Hall, London

Coordinated Avifaunal Roadcounts (CAR) (2020). <http://car.birdmap.africa/index.php>

Del Hoyo, J., Collar, N.J., Christie, D.A., Elliott, A., Fishpool, L.D.C., Boesman, P. & Kirwan, G.M. (1996). HBW and BirdLife International Illustrated Checklist of the Birds of the World. Volume 2: Passerines. Lynx Editions and BirdLife International, Barcelona, Spain and Cambridge, UK.

Department of Forestry, Fisheries and the Environment (DFFE). 2023a. SACAD (South Africa Conservation Areas Database) and SAPAD (South Africa Protected Areas Database). <http://egis.environment.gov.za>.

Department of Forestry, Fisheries and the Environment (DFFE). 2021b. National Protected Areas Expansion Strategy. <http://egis.environment.gov.za>.

Department of Forestry, Fisheries and the Environment (DFFE). 2021c. Renewable Energy EIA Application Database. <http://egis.environment.gov.za>.

Taylor, M.R., Peacock, F. & Wanless, R.M. (Eds). 2015. The 2015 Eskom Red Data Book of birds of South Africa, Lesotho and Swaziland. BirdLife South Africa, Johannesburg.

Hockey, P.A.R., Dean, W.R.J. & Ryan, P.G. (Eds). (2005). Roberts – Birds of Southern Africa, VIIIth ed. The Trustees of the John Voelcker Bird Book Fund, Cape Town.

IUCN. (2021). The IUCN Red List of Threatened Species. www.iucnredlist.org

Prinsen, H.A.M., Smallie, J.J., Boere, G.C. & Pires, N. (Compilers). 2012. Guidelines on How to Avoid or Mitigate Impact of Electricity Power Grids on Migratory Birds in the African-Eurasian Region. AEWA Conservation Guidelines No. 14, CMS Technical Series No. 29, AEWA Technical Series No. 50, CMS Raptors MOU Technical Series No. 3, Bonn, Germany.

Shaw, J.M., Reid, T.A., Gibbons, B.K., Pretorius, M., Jenkins, A.R., Visagie, R., Michael, M.D. & Ryan, P.G. 2021. A large-scale experiment demonstrates that line marking reduces power line collision mortality for large terrestrial birds, but not bustards, in the Karoo, South Africa. *Ornithological Applications*, 123: 1-10.

Skowno, A.L., Raimondo, D.C., Poole, C.J., Fizzotti, B. & Slingsby, J.A. (eds.). 2019. South African National Biodiversity Assessment 2018 Technical Report Volume 1: Terrestrial Realm. South African National Biodiversity Institute, Pretoria.

South African National Biodiversity Institute (SANBI). 2016. Lexicon of Biodiversity Planning in South Africa. Beta Version, June 2016. South African National Biodiversity Institute, Pretoria. 72 pp.

South African National Biodiversity Institute (SANBI). 2017. Technical guidelines for CBA Maps: Guidelines for developing a map of Critical Biodiversity Areas & Ecological Support Areas using systematic biodiversity planning. Driver, A., Holness, S. & Daniels, F. (Eds). 1st Edition. South African National Biodiversity Institute, Pretoria.

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.

Van Deventer, H., Smith-Adao, L., Mbona, N., Petersen, C., Skowno, A., Collins, N.B., Grenfell, M., Job, N., Lötter, M., Ollis, D., Scherman, P., Sieben, E. & Snaddon, K. 2018. South African National Biodiversity Assessment 2018: Technical Report. Volume 2a: South African Inventory of Inland Aquatic Ecosystems (SAIIAE). Version 3, final released on 3 October 2019. Council for Scientific and Industrial Research (CSIR) and South African National Biodiversity Institute (SANBI): Pretoria, South Africa.

8 Appendix Items

8.1 Appendix A: Methodology

8.1.1 Desktop Dataset Assessment

The desktop assessment was principally undertaken using a Geographic Information System (GIS) to access the latest available spatial datasets to develop digital cartographs and species lists. These datasets and their date of publishing are provided below.

8.1.1.1 Expected Species

The avifaunal desktop assessment comprised of the following, compiling an expected species list:

- Avifauna list, generated from the SABAP2 dataset by looking at pentads 3150_2645; 3150_2650; 3150_2655; 3155_2645; 3155_2650; 3155_2655; 3200_2645; 3200_2650; 3200_2655; and
- Compilation of a Coordinated Water Bird Count (CWAC) species list if the PAOI was found to be in a vicinity of a CWAC site.

8.1.1.2 Ecologically Important Landscape Features

Existing ecologically relevant data layers were incorporated into a GIS to establish how the proposed project might interact with any ecologically important entities. Emphasis was placed around the following spatial datasets:

- Ecosystem Threat Status (ETS) – indicator of an ecosystem’s wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. The revised red list of threatened ecosystems was developed between 2016 and 2021 incorporating the best available information on terrestrial ecosystem extent and condition, pressures and drivers of change. The revised list (known as the Red List of Ecosystems (RLE) 2022) is based on assessments that followed the International Union for Conservation of Nature (IUCN) Red List of Ecosystems Framework (version 1.1) and covers all 456 terrestrial ecosystem types described in South Africa (Mucina and Rutherford 2006; with updates described in Dayaram *et al.*, 2019). The revised list identifies 120 threatened terrestrial ecosystem types (55 Critically Endangered, 51 Endangered and 14 Vulnerable types). The revised list was published in the Government Gazette (Gazette Number 47526, Notice Number 2747) and came into effect on 18 November 2022;
- Ecosystem Protection level (EPL) informs on whether ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Not Protected (NP), Poorly Protected (PP), Moderately Protected (MP) or Well Protected (WP), based on the proportion of each ecosystem type that occurs within a protected area recognised in the Protected Areas Act (Skowno *et al.*, 2019). NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems.
- Protected areas - South Africa Protected Areas Database (SAPAD) (DEA, 2023) – The SAPAD Database contains spatial data pertinent to the conservation of South African biodiversity. It includes spatial and attribute information for both formally protected areas and areas that have less formal protection. SAPAD is updated on a continuous basis and forms

the basis for the Register of Protected Areas, which is a legislative requirement under the National Environmental Management: Protected Areas Act, Act 57 of 2003.

- National Protected Areas Expansion Strategy (NPAES) (SANBI, 2018) – The NPAES provides spatial information on areas that are suitable for terrestrial ecosystem protection. These focus areas are large, intact and unfragmented and therefore, of high importance for biodiversity, climate resilience and freshwater protection.
- The Eastern Cape Biodiversity Conservation Plan (2019) classifies areas within the province on the basis of their contributions to reaching the associated conservation targets within the province. These areas are primarily classified as either Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs). These biodiversity priority areas, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species, as well as the long-term ecological functioning of the landscape as a whole.
 - Critical Biodiversity Areas (CBAs) – CBAs are areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and healthy functioning of important species and ecosystems and the delivery of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then provincial biodiversity targets cannot be met (SANBI, 2017).
 - Ecological Support Areas (ESAs) - ESAs are areas that are not essential for meeting biodiversity representation targets but play an important role in supporting the ecological functioning of ecosystems as well as adjacent Critical Biodiversity Areas, and/or in delivering ecosystem services that support socio-economic development (SANBI, 2017).
 - Provincial CBAs and ESAs are often further classified into sub-categories, such as CBA1 and CBA2 or ESA1 and ESA2. These present fine scale habitat and biodiversity area baseline requirements and associated land management objectives or outcomes. The highest categorisation level is often referred to as a CBA1 'Irreplaceable Critical Biodiversity Area' which usually represents pristine natural habitat that is very important for conservation.
- Important Bird and Biodiversity Areas (IBAs) (BirdLife South Africa, 2017) – IBAs constitute a global network of over 13 500 sites, of which 112 sites are found in South Africa. IBAs are sites of global significance for bird conservation, identified through multi-stakeholder processes using globally standardised, quantitative and scientifically agreed criteria; and
- South African Inventory of Inland Aquatic Ecosystems (SAIIAE) (Van Deventer *et al.*, 2018) – A SAIIAE was established during the NBA of 2018. It is a collection of data layers that represent the extent of river and inland wetland ecosystem types and pressures on these systems.

8.1.2 Avifauna Survey

Sampling consisted of random diurnal incidental surveys as a result of the size of the PAOI. The horizontal detection limit was set to 150 m. The observer would document the date, habitat, numbers of each species, detection method (seen or heard), behaviour (perched or flying) and general notes on habitat and nesting suitability for conservation important species. Effort was made to cover all the different habitat types within the limits of time and access, nearby water sources were also assessed.

8.1.2.1 Data Analysis

The analyses described below only used the data collected from the standardised point counts. See Appendix B and D for the point count raw data.

The analyses described below only used the data collected from the Standardised Point Counts. Raw count data was converted to relative abundance values and used to establish dominant species and calculate the diversity of each habitat. Present, and potentially occurring species were assigned to 13 major trophic guilds loosely based on the classification system developed by González-Salazar *et al.* (2014). Species were first classified by their dominant diet (carnivore, herbivore, granivore, frugivore, nectarivore, omnivore), then by the medium upon / within which they most frequently forage (ground, water, foliage, air) and lastly by their activity period (nocturnal or diurnal).

8.2 Appendix B: Site Ecological Importance

The different habitat types within the study area were delineated and identified, based on observations during the field assessment, and available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories, based on their ecological integrity, conservation value, the presence of SCC and their ecosystem processes.

SEI is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/fauna community or habitat type present on the site) and Receptor Resilience (RR) (its resilience to impacts) as follows.

BI is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor as follows. The criteria for the CI and FI ratings are provided Table 8-1 and Table 8-2, respectively.

Table 8-1 Summary of Conservation Importance (CI) criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of CR, EN, VU or Extremely Rare or CR species that have a global extent of occurrence (EOO) of < 10 km ² . Any area of natural habitat of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent) of natural habitat of an EN ecosystem type. Globally significant populations of congregatory species (> 10% of global population).
High	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km ² . IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A. If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining. Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type. Presence of Rare species. Globally significant populations of congregatory species (> 1% but < 10% of global population).
Medium	Confirmed or highly likely occurrence of populations of Near Threatened (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. Any area of natural habitat of threatened ecosystem type with status of VU. Presence of range-restricted species. > 50% of receptor contains natural habitat with potential to support SCC.
Low	No confirmed or highly likely populations of SCC. No confirmed or highly likely populations of range-restricted species. < 50% of receptor contains natural habitat with limited potential to support SCC.
Very Low	No confirmed and highly unlikely populations of SCC.

No confirmed and highly unlikely populations of range-restricted species.
No natural habitat remaining.

Table 8-2 Summary of Functional Integrity (FI) criteria

Functional Integrity	Fulfilling Criteria
Very High	Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types. High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches. No or minimal current negative ecological impacts with no signs of major past disturbance.
High	Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN ecosystem types. Good habitat connectivity with potentially functional ecological corridors and a regularly used road network between intact habitat patches. Only minor current negative ecological impacts with no signs of major past disturbance and good rehabilitation potential.
Medium	Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type or > 20 ha for VU ecosystem types. Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches. Mostly minor current negative ecological impacts with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.
Low	Small (> 1 ha but < 5 ha) area. Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat and a very busy used road network surrounds the area. Low rehabilitation potential. Several minor and major current negative ecological impacts.
Very Low	Very small (< 1 ha) area. No habitat connectivity except for flying species or flora with wind-dispersed seeds. Several major current negative ecological impacts.

BI can be derived from a simple matrix of CI and FI as provided in *Table 8-3*.

Table 8-3 Matrix used to derive Biodiversity Importance (BI) from Functional Integrity (FI) and Conservation Importance (CI)

Biodiversity Importance (BI)		Conservation Importance (CI)				
		Very high	High	Medium	Low	Very low
Functional Integrity (FI)	Very high	Very high	Very high	High	Medium	Low
	High	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	Low	Medium	Medium	Low	Low	Very low
	Very low	Medium	Low	Very low	Very low	Very low

The fulfilling criteria to evaluate RR are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor as summarised in *Table 8-4*

Table 8-4 Summary of Resource Resilience (RR) criteria

Resilience	Fulfilling Criteria
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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.
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.
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	Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed.
Very Low	Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are unlikely to return to a site once the disturbance or impact has been removed.

Subsequent to the determination of the BI and RR, the SEI can be ascertained using the matrix as provided in Table 8-5.

Table 8-5 Matrix used to derive Site Ecological Importance (SEI) from Receptor Resilience (RR) and Biodiversity Importance (BI)

Site Ecological Importance (SEI)		Biodiversity Importance (BI)				
		Very high	High	Medium	Low	Very low
Receptor Resilience (RR)	Very Low	Very high	Very high	High	Medium	Low
	Low	Very high	Very high	High	Medium	Very low
	Medium	Very high	High	Medium	Low	Very low
	High	High	Medium	Low	Very low	Very low
	Very High	Medium	Low	Very low	Very low	Very low

Interpretation of the SEI in the context of the proposed development activities is provided in Table 8-6

Table 8-6 Guidelines for interpreting Site Ecological Importance (SEI) in the context of the proposed development activities

Site Ecological Importance (SEI)	Interpretation in relation to proposed development activities
Very High	Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e., last remaining populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
High	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.
Medium	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Low	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Very Low	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

The SEI evaluated for each taxon can be combined into a single multi-taxon evaluation of SEI for the assessment area. Either a combination of the maximum SEI for each receptor should be applied, or the SEI may be evaluated only once per receptor but for all necessary taxa simultaneously. For the latter, justification of the SEI for each receptor is based on the criteria that conforms to the highest CI and FI, and the lowest RR across all taxa.

8.3 Appendix C: Specialist Declaration of Independence

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.



Dr Lindi Steyn

Ecologist

The Biodiversity Company

June 2024

8.4 Appendix D: Specialist CVs

Lindi Steyn

PhD Biodiversity and Conservation

(Pr Sci Nat)

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Email: Lindi@thebiodiversitycompany.com

Identity Number: 8805250059080

Date of birth: 25 May 1988



Profile Summary

Working experience throughout South Africa and neighbouring countries.

Specialist experience with mining, road development, engineering, renewable energy, protected areas, and biodiversity offsets.

Specialist guidance, support and facilitation for the compliance with legislative processes, for in-country requirements.

Specialist expertise include Avifauna and Terrestrial Ecology.

Areas of Interest

Mining, Oil & Gas, Renewable Energy & Bulk Services Infrastructure Development, Sustainability and Conservation.

Research publication with a conservation influence.

Ornithology

OVERVIEW

An overview of the specialist technical expertise includes the following:

- Terrestrial Ecological Assessments.
- Faunal surveys which includes mammals, birds, amphibians and reptiles.
- Conservation Plans and Monitoring for terrestrial component.
- Avifaunal surveys.
- Biodiversity offset plans.
- Management plan compilation (Erosion, Plant Rescue, Rehabilitation, Alien Invasive Species Plans).
- Bioaccumulation assessments for birds.
- Toxicity analysis of air dust samples, sediment, water and biota.

Key Experience

- Environmental Impact Assessment
- Terrestrial Ecological Assessments
- Rehabilitation Plans and Monitoring
- Avifaunal Conservation Surveys
- Conservation Management Plans
- Laboratory analysis
- The use of avifaunal species as indicators of pollution.

Countries worked in

South Africa
Swaziland
Zimbabwe
Lesotho

Nationality

South African

Languages

English – Proficient
Afrikaans – Proficient

Qualifications

- PhD Biodiversity and Conservation, University of Johannesburg, South Africa.
- MSc Biodiversity and Conservation, University of Johannesburg, South Africa.
- BSc Hons Biodiversity and Conservation.
- BSc Botany and Zoology.
- Certificate in Field Guiding, Damelin.
- Certificate in Ecotraining.
- Field Guiding FGASA level 1 certificate (2007).