



TERRESTRIAL BIODIVERSITY ASSESSMENT AND WALKDOWN FOR THE PROPOSED NTCSA ARIES- PAULPUTS-KOKERBOOM 400KV LOOP-IN-LOOP- OUT POWERLINE AND SUBSTATION UPGRADE

**ZF Mgcawu and Namakwa District Municipalities,
Northern Cape Province, South Africa**

2/16/2026

Prepared by:

The Biodiversity Company

Cell: +27 81 319 1225

Fax: +27 86 527 1965

info@thebiodiversitycompany.com

www.thebiodiversitycompany.com





Report Name	TERRESTRIAL BIODIVERSITY ASSESSMENT AND WALKDOWN FOR THE PROPOSED NTCSA ARIES-PAULPUTS-KOKERBOOM 400KV LOOP-IN-LOOP-OUT POWERLINE AND SUBSTATION UPGRADE	
Specialist Theme	Terrestrial Biodiversity/Plant and Animal Theme	
Project Reference	Aries-Paulputs: Aries Kokerboom 400kV LILO	
Report Version	Draft 1 / 2/16/2026	
Environmental Assessment Practitioner		
Fieldwork & Report Writer	Connor Ryan (SACNASP 174076)	
Report Reviewer	Andine de Villiers (Cand. Nat. Sci. 164894)	
Report Reviewer	Sarah Newman (Pr. Sci. Nat. 158474)	
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, 2017. 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>	

Table of Contents

1	Introduction.....	7
1.1	Background	7
1.2	Project Description	10
1.3	Scope of Work.....	11
1.4	Assumptions and Limitations	11
1.5	Key Legislative Requirements.....	12
2	Fieldwork	13
2.1	Biodiversity Field Assessment	13
3	Results & Discussion	16
3.1	Desktop Baseline	16
3.1.1	Ecologically Important Landscape Features	16
3.1.2	Flora Assessment.....	24
3.1.3	Faunal Assessment.....	26
3.1.4	DFFE Screening Tool.....	27
3.2	Biodiversity Field Survey.....	31
3.2.1	Flora Assessment.....	31
3.2.2	Faunal Assessment.....	40
4	Site Sensitivity Verification	42
4.1	Habitat Assessment	42
4.2	Site Ecological Importance.....	56
4.2.1	Screening Tool Comparison.....	59
5	Walkdown.....	62
6	Impact Assessment.....	89
6.1	Biodiversity Risk Assessment	89
6.2	Present Impacts to Biodiversity.....	89
6.3	Loss of Irreplaceable Resources.....	90
6.4	Unplanned Events	90
6.4.1	Identification of Additional Potential Impacts	90
6.4.2	Assessment of Impact Significance	92
6.5	Cumulative Impacts.....	101
7	Conclusion.....	103
7.1	Impact Statement	104

7.2	Specialist Opinion	104
8	References	106
9	Appendix Items.....	108
9.1	Appendix A: Methodology	108
9.1.1	Desktop Baseline	108
9.1.2	Field Assessment.....	112
9.2	Terrestrial Site Ecological Importance	114
9.3	Appendix D: Flora species expected	117
9.4	Appendix E: Amphibian species expected.....	123
9.5	Appendix F: Reptile species expected.....	123
9.6	Appendix G: Expected Mammal species.....	124
9.7	Appendix C: Impact Assessment	125
9.7.1	Impact Assessment Considerations and Procedure	125
9.8	Appendix H: Specialist Declaration of Independence	131
9.9	Appendix I: Specialist CVs	134

List of Tables

Table 1-1	A list of key legislative requirements	12
Table 3-1	Summary of relevance of the PAOI to ecologically important landscape features.	16
Table 3-2	Flora SCC expected in the PAOI. EN = Endangered, DDD = Data Deficient and VU = Vulnerable. LoO = Likelihood of occurrence.	26
Table 3-3	List of reptile Species of SCC that may occur in the PAOI. NT = Near Threatened. LoO = Likelihood of Occurrence.	27
Table 3-4	Floral SCC observed within the PAOI. DD = Data Deficient, VU = Vulnerable.	32
Table 3-5	Protected recorded within the PAOI. LC=Least Concern.	36
Table 3-6	Proposed monitoring framework for the control of AIPs within the PAOI.	39
Table 3-7	Reptile species observed within the PAOI.....	40
Table 3-8	Mammals found within the PAOI.....	40
Table 4-1	Sensitivity summary of the habitat types delineated within the PAOI.....	44
Table 4-2	Sensitivity summary of the habitat types delineated within the PAOI.....	56
Table 4-3	Summary of the screening tool vs specialist assigned sensitivities.	59
Table 5-1	Pylon locations and their associated sensitivities and recommendations for movement.	62
Table 6-1	Summary of unplanned events for terrestrial biodiversity	90
Table 6-2	Potential impacts to biodiversity associated with the proposed activity.	91
Table 6-3	Summary assessment of significance of potential impacts on terrestrial biodiversity associated with the project for the proposed linear infrastructure (OHL and access roads)	94
Table 6-4	Summary assessment of significance of potential impacts on terrestrial biodiversity associated with the project for the substation expansion.	98
Table 6-5	Cumulative impacts for the linear infrastructure (OHL and roads).....	101
Table 6-6	Cumulative impacts for the substation.	102
Table 7-1	Habitats and their associated specialist assignment sensitivities for the Screening Tool Themes (the sensitivities are either disputed or validated).....	103
Table 9-1	Summary of Conservation Importance (CI) criteria.....	114
Table 9-2	Summary of Functional Integrity (FI) criteria	114
Table 9-3	Matrix used to derive Biodiversity Importance (BI) from Functional Integrity (FI) and Conservation Importance (CI)	115
Table 9-4	Summary of Resource Resilience (RR) criteria	115
Table 9-5	Matrix used to derive Site Sensitivity Verification (SSV) from Receptor Resilience (RR) and Biodiversity Importance (BI).....	116
Table 9-6	Guidelines for interpreting Site Sensitivity Verification (SSV) in the context of the proposed development activities.....	116
Table 9-7	Expected amphibian species within the PAOI. LC = Least Concern	123

Table 9-8	Expected reptile species within the PAOI. LC = Least Concern and NT = Near Threatened.	123
Table 9-9	Expected Mammal species within the PAOI.	124
Table 9-10	Assessment of significance of potential impacts on terrestrial biodiversity associated with the project for the OHL and servitude roads.	125
Table 9-11	Assessment of significance of potential impacts on terrestrial biodiversity associated with the project for the substation.	128

List of Figures

Figure 1-1	Map illustrating the regional context of the PAOI.	8
Figure 1-2	Map illustrating the layout of the proposed infrastructure within the PAOI (Part 1, western portion).	8
Figure 1-3	Map illustrating the layout of the proposed infrastructure within the PAOI (Part 2, middle portion).	9
Figure 1-4	Map illustrating the layout of the proposed infrastructure within the PAOI (Part 3, eastern portion).	9
Figure 1-5	Proposed network diagram for the proposed Paulputs 400 kV strengthening project. The double dotted green line indicates the proposed powerline (provided by EIMS, 2025).	11
Figure 2-1	Map illustrating the field tracks (Part 1, western portion).	14
Figure 2-2	Map illustrating the field tracks (Part 2, middle portion).	15
Figure 2-3	Map illustrating the field tracks (Part 3, eastern portion).	15
Figure 3-1	Map illustrating the ecosystem threat status associated with the proposed development.	17
Figure 3-2	Map illustrating the ecosystem protection level associated with the PAOI.	18
Figure 3-3	Map illustrating the PAOI in relation to the Northern Cape CBA layer.	19
Figure 3-4	The PAOI in relation to the NPAES areas	20
Figure 3-5	The PAOI in relation to KBAs	21
Figure 3-6	The PAOI in relation to the South African Inventory of Inland Aquatic Ecosystems.	22
Figure 3-7	The PAOI in relation to the strategic transmission corridors dataset.	23
Figure 3-8	Map illustrating the vegetation types associated with the PAOI.	24
Figure 3-9	Terrestrial Biodiversity Theme Sensitivity	28
Figure 3-10	Plant Theme Sensitivity	29
Figure 3-11	Animal Theme Sensitivity	30
Figure 3-12	Photographs presenting some of the indigenous plant species recorded for the PAOI: A) <i>Ledebouria apertifolia</i> , B) <i>Rhigozum trichotomum</i> , C) <i>Tribulus cristatus</i> and D) <i>Aptosimum spinescens</i>	31

Figure 3-13	H. gordonii observed within the PAOI.	33
Figure 3-14	Map illustrating the flora SCC locations within the PAOI, part 1.	34
Figure 3-15	Map illustrating the flora SCC locations within the PAOI, part 2.	34
Figure 3-16	Map illustrating the flora SCC locations within the PAOI, part 3.	35
Figure 3-17	Map illustrating the flora SCC locations within the PAOI, part 4.	35
Figure 3-18	Nationally protected Vachellia erioloba observed within the PAOI.	36
Figure 3-19	Provincially protected flora within the PAOI including A) Euphorbia spinea and B) Euphorbia hamata and C) Boschia foetida.	37
Figure 3-20	Photograph presenting Neltuma velutina.	38
Figure 3-21	Evidence of some of the mammal species recorded within the PAOI including: A) Hystrix africaeaustralis, B) Proteles cristatus, C) Orycteropus afer and D) Lupulella mesomelas.	41
Figure 4-1	Habitats identified within the PAOI (Part 1, western portion).	42
Figure 4-2	Habitats identified within the PAOI (Part 2, middle portion).	42
Figure 4-3	Habitats identified within the PAOI (Part 3, eastern portion).	43
Figure 4-4	Map illustrating Site Ecological Importance (SEI) of the habitat types within the PAOI (Western Section).	60
Figure 4-5	Map illustrating Site Ecological Importance (SEI) of the habitat types within the PAOI (Middle Section).	61
Figure 4-6	Map illustrating Site Ecological Importance (SEI) of the habitat types within the PAOI (Eastern Section).	61
Figure 6-1	Photographs illustrating some of the current negative impacts associated with the PAOI: A) Overgrazing, B) Energy distribution infrastructure, C) Agricultural infrastructure and D) Roads.	90
Figure 6-2	Photo illustrating the existing overhead powerline within the PAOI. Note the existing vegetation clearance.	93
Figure 9-1	Map illustrating the extent of area used to obtain the expected flora species list from the GBIF database. Black line indicates the approximate area of the POAI.	112
Figure 9-2	Expected plant species within the PAOI.	117

1 Introduction

1.1 Background

The Biodiversity Company was appointed by EIMS to conduct a terrestrial biodiversity assessment and walkdown for the proposed Paulputs: Aries Kokerboom 400 kilo-Volt (kV) loop-in-loop-out powerline and Paulputs substation expansion. The corridor measures approximately 50 kilometre (km), with a 500-meter (m) buffer width on either side of the line. The objective of the proposed project is to secure supply of electricity in order to cater for proposed developments in the area. The planned transmission line will cover roughly 50 km, passing through a mix of private farms and state-owned lands within the ZF Mgcawu and Namakwa District Municipalities, Northern Cape Province. The proposed powerline runs from the existing Aries-Kokerboom powerline to the Paulputs substation around 31 km northeast of Pofadder (Figure 1-1). The boundaries of the assessment area (1 km powerline corridor), as provided for by the client, were assessed and are referred to as the Project of Influence (PAOI) for reporting purposes (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*".

The National Web based Environmental Screening Tool has characterised the theme sensitivity of the PAOI as follows:

- Terrestrial Biodiversity Theme sensitivity is 'Very High';
- Plant Species Theme sensitivity is 'Medium'; and
- Animal Species Theme sensitivity is 'High'.

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, as to the ecological viability of the proposed project.

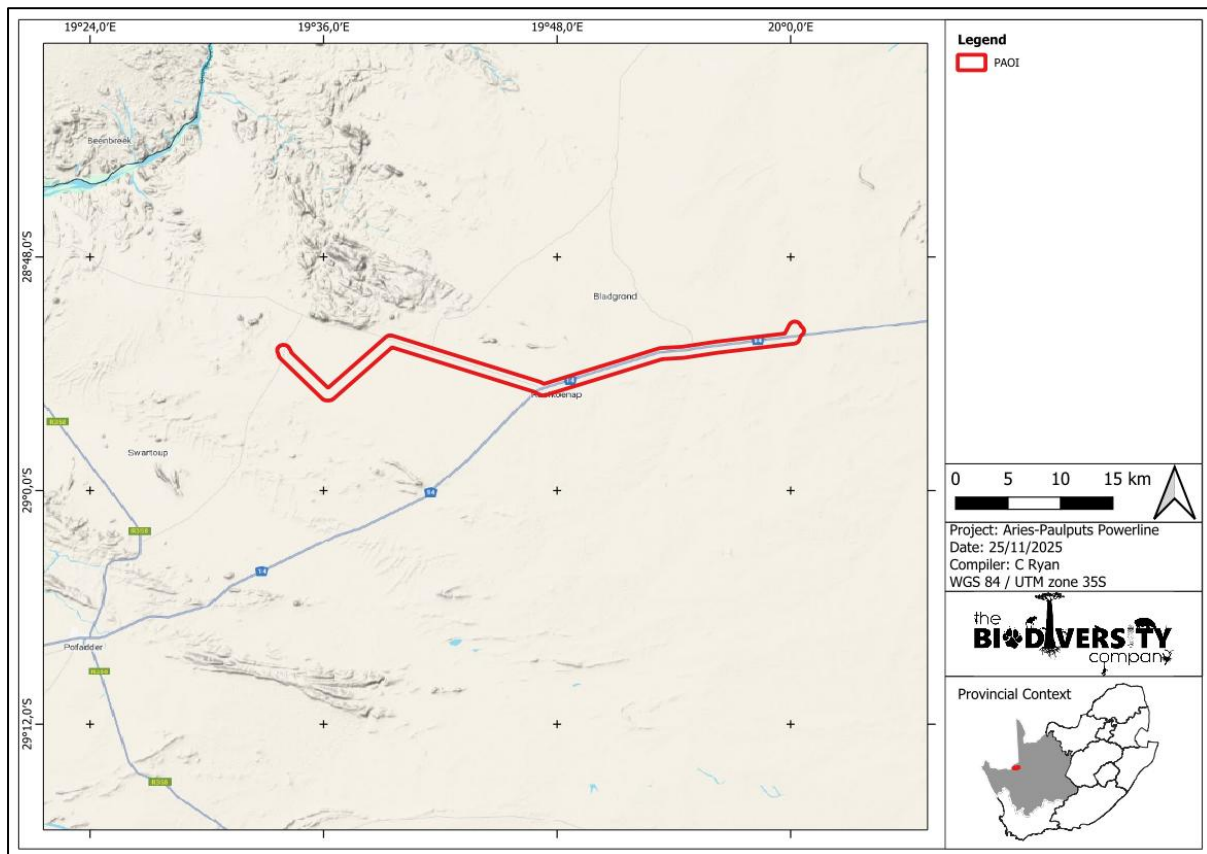


Figure 1-1 Map illustrating the regional context of the PAOI.

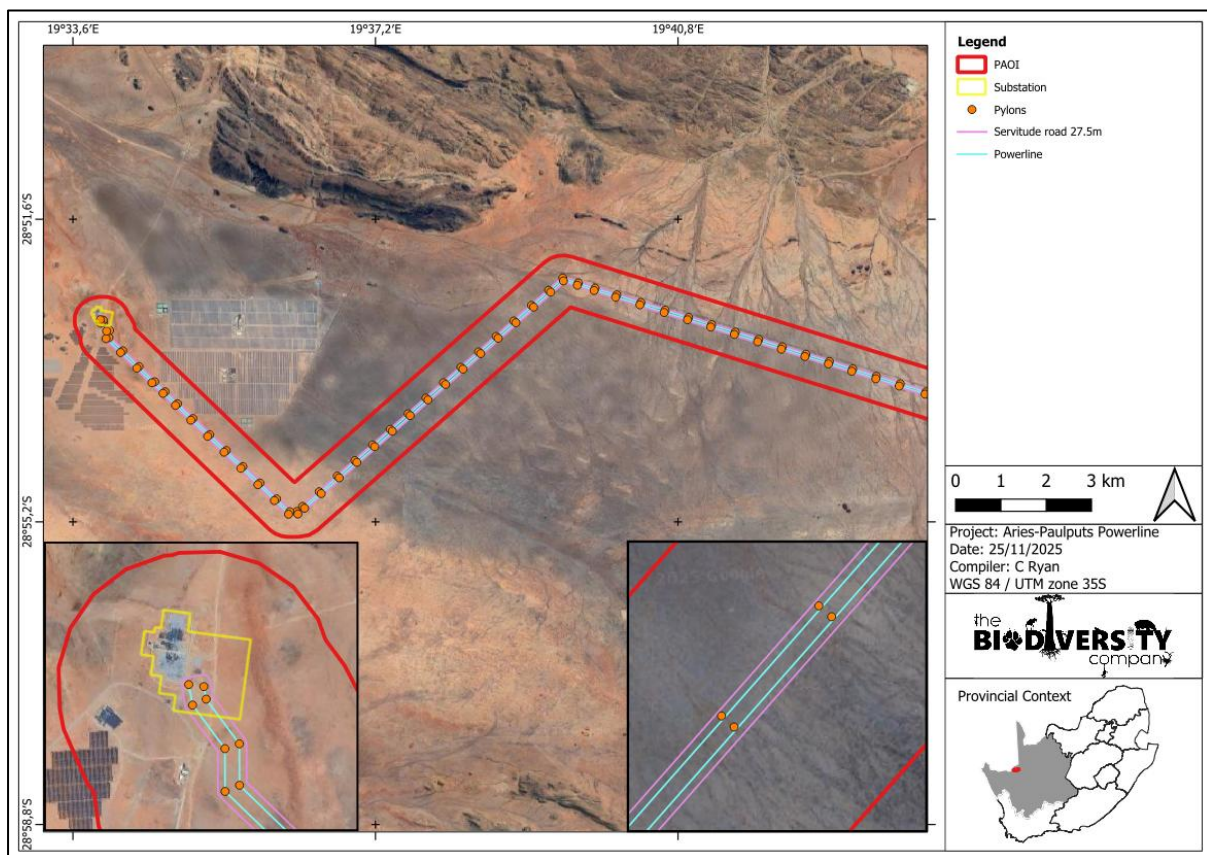


Figure 1-2 Map illustrating the layout of the proposed infrastructure within the PAOI (Part 1, western portion).

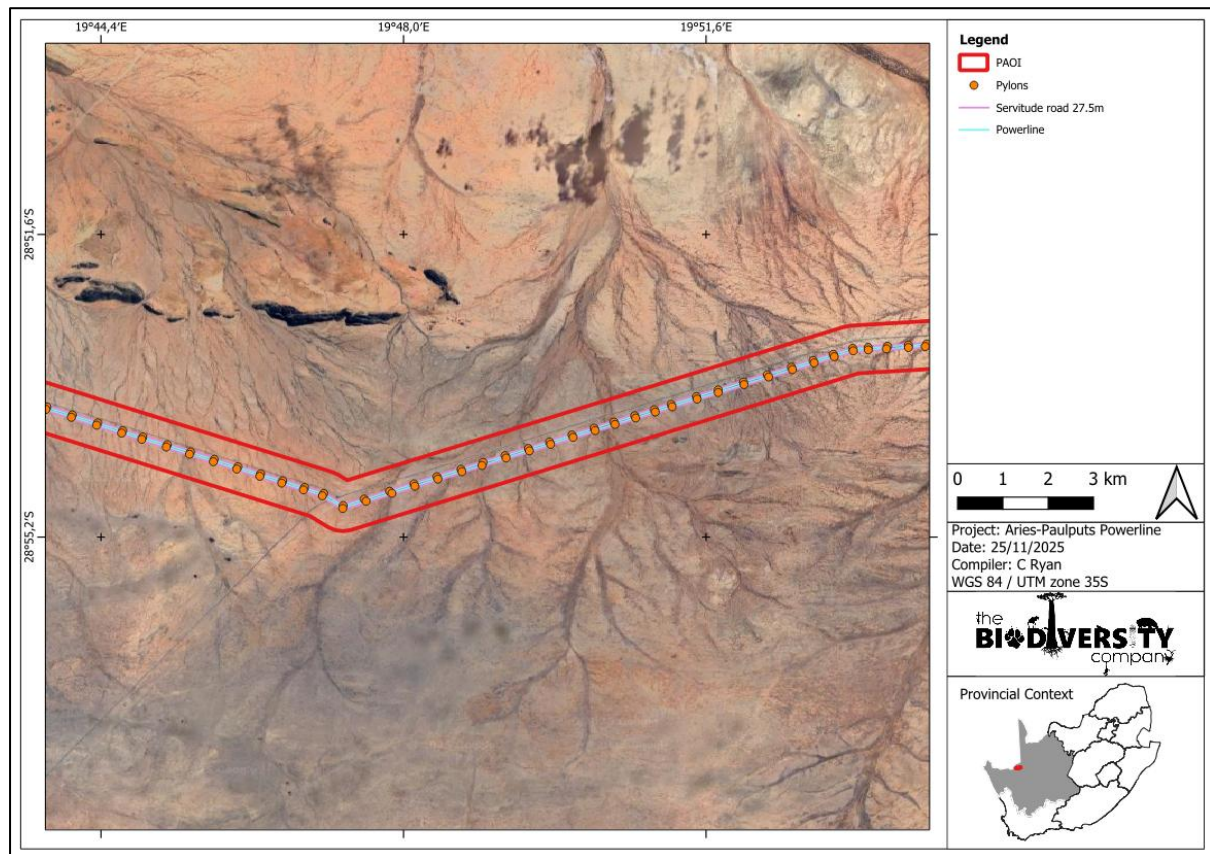


Figure 1-3 Map illustrating the layout of the proposed infrastructure within the PAOI (Part 2, middle portion).



Figure 1-4 Map illustrating the layout of the proposed infrastructure within the PAOI (Part 3, eastern portion).

1.2 Project Description

According to the Scope of work (provided by EIMS), the project is part of the group of projects identified for the Northern Cape network strengthening requirements in meeting the IRP 2019 renewables generation integration. The installed generation capacity in the Northern Cape already exceeds the peak load in the province. Generation capacity is expected to increase in the province as a result of bulk renewable energy generation capacity allocation due to favourable sun and wind conditions. Therefore, significant network infrastructure is required to enable the integration and evacuation of power from the renewable energy plants anticipated in the province.

To provide future reliability and flexibility in the evacuation of renewable power from Paulputs substation, an additional 400 kV infeed is proposed via a loop in loop out from the Aries – Kokerboom 400 kV line which is approximately 45 km away. Although there is uncertainty regarding the phasing of IPP integration at the various substations in the province, it is crucial that all project development activities are prioritised and advanced to a stage of execution readiness to ensure timeous integration of the expected renewable generation.

The following is the scope of work as provided by EIMS:

- Loop in loop out the Aries – Kokerboom 400 kV line into Paulputs (2 x ~50 km individual lines altogether including at least 222 individual towers or pylons);
- Establish/Equip 2 x 400 kV feeder bays at Paulputs Substation;
- Install a 100 MVA busbar reactor at Paulputs Substation.
- Paulputs-Konkoonsies 33 kV OHL Deviation
- Build new MV OHL with new switchgear and equipment
- -± 1 km of new MV OHL (±800m of 33 kV OHL & ±200m of 19 kV SWER OHL)
- -New 33 kV Recloser
- -New 33 kV CT/VT metering unit
- -New 33/19 kV SWER Transformer
- New SWER 19 kV Single Phase Recloser
- -Disconnect, Decommission & Dismantle old equipment (the existing 33kV and associated infrastructure)

The proposed layout is presented in Figure 1-5 below.

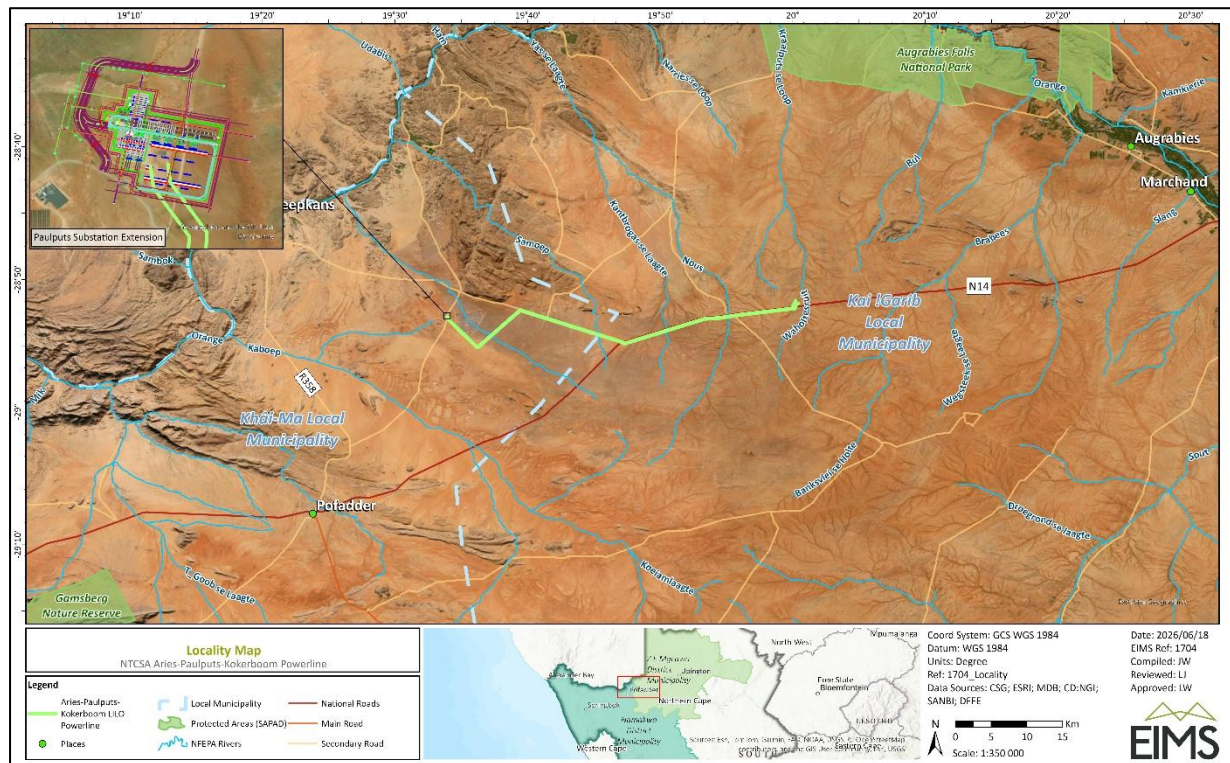


Figure 1-5 *Proposed layout for the Aries-Paulputs-Kokerboom 400 kV LILo project. The double dotted green line indicates the proposed powerline (provided by EIMS, 2025)*

1.3 Scope of Work

The Terms of Reference (ToR) included the following:

- Desktop assessment to identify the relevant ecologically important geographical features within the PAOI;
- Desktop assessment to compile an expected species list and identify possible threatened flora and fauna species that occur within the PAOI;
- Field survey to ascertain the species composition of the present flora and fauna community within the PAOI;
- Ground-truthing survey to obtain preliminary sensitivity in order to account for occurrences on a seasonal scale, but also identify the preferred powerline alternative;
- Delineate and map the habitats and their respective sensitivities that occur within the PAOI;
- Identify the manner that the project impacts the flora and fauna community and evaluate the level of risk of these potential impacts; and
- The prescription of mitigation measures and recommendations for identified risks.

1.4 Assumptions and Limitations

The following assumptions and limitations are applicable for this assessment:

- The assessment area was based on the spatial data provided for by the client and any alterations to the route and/or missing GIS information pertaining to the assessment area would have affected the area surveyed;
- The area was only surveyed during a single dry season site visit (3rd to the 6th of November 2025), therefore, this assessment does not consider temporal trends (note that the data collected is considered sufficient to derive a meaningful baseline);
 - As the sampling occurred in the dry season, some floral species were not visible above ground; nevertheless, the vegetation state was still identifiable as many species were present.
 - The walkdown was conducted at the same time as the impact assessment survey, which could have limited the detection of SCC that are typically dormant during the dry season. This could have limited the detection of SCC that are typically dormant during the dry season. However, the expected SCC were not dormant during this period, and those present within the PAOI were identifiable. Therefore, the walkdown was successful in locating SCC and protected species. Nevertheless, because the walkdown was conducted in the dry season, there remains a possibility that additional, unexpected SCC may have been missed.
- The GPS used in the assessment has an accuracy of 5 m and consequently any spatial features may be offset by 5 m;
- This assessment was conducted from a terrestrial perspective only and must be considered in conjunction with the accompanying avifauna and aquatic reporting;
- Effort was made to cover as much of the PAOI as possible within access and time constraints; and
- Whilst every effort is made to cover as much of the PAOI as possible, representative sampling is completed and by its nature, it is possible that some plant and animal species that are present across the PAOI were not recorded during the field investigations. Time and access constraints should be kept in mind regarding this. The coverage of the PAOI during the assessment is considered sufficient for deriving a meaningful baseline.
 - As the PAOI was 1 km wide, field coverage focused on the infrastructure locations (pylon locations, servitude road and substation), with the remaining areas delineated from desktop analysis by extrapolating from ground-truthed segments.

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	The National Environmental Management Act (NEMA) (Act No. 107 of 1998)	Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017), Appendix 6 requirements
	The National Environmental Management: Biodiversity Act (Act No. 10 of 2004), Threatened or Protected Species Regulations	The protection of species and ecosystems that warrant protection
	Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of	The minimum criteria for reporting.

	Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, GNR 320 of Government Gazette 43310 (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, GNR 1150 of Government Gazette 43855 (October 2020)	Protocol for the specialist assessment and minimum report content requirements.
	The National Environmental Management: Waste Act, 2008 (Act 59 of 2008);	The regulation of waste management to protect the environment.
	National Water Act (NWA) (Act No. 36 of 1998)	The regulation of water uses.
	Alien and Invasive Species Regulations and, Alien and Invasive Species List, published under NEMBA	The regulation and management of alien invasive species.
	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA)	To provide for control over the utilization of the natural agricultural resources including the vegetation and the combating of weeds and invader plants.
	Government Notice No. 113 in Government Gazette No. 41445 and Government Notice No. 383 in Government Gazette No. 44504. Government Notice No. 2313 of Government Gazette No. 47095 of 27 July 2022	Strategic Transmission Corridors (STC) important for the planning of electricity transmission and distribution infrastructure as well as procedure to be followed when applying for environmental authorisation for electricity transmission and distribution expansion when occurring in these corridors.
	Government Notice No. 114 in Government Gazette No. 41445 and Government Notice No. 142, 144 and 145 in Government Gazette No. 44191	The procedure to be followed when applying for environmental authorisation for electricity transmission or distribution infrastructure or large-scale wind and solar photovoltaic energy facilities in these REDZs
Provincial	Northern Cape Biodiversity Plan (2016)	To provide for the management and conservation of the province's biophysical environment and protected areas.
	Northern Cape Nature Conservation Act (Act 9 of 2009)	To inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management

2 Fieldwork

2.1 Biodiversity Field Assessment

A single field survey for the PAOI was undertaken from the 3rd to 6th of November 2025, which constitutes a dry season survey, to determine the presence of flora, fauna, and dominant vegetation within the PAOI as well as to determine the likelihood of occurrence within the assessed area. Vegetation and habitat units were also identified. This survey was conducted as a site-specific tower-to-tower assessment, allowing for the thorough surveying of tower locations. Flora and fauna SCC were identified wherever possible. Every effort was made to cover all the different habitat types, within the limits of time and access (Figure 2-1 to Figure 2-3).

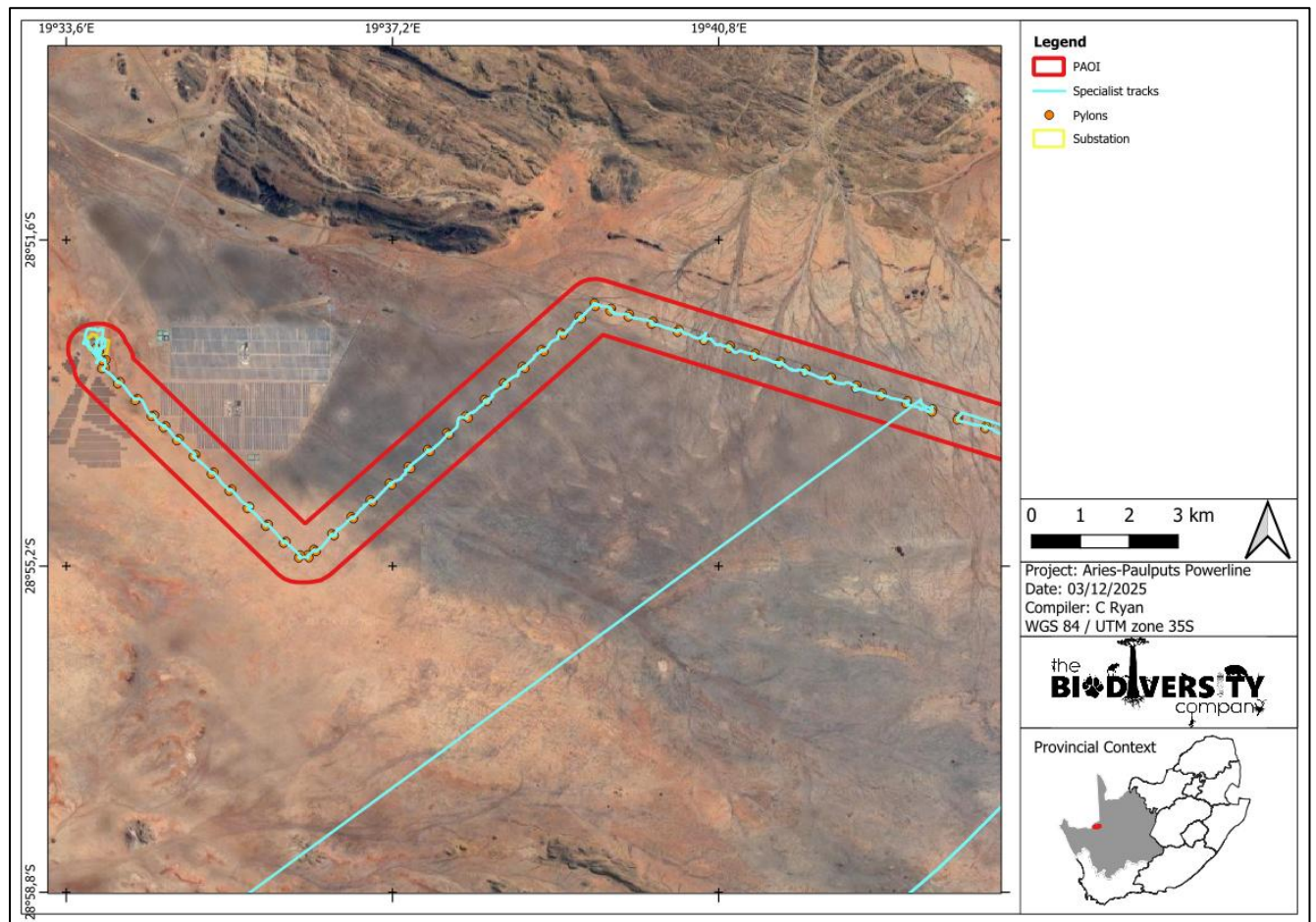


Figure 2-1 Map illustrating the field tracks (Part 1, western portion).

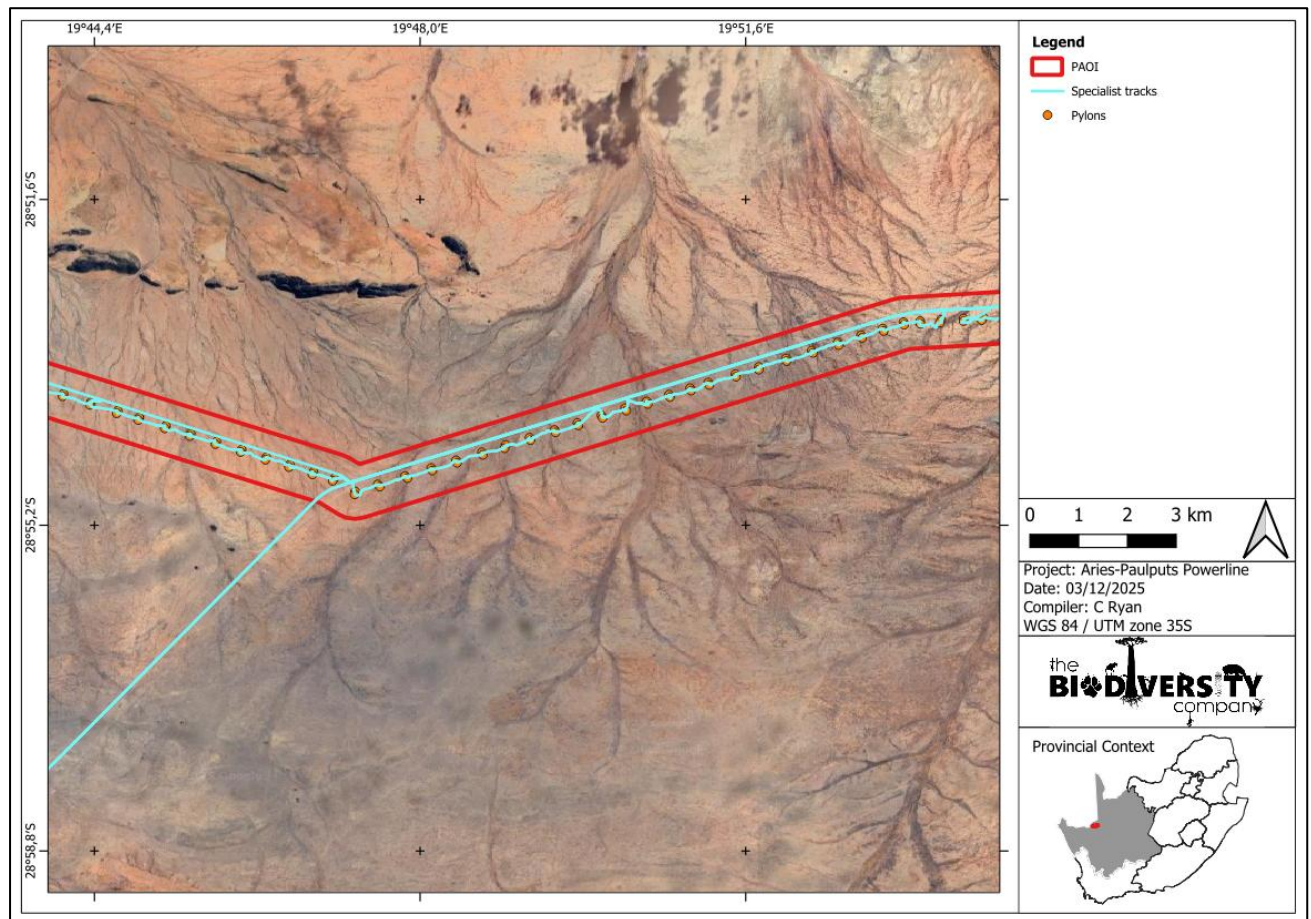


Figure 2-2 Map illustrating the field tracks (Part 2, middle portion).

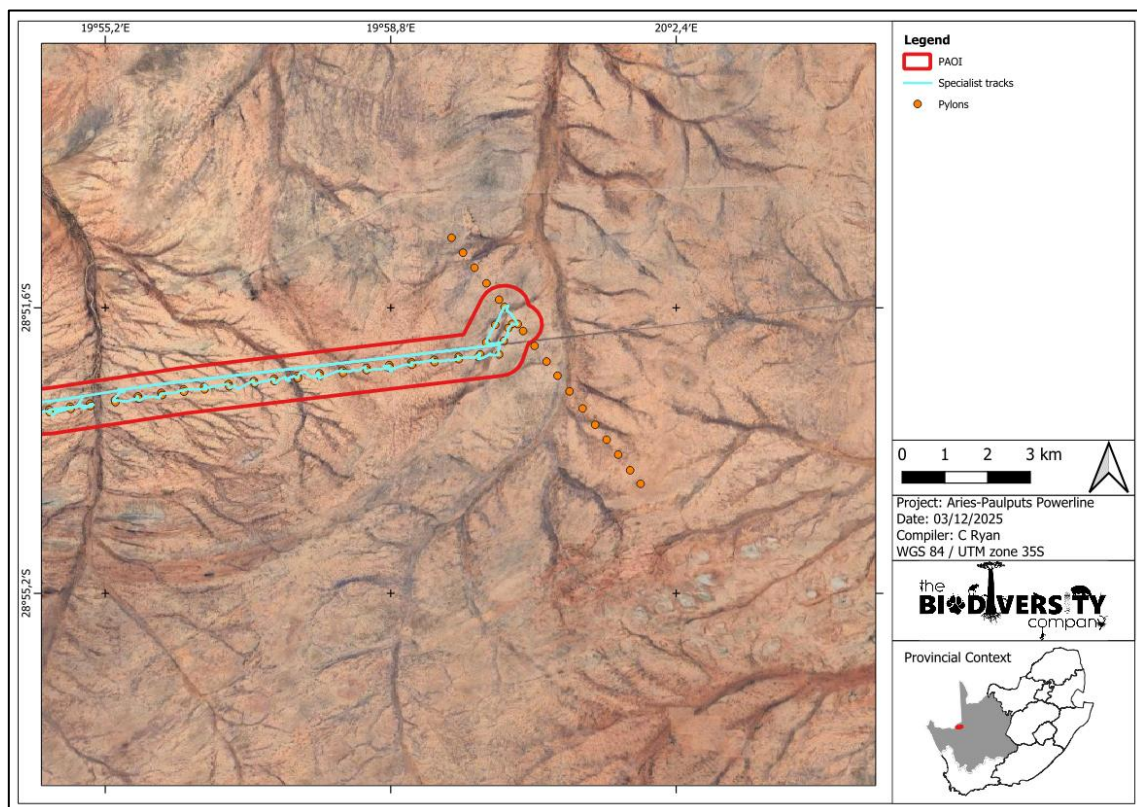


Figure 2-3 Map illustrating the field tracks (Part 3, eastern portion).

3 Results & Discussion

3.1 Desktop Baseline

3.1.1 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 PAOI to ecologically important landscape features.*

Desktop Information Considered	Relevance	Reasoning	Section
Red List of Ecosystems (RLE, 2022)	Relevant	The PAOI is located within a "Least Concern" (LC) ecosystem (Bushmanland Arid Grassland).	3.1.1.1
Ecosystem Protection Level (NBA, 2018)	Relevant	The PAOI overlaps with a "Not Protected" (NP) ecosystem.	3.1.1.2
Conservation Plan [Northern Cape Biodiversity Spatial Plan (NCBSP, 2024)]	Relevant	The PAOI overlaps with Critical Biodiversity Area (CBA 1 and CBA2), and Ecological Support Area (ESA). The reasonings for the CBA 1 and CBA 2 assignment is the vegetation type conservation targets.	3.1.1.3
South African Protected and Conservation Areas Databases (SAPAD & SACAD) (2025, Q2)	Irrelevant	The nearest protected area is around 30 km northeast from the PAOI (Augrabies Falls National Park) The nearest conservation area is more than 200 km away from the PAOI (Hantam National Botanical Garden).	-
National Protected Areas Expansion Strategy (NPAES, 2018).	Relevant	The PAOI overlaps with NPAES Priority Focus Areas.	3.1.1.4
Key Biodiversity Areas (KBAs, 2024)	Relevant	The PAOI overlaps with the Aggenys-Pella-Pofadder KBA and is 30 km from the Augrabies KBA.	3.1.1.5
South African Inventory of Inland Aquatic Ecosystems (SAIIAE, 2018).	Relevant	The 500 m regulated zone for the PAOI overlaps with a Critically Endangered (CR) wetland ,an unclassified wetland and the Endangered (EN) Wahoitesruit river. The PAOI and regulated zone overlaps with other Least Threatened rivers (Nouse, Kantbrogas se Laagte, Samoep and one unnamed river)	3.1.1.6.1
National Freshwater Priority Areas (NFEPA, 2011)	Irrelevant	The PAOI and its associated 500 m regulated zone does not overlap with any NFEPA wetlands.	-
Strategic Water Source Areas (SWSA, 2021)	Irrelevant	The PAOI does not overlap with any SWSAs.	-
Strategic Transmission Corridors (EGI, 2020)	Relevant	The PAOI is within the northern corridor.	3.1.1.7

3.1.1.1 Red List of Ecosystems

The Ecosystem Threat Status is an 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) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition.

According to the spatial dataset, the proposed development overlaps with a LC ecosystem (Bushmanland Arid Grassland) (Figure 3-1).

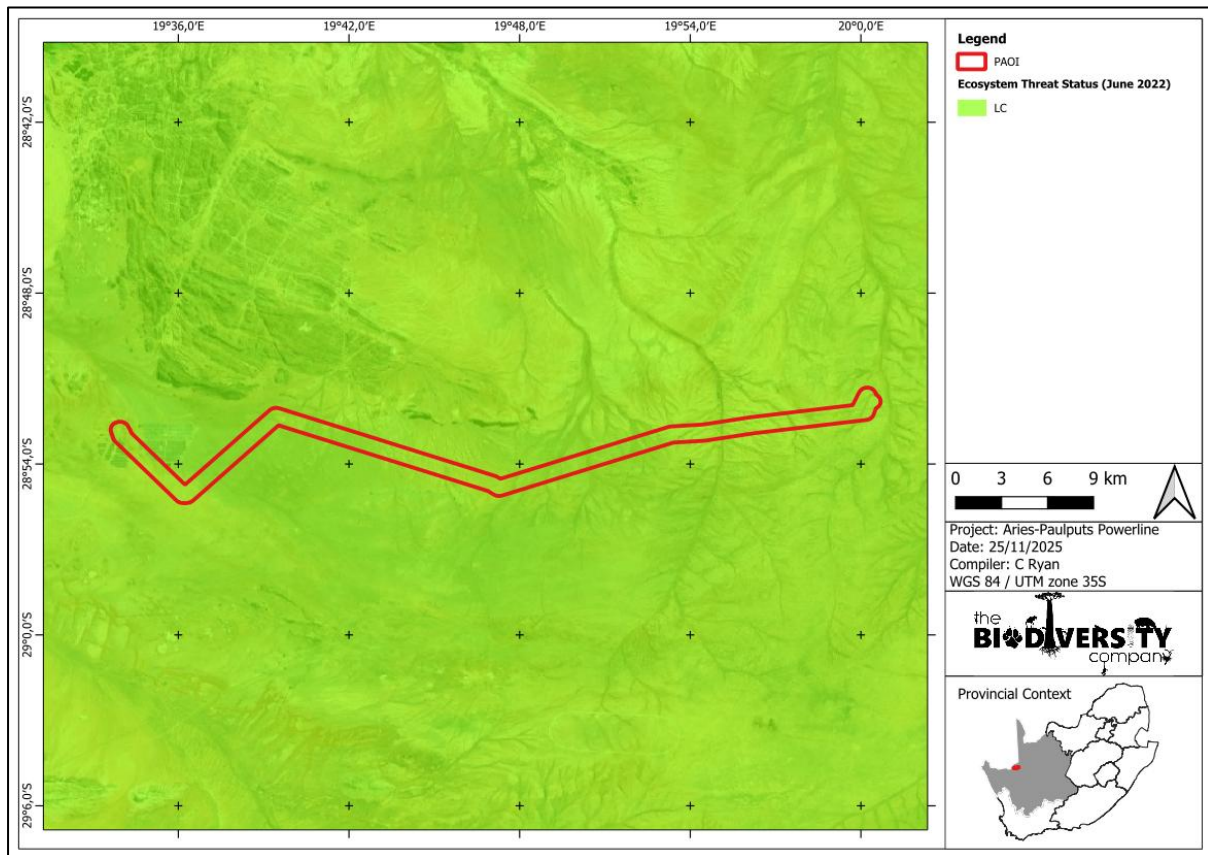


Figure 3-1 Map illustrating the ecosystem threat status associated with the proposed development.

3.1.1.2 Ecosystem Protection Level

This is an indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP) and Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems.

The proposed PAOI overlaps with a NP ecosystem (Figure 3-2).

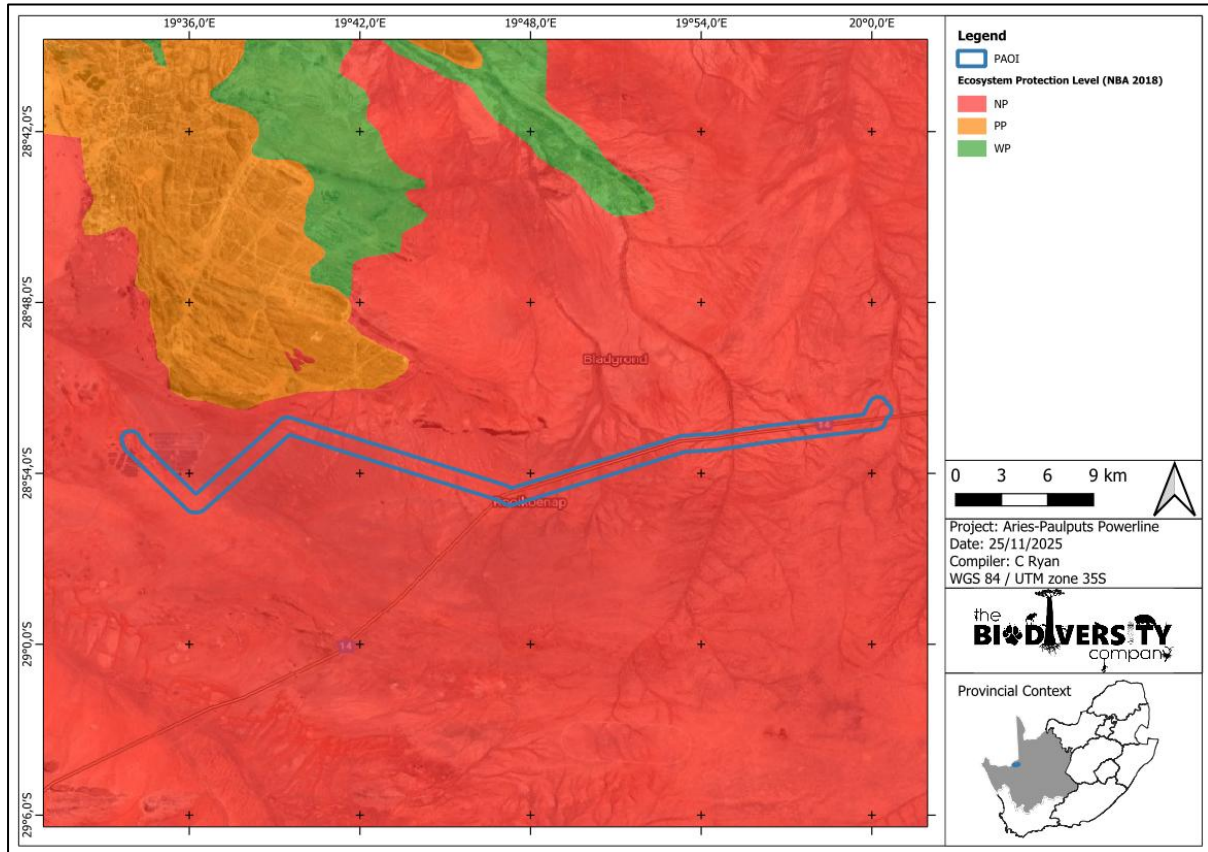


Figure 3-2 Map illustrating the ecosystem protection level associated with the PAOI.

3.1.1.3 Provincial Conservation Plan

Northern Cape Critical Biodiversity Areas (CBAs) (SANBI, 2024) map was produced as part of this plan and sites were assigned to the following CBA categories based on their biodiversity characteristics, spatial configuration, and requirement for meeting targets for both biodiversity pattern and ecological processes:

- Critical Biodiversity Area 1 (CBA1);
- Critical Biodiversity Area 2 (CBA2);
- Ecological Support Area (ESA); and
- Protected Area (PA).

Figure 3-3 below presents a map of the PAOI superimposed on the Northern Cape CBAs dataset. The PAOI overlaps with a CBA 1, CBA 2 and ESA.

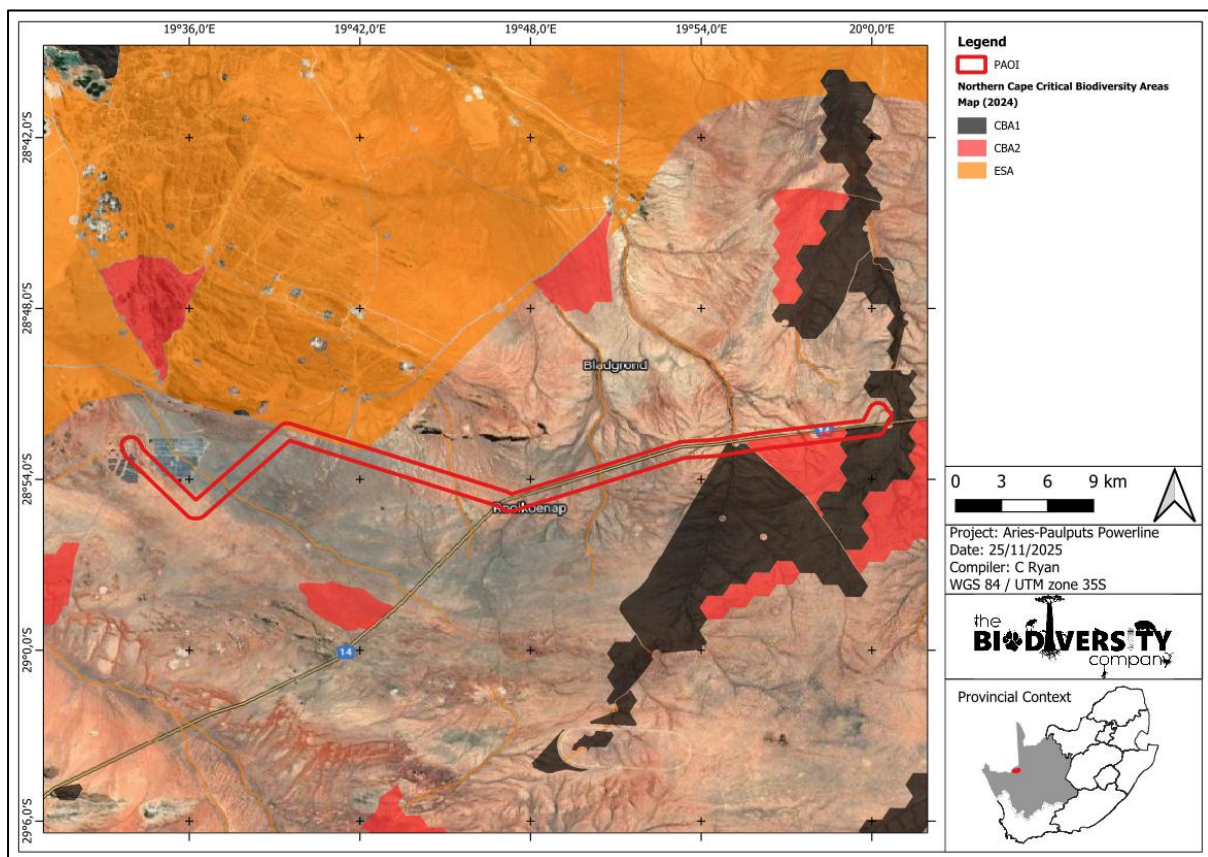


Figure 3-3 Map illustrating the PAOI in relation to the Northern Cape CBA layer.

3.1.1.4 National Protected Area Expansion Strategy

National Protected Area Expansion Strategy 2018 (NPAES) were identified through a systematic biodiversity planning process. They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with strong emphasis on climate change resilience and requirements for protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for fine scale planning which may identify a range of different priority sites based on local requirements, constraints and opportunities (NPAES, 2018).

Figure 3-4 shows that the PAOI marginally overlaps with priority focus areas on the western end.

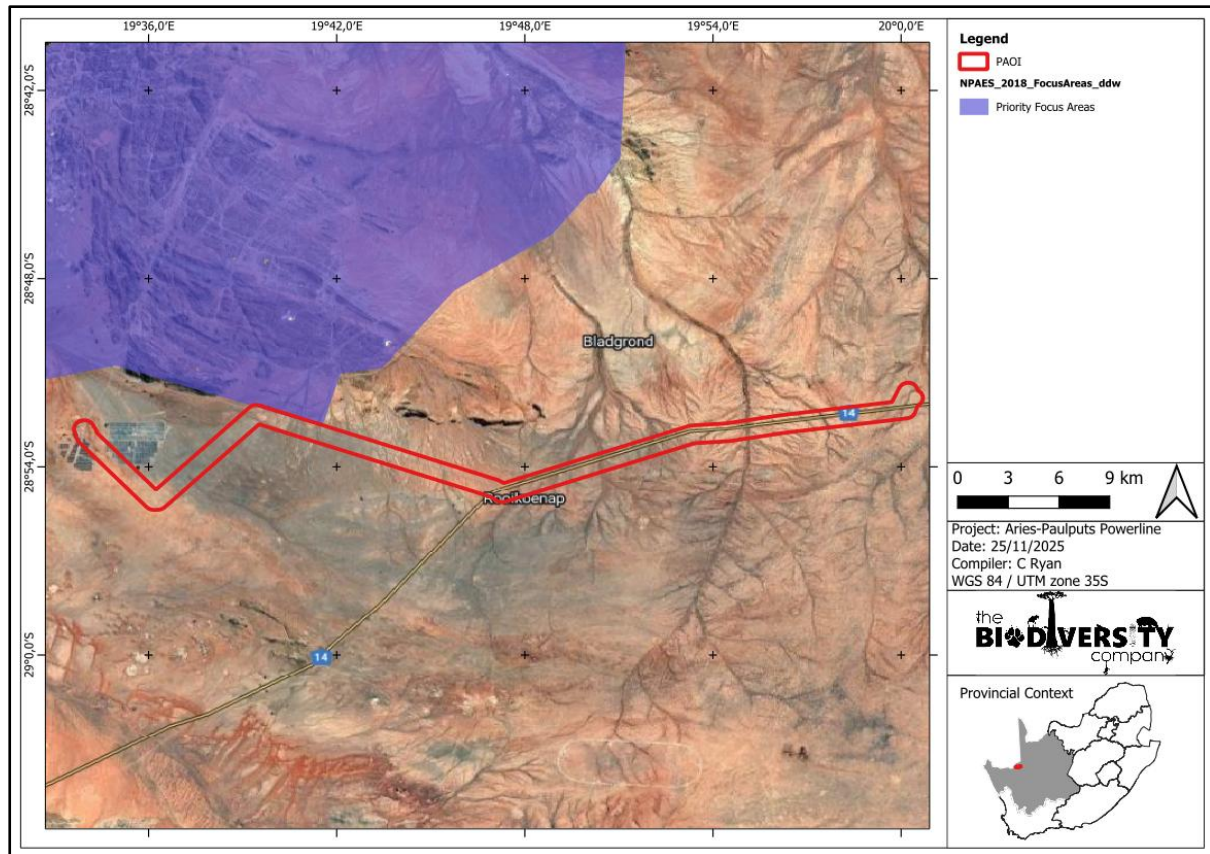


Figure 3-4 The PAOI in relation to the NPAES areas

3.1.1.5 Key Biodiversity Areas

A new set of Key Biodiversity Areas (KBA) specific to South Africa has been identified using the Global Standard for the Identification of Key Biodiversity Areas version 1.2 (IUCN 2016), applied to South African species and ecosystems. KBAs are critical sites that play a vital role in maintaining global biodiversity by serving as essential habitats for species. The identification of KBAs enables governments and civil society to pinpoint key locations crucial for species and their habitats worldwide. This understanding facilitates collaborative efforts to manage and conserve these areas, thereby safeguarding global biological diversity and supporting international biodiversity objectives.

Unlike the Important Bird Areas (IBAs), which primarily focus on birds, the KBA framework encompasses a broader spectrum of biodiversity, including mammals, amphibians, plants, and other taxa. BirdLife South Africa (BLSA), in consultation with the KBA National Coordination Group, has opted to retire IBAs and integrate KBAs into its conservation strategy. This strategic shift acknowledges the necessity of investing resources effectively to protect avian and other macroecological elements at the site level within a comprehensive framework of biodiversity conservation (KBA NCG, 2024).

The PAOI overlaps with the Aggenys-Pella-Pofadder KBA (Figure 3-5).

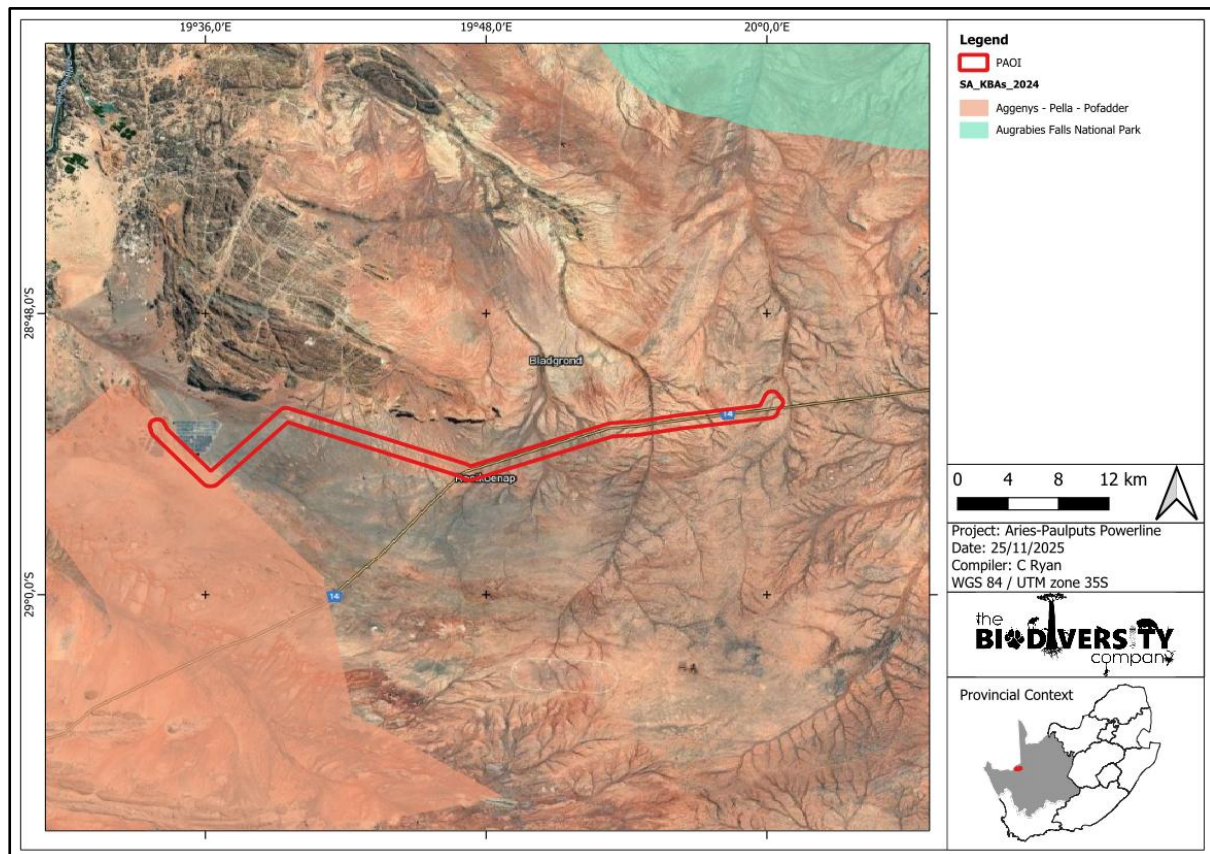


Figure 3-5 The PAOI in relation to KBAs

3.1.1.6 Hydrological Setting

3.1.1.6.1 South African Inventory of Inland Aquatic Ecosystems

The South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was released with the NBA in 2018. Ecosystem threat status (ETS) of river and wetland ecosystem types are based on the extent to which each river ecosystem type had been altered from its natural condition. Ecosystem types are categorised as CR, EN, VU or LT, with CR, EN and VU ecosystem types collectively referred to as 'threatened' (Van Deventer *et al.*, 2019; Skowno *et al.*, 2019).

The 500 m regulated zone surrounding the PAOI overlaps with a CR wetland and unclassified wetlands, as well as EN rivers (Waholtesruit and Nous), LT rivers (Kantbrogas se Laagte and Samoep), and one unclassified river (Figure 3-6).

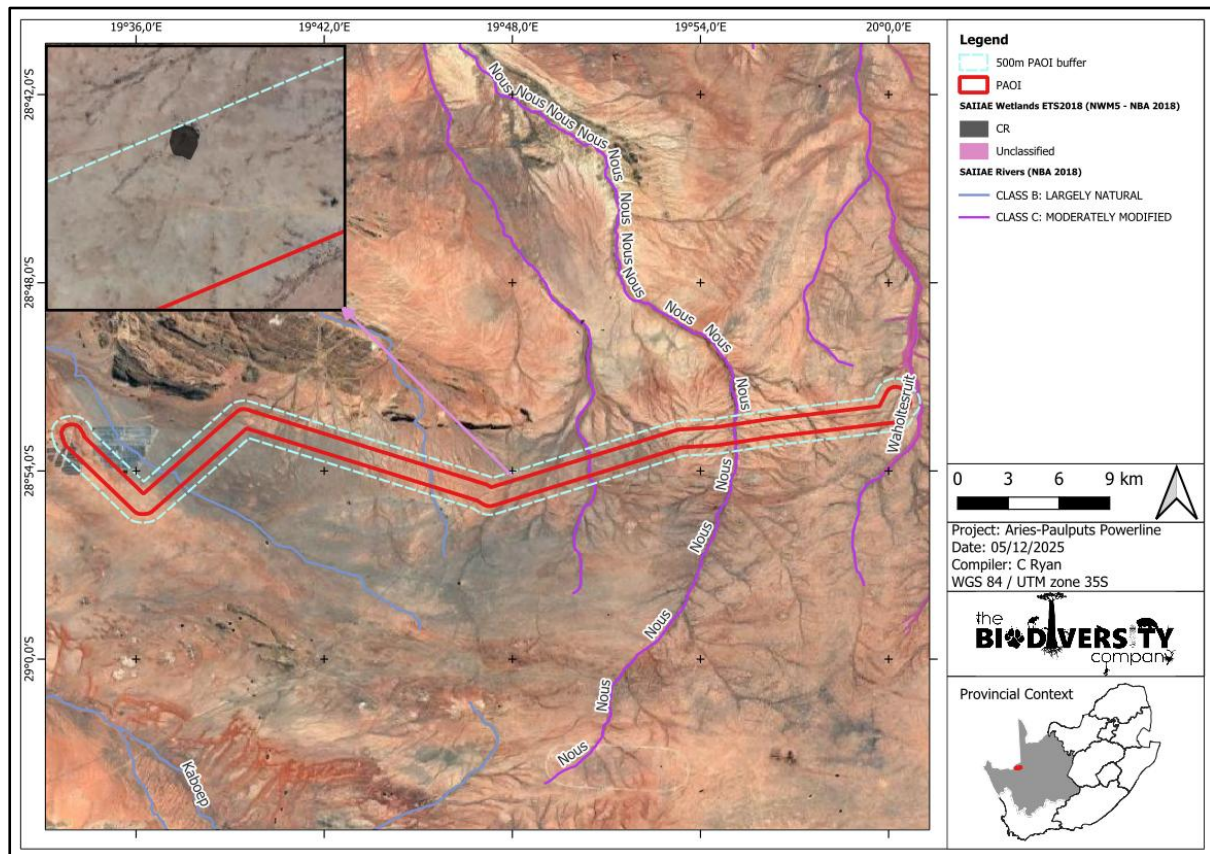


Figure 3-6 The PAOI in relation to the South African Inventory of Inland Aquatic Ecosystems.

3.1.1.7 Strategic Transmission Corridors

On the 16 February 2018 Minister Edna Molewa published Government Notice No. 113 in Government Gazette No. 41445 which identified 5 strategic transmission corridors important for the planning of electricity transmission and distribution infrastructure as well as procedure to be followed when applying for environmental authorisation for electricity transmission and distribution expansion when occurring in these corridors.

On 29 April 2021, Minister Barbara Dallas Creecy published Government Notice No. 383 in Government Gazette No. 44504, which expanded the eastern and western transmission corridors and gave notice of the applicability of the application procedures identified in Government Notice No. 113, to these expanded corridors. More information on this can be obtained from <https://egis.environment.gov.za/egi>.

The PAOI overlaps with the Northern Corridor (Figure 3-7).

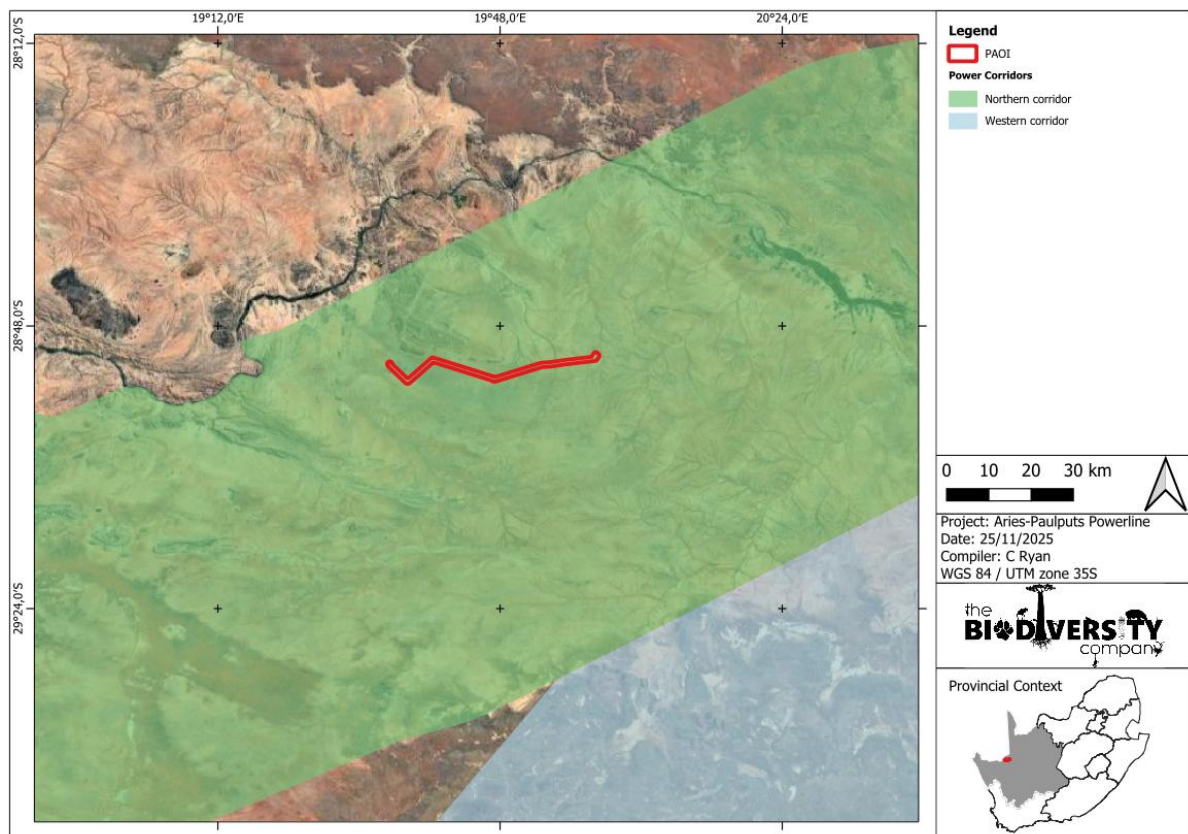


Figure 3-7 The PAOI in relation to the strategic transmission corridors dataset

3.1.2 Flora Assessment

This section is divided into a description of the biome and local vegetation type that would be expected under natural conditions, and the expected flora species.

3.1.2.1 Biome

The PAOI is situated within the Nama-karoo biome. This biome is found in the central plateau of the western half of South Africa. The geology underlying the biome is varied, as the distribution of this biome is determined primarily by rainfall. The rain falls in summer and varies between 100 and 520 mm per year. This also determines the predominant soil type; over 80% of the area is covered by a lime-rich, weakly developed soil over rock. Although less than 5% of rain reaches the rivers, the high erodibility of soils poses a major problem where overgrazing occurs (SANBI, 2019).

The dominant vegetation is a grassy, dwarf shrubland. Grasses tend to be more common in depressions and on sandy soils, and less abundant on clayey soils. Grazing rapidly increases the relative abundance of shrubs. Most of the grasses are of the C4 type and, like the shrubs, are deciduous in response to rainfall events (SANBI, 2019).

On a fine-scale vegetation type, the PAOI overlaps with the Bushmanland Arid Grassland vegetation type (Figure 3-8).

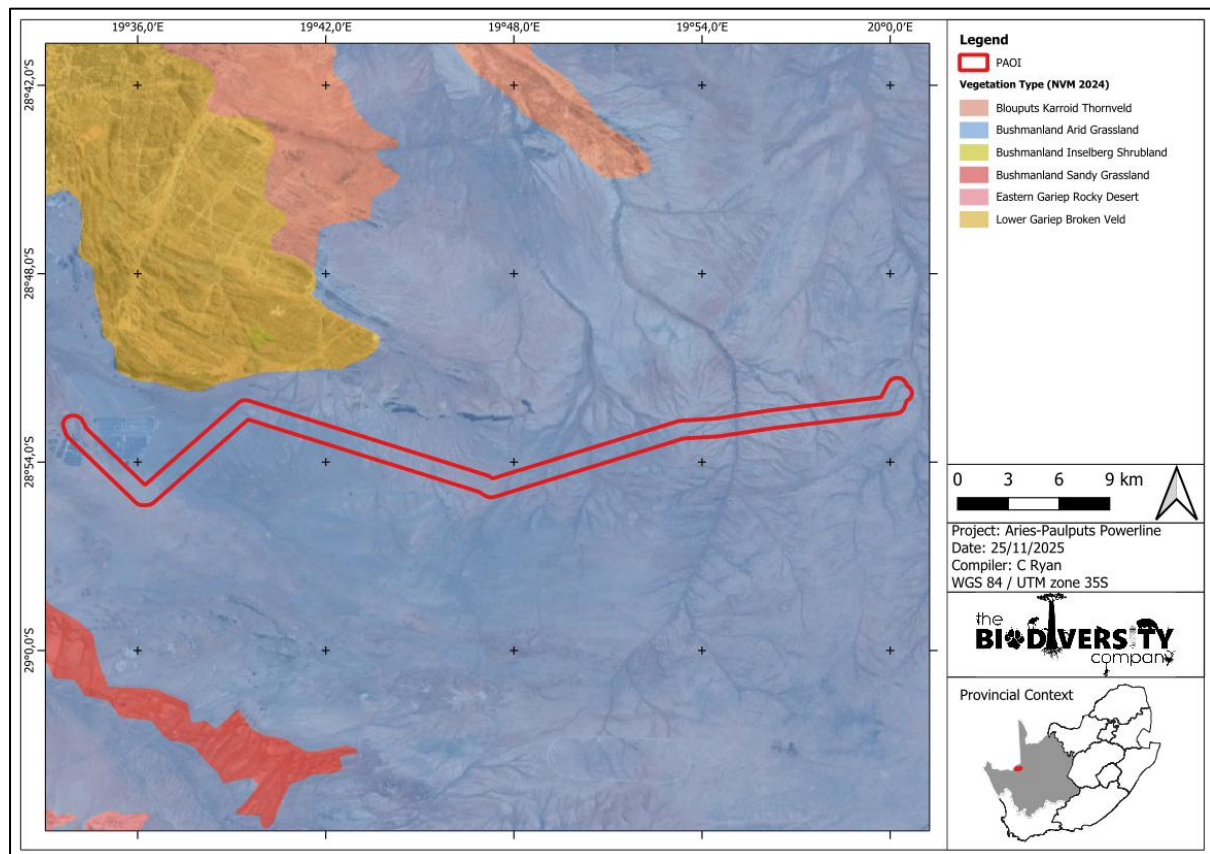


Figure 3-8 Map illustrating the vegetation types associated with the PAOI.

3.1.2.1.1 Bushmanland Arid Grassland

The Bushmanland Arid Grassland consists of extensive to irregular plains on a slightly sloping plateau. It is sparsely vegetated by grasslands, mainly dominated by white grasses (*Stipagrostis* species) giving this vegetation type the character of semidesert 'steppe'. In places low shrubs of *Salsola* change the vegetation structure. In years of abundant rainfall rich displays of annual herbs can be expected.

Important Taxa (^WWestern and ^EEastern regions of the unit only; d = dominant)

Graminoids: *Aristida adscensionis* (d), *A. congesta* (d), *Enneapogon desvauxii* (d), *Eragrostis nindensis* (d), *Schmidtia kalahariensis* (d), *Stipagrostis ciliata* (d), *S. obtusa* (d), *Cenchrus ciliaris*, *Enneapogon scaber*, *Eragrostis annulata*^E, *E. porosa*^E, *E. procumbens*, *Panicum lanipes*^E, *Setaria verticillata*^E, *Sporobolus nervosus*, *Stipagrostis brevifolia*^W, *S. uniplumis*, *Tragus berteronianus*, *T. racemosus*^E.

Small Trees: *Senegalia mellifera* subsp. *detinens*^E, *Boscia foetida* subsp. *foetida*.

Tall Shrubs: *Lycium cinereum* (d), *Rhigozum trichotomum* (d), *Cadaba aphylla*, *Parkinsonia africana*.

Low Shrubs: *Aptosimum spinescens* (d), *Hermannia spinosa* (d), *Pentzia spinescens* (d), *Aizoon asbestinum*^E, *A. schellenbergii*^E, *Aptosimum elongatum*, *A. lineare*^E, *A. marlothii*^E, *Barleria rigida*, *Berkheya annectens*, *Blepharis mitrata*, *Eriocephalus ambiguus*, *E. spinescens*, *Limeum aethiopicum*, *Lophiocarpus polystachyus*, *Monechma incanum*, *M. spartioides*, *Pentzia pinnatisecta*, *Phaeoptilum spinosum*^E, *Polygala seminuda*, *Pteronia leucoclada*, *P. mucronata*, *P. sordida*, *Rosenia humilis*, *Senecio niveus*, *Sericocoma avolans*, *Solanum capense*, *Talinum arnotii*^E, *Tetragonia arbuscula*, *Zygophyllum microphyllum*.

Succulent Shrubs: *Kleinia longiflora*, *Lycium bosciifolium*, *Salsola tuberculata*, *S. glabrescens*.

Herbs: *Acanthopsis hoffmannseggiana*, *Aizoon canariense*, *Amaranthus praetermissus*, *Barleria lichtensteiniana*^E, *Chamaesyce inaequilatera*, *Dicoma capensis*, *Indigastrium argyraeum*, *Lotononis platycarpa*, *Sesamum capense*, *Tribulus pterophorus*, *T. terrestris*, *Vahlia capensis*.

Succulent Herbs: *Gisekia pharnacioides*^E, *Psilocaulon coriarium*, *Trianthema parvifolia*.

Geophytic Herb: *Moraea venenata*.

Biogeographically Important Taxon (Bushmanland endemic)

Succulent Herb: *Tridentea dwequensis*.

Endemic Taxa

Succulent Shrubs: *Dinteranthus pole-evansii*, *Larryleachia dinteri*, *L. marlothii*, *Ruschia kenhardtensis*.

Herbs: *Lotononis oligocephala*, *Nemesia maxii*.

Conservation Status

According to Mucina and Rutherford (2006), this vegetation type is classified as Least Concern. The national target for conservation protection for this vegetation types is 21%, with only small patches statutorily conserved in Augrabies Falls National Park and Goegab Nature Reserve. Very little of the area has been transformed. The risk of erosion in this vegetation type is very low (60%) and low (33%).

3.1.2.2 Expected Flora Species

The Global Biodiversity Information Facility (GBIF) database, with all available datasets including iNaturalist, was accessed to compile a list of expected flora species within the proposed development area and surrounding landscape, which totalled 297 species (Appendix D: Flora species expected); GBIF.org (26 November 2025) GBIF Occurrence Download <https://doi.org/10.15468/dl.rmfwna>. The Red List of South African Plants (Raimondo *et al.*, 2009; SANBI, 2020) was utilized to provide the most current national conservation status of flora species.

Please note that the Screening Tool report includes lists of bird, mammal, reptile, amphibian, butterfly and plant species of conservation concern known or expected to occur on the proposed development footprint. Some of these SCC are sensitive to illegal harvesting. Such species have had their names obscured and are listed as sensitive plant unique number / sensitive animal unique number. As per the best practise guideline that accompanies the protocol and screening tool, **the name of the sensitive species may not appear in the final BAR nor any of the specialist reports released into the public domain**. It should be referred to as *sensitive plant* or *sensitive animal* and its threat status may be included, e.g. *critically endangered sensitive plant* or *endangered sensitive animal*.

The GBIF database combined with the Screening Tool listed a total of four (4) flora SCC that may occur on site (Table 3-2).

Table 3-2 Flora SCC expected in the PAOI. EN = Endangered, DDD = Data Deficient and VU = Vulnerable. LoO = Likelihood of occurrence.

Family	Species	Screening Tool	Conservation Status	Habitat	LoO	Reason
-	<i>Sensitive species 144</i>	Medium	VU	-	High-	Presence confirmed within the PAOI.
Aizoaceae	<i>Lithops dorotheae</i>	-	EN	Plants occur on fine-grained, sheared, feldspathic quartzite.	Medium	Suitable habitat present within the PAOI.
Apocynaceae	<i>Hoodia gordonii</i>	-	DDD	Occurs in a wide variety of arid habitats from coastal to mountainous, also on gentle to steep shale ridges, found from dry, rocky places to sandy spots in riverbeds.	High	Presence confirmed within the PAOI.
Fabaceae	<i>Crotalaria pearsonii</i>	Medium	VU	Dry ravines, in granite and quartzite derived soils.	Low	No suitable habitat present within the PAOI.

3.1.3 Faunal Assessment

The Screening Tool indicates that two (2) avifaunal SCC are predicted to occur within the PAOI, these SCC are discussed further in the accompanying Avifaunal report (TBC, 2025). According to the Endangered Wildlife Trust Threatened Species No-Go Map (EWT, 2025), the PAOI does not overlap with any No-Go areas and no occurrence records of the SCC are present.

3.1.3.1 Mammals

The Global Biodiversity Information Facility (GBIF) database lists four (4) mammal species that could be expected to occur within the PAOI ((Section 9.6)(GBIF.org (26 November 2025) GBIF Occurrence Download <https://doi.org/10.15468/dl.rmfwna>)). None of these species are classified as an SCC. No mammal species are listed by the Screening Tool.

3.1.3.2 Amphibians

The GBIF database lists one (1) amphibian species that could be expected to occur within the PAOI ((Section 9.4)(GBIF.org (26 November 2025) GBIF Occurrence Download <https://doi.org/10.15468/dl.rmfwna>)). This species is not classified as a SCC. No amphibian species are listed by the Screening Tool.

3.1.3.3 Reptiles

The GBIF database lists twenty-five (25) reptile species that are expected to occur within the area (the full list is provided (Section 9.5)). One (1) species is listed as an SCC (Table 3-3). No reptile species are listed by the Screening Tool.

Table 3-3 List of reptile Species of SCC that may occur in the PAOI. NT = Near Threatened. LoO = Likelihood of Occurrence.

Family	Species	Common Name	Screening Tool	Conservation Status		Habitat	LoO	Reason
				Regional	Global			
Testudinidae	<i>Psammobates tentorius verroxii</i>	Tent Tortoise	-	NT	NT	Occurs in arid regions under varying temperature regimes. Suitable vegetation includes dwarf shrubland with succulents, annuals, grasses and geophytes.	Medium	Suitable habitat present within the PAOI

3.1.4 DFFE Screening Tool

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):

- Terrestrial Biodiversity Theme sensitivity is Very High for the PAOI, due to it overlapping CBA 1, CBA2, ESA, SANParks PAES (Figure 3-9).
- Plant Species Theme sensitivity is Medium for the PAOI, due to the potential presence of two (2) floral SCC (Figure 3-10); and
- Animal Species Theme is High for the PAOI owing to the potential presence of two (2) avifaunal medium to high sensitivity SCC (Figure 3-11).

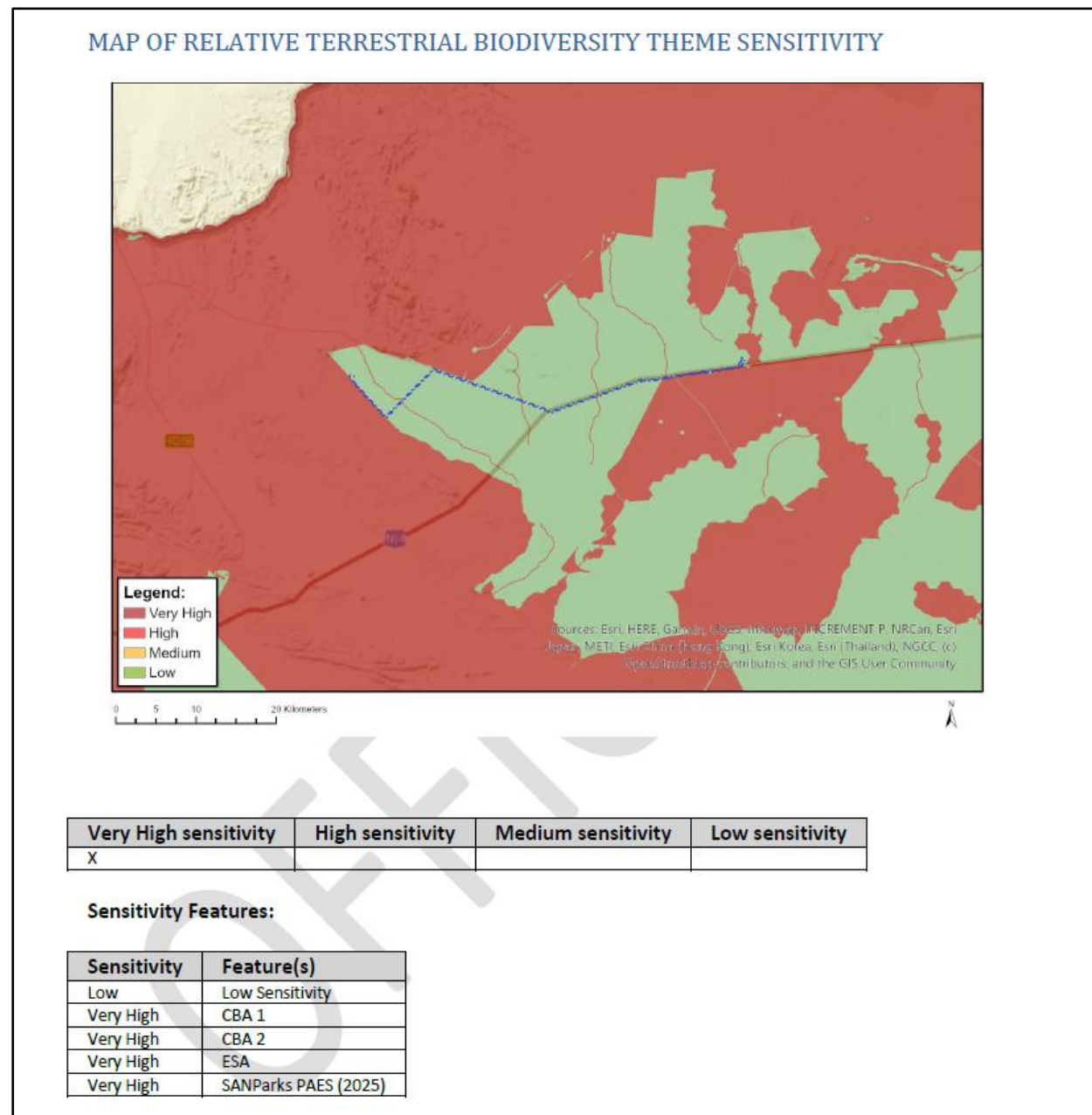
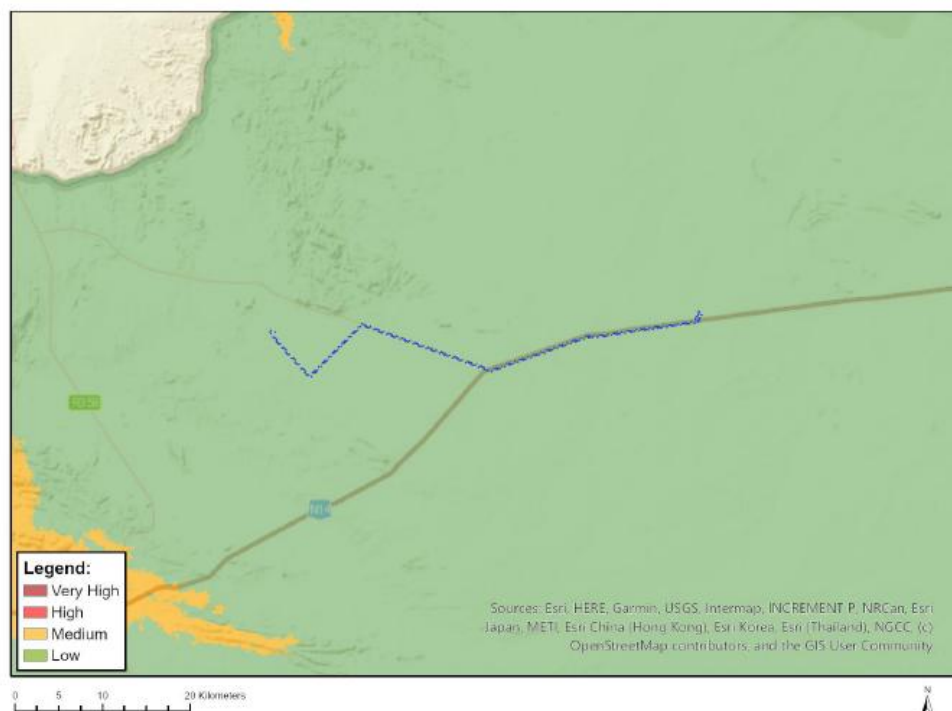


Figure 3-9 **Terrestrial Biodiversity Theme Sensitivity**

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



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.

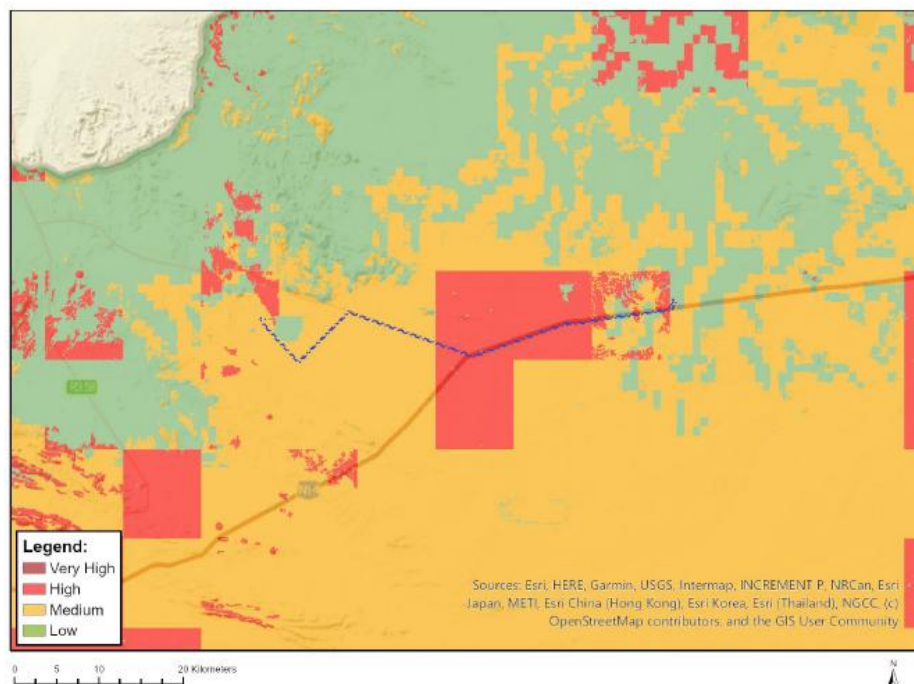
Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Crotalaria pearsonii
Medium	Sensitive species 144

Figure 3-10 Plant Theme Sensitivity

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



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 eladatarequests@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)
High	Aves-Falco biarmicus
High	Aves-Neotis ludwigii
Low	Subject to confirmation
Medium	Aves-Neotis ludwigii

Figure 3-11 Animal Theme Sensitivity

3.2 Biodiversity Field Survey

The following sections discuss the results from the field survey that was undertaken. Key representative sample points are described and shown in Figure 2-1.

3.2.1 Flora Assessment

This section is divided into three sections:

- Indigenous species;
- SCC and Protected species; and
- Alien Invasive Plants (AIPs).

3.2.1.1 Indigenous Species

The flora assessments were conducted throughout the extent of the PAOI. Numerous indigenous flora species were recorded in the PAOI (a list can be provided upon request), characteristic of the vegetation types for the site. The list of plant species recorded is by no means comprehensive, and repeated surveys during different phenological periods not covered, may likely yield additional flora species for the PAOI. Selected species are presented in Figure 3-12.

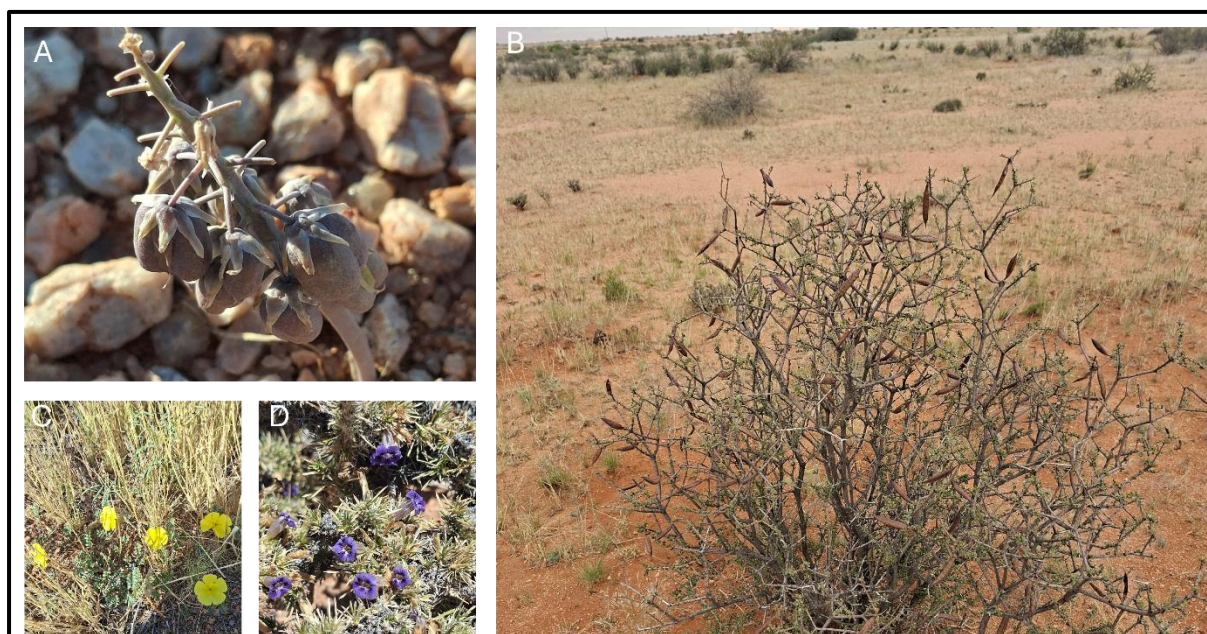


Figure 3-12 Photographs presenting some of the indigenous plant species recorded for the PAOI: A) *Ledebouria apertifolia*, B) *Rhigozum trichotomum*, C) *Tribulus cristatus* and D) *Aptosimum spinescens*

3.2.1.1.1 Species of Conservation Concern

Two (2) floral SCC were recorded during the survey (Table 3-4). The locations of Sensitive species 144 must be protected and not released into the public domain. Below is a map showing the occurrence of the *Hoodia gordonii* which were recorded within the PAO (Figure 3-14 to Figure 3-17). One hundred meter (100m) buffers were placed on the Sensitive species 144 locations to assist with mitigating impacts to this species (Due to a high incidence of poaching, the locations of Sensitive species 144 and associated 100m buffer cannot be shown in this report). According to the species guidelines, buffers should be incorporated for all populations of Critically Endangered, Endangered, Vulnerable, Rare and Critically Rare Species (SANBI, 2020). The guidelines stipulate that a 200m buffer is required and this was considered, however due to the larger, growth form of the species and the lower impact of the powerline, a 100m buffer will suffice. This 100m no development buffer must be strictly adhered to for both the powerline and the servitude roads.

The original proposed powerline route and servitude road interferes with these species, namely *Sensitive species 144* and *Hoodia gordonii*, and therefore proposed pylon locations have been described in Section 5 of this report. An image of the *Hoodia gordonii* is included (Figure 3-13).

Table 3-4 Floral SCC observed within the PAOI. DD = Data Deficient, VU = Vulnerable.

Family	Scientific Name	Red List (SANBI, 2025)
Apocynaceae	<i>Hoodia gordonii</i>	DD
-	<i>Sensitive species 144</i>	VU



Figure 3-13 *H. gordonii* observed within the PAOI.

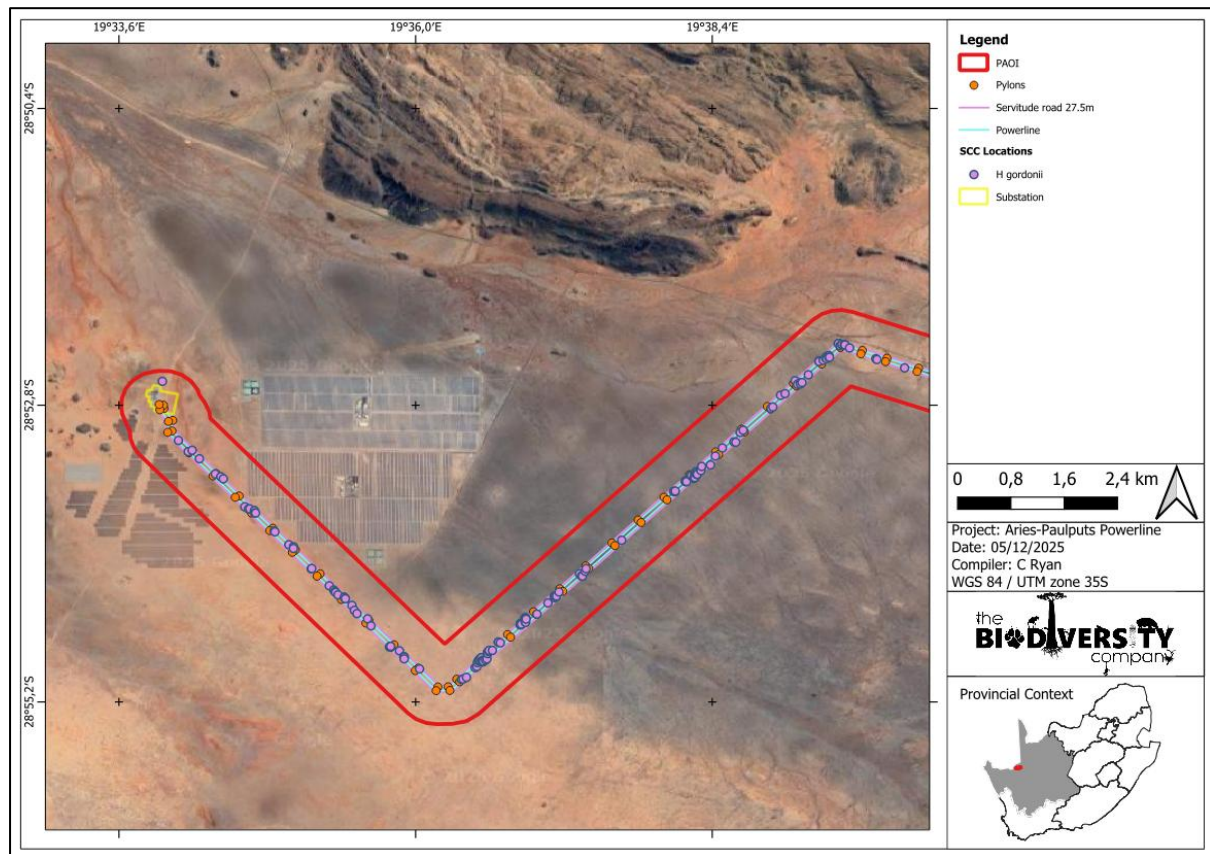


Figure 3-14 Map illustrating the flora SCC locations within the PAOI, part 1.

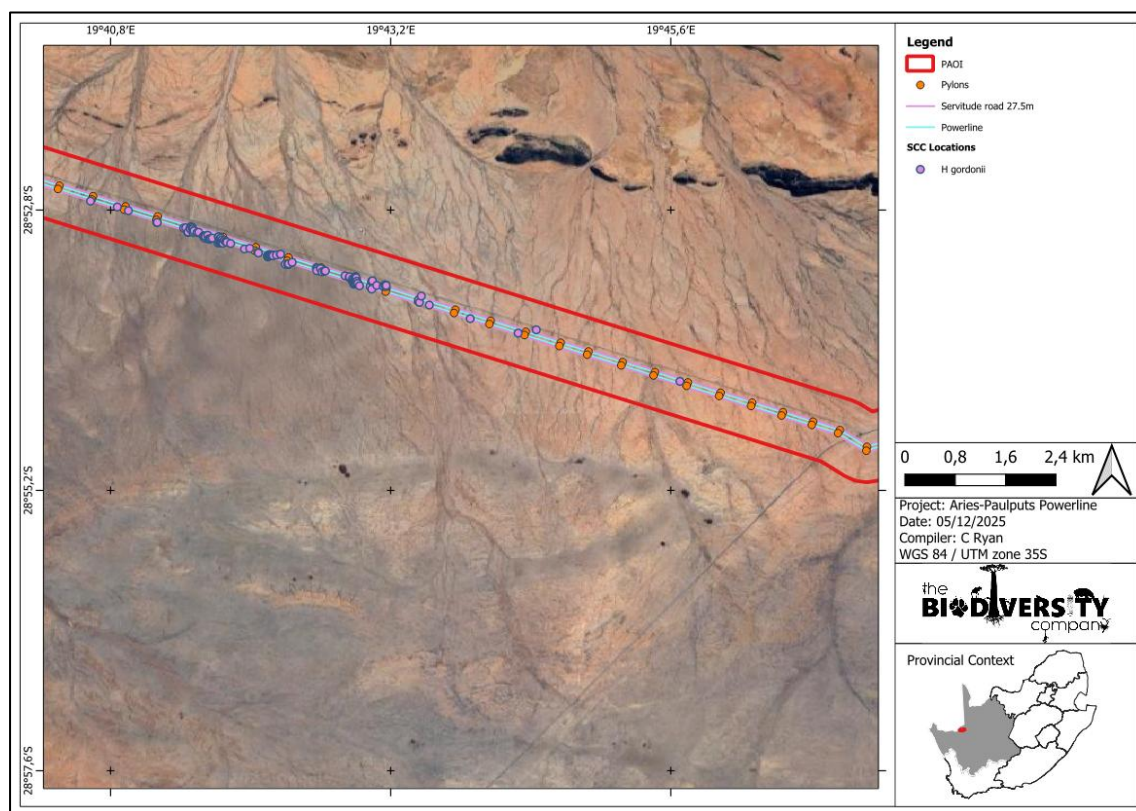


Figure 3-15 Map illustrating the flora SCC locations within the PAOI, part 2.

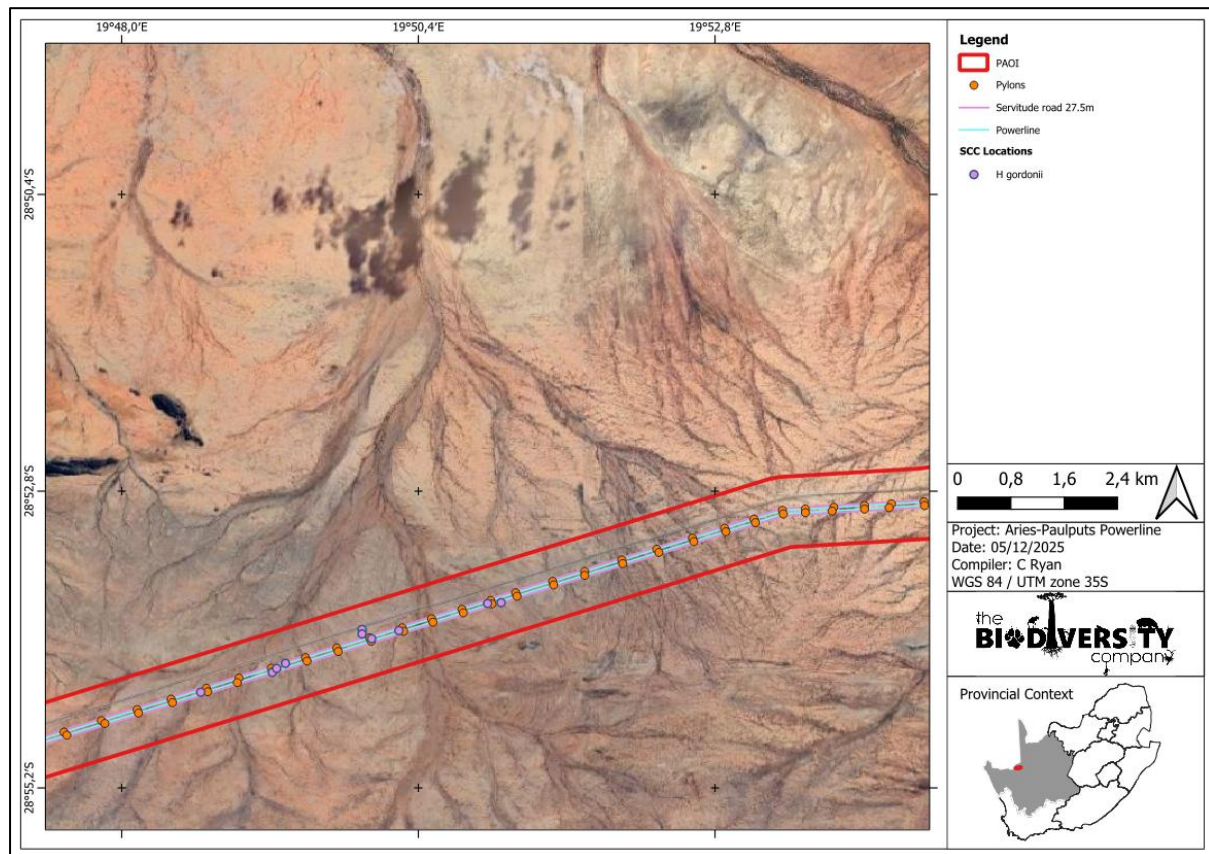


Figure 3-16 Map illustrating the flora SCC locations within the PAOI, part 3.

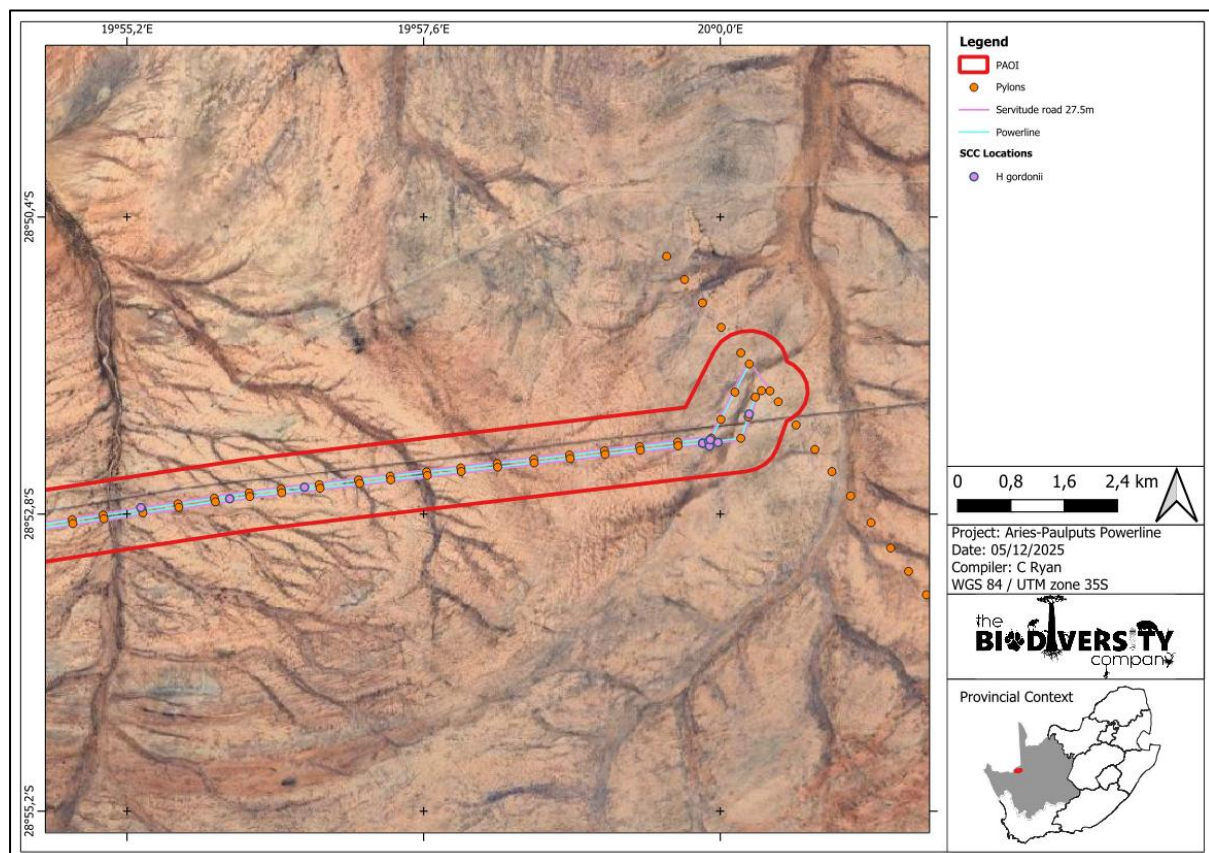


Figure 3-17 Map illustrating the flora SCC locations within the PAOI, part 4.

3.2.1.1.2 Protected Species

The presence of one (1) nationally protected tree species, *Vachellia erioloba*, as listed in the National Forests Act, 1998 (Vol. 681, 25 March 2022) was confirmed on site during the site visit (Table 3-5 and Figure 3-18). No person may cut, disturb, damage or destroy any protected tree except under a permit granted by the minister.

Four (4) provincially protected plant species were recorded during the site assessment; *Boscia foetida*, *Euphorbia spinea*, *Euphorbia hamata* and Sensitive species 144. Please note that sensitive species 144 is currently under a moratorium, where permits for destruction or relocation are not readily granted. All species of the *Euphorbia* and *Boscia* genera are provincially protected under Schedule 1 of the Northern Cape Nature Conservation Act, 2009 (Act 9 of 2009). Images of the protected species are seen in Figure 3-19.

The protected species found within the PAOI will require a permit – should any of the protected species require removal, damage/destruction, or relocation. A walkdown was conducted to record the locations of these individuals in relation to the development infrastructure. More information regarding this walkdown is in Section 5 of this report.

Table 3-5 Protected recorded within the PAOI. LC=Least Concern.

Family	Scientific Name	Red List (SANBI, 2025)	Status
Capparaceae	<i>Boscia foetida</i>	LC	Indigenous; Provincially Protected
Fabaceae	<i>Vachellia erioloba</i>	LC	Indigenous; Nationally Protected
Euphorbiaceae	<i>Euphorbia hamata</i>	LC	Indigenous; Provincially Protected
Euphorbiaceae	<i>Euphorbia spinea</i>	LC	Indigenous; Provincially Protected



Figure 3-18 Nationally protected *Vachellia erioloba* observed within the PAOI.

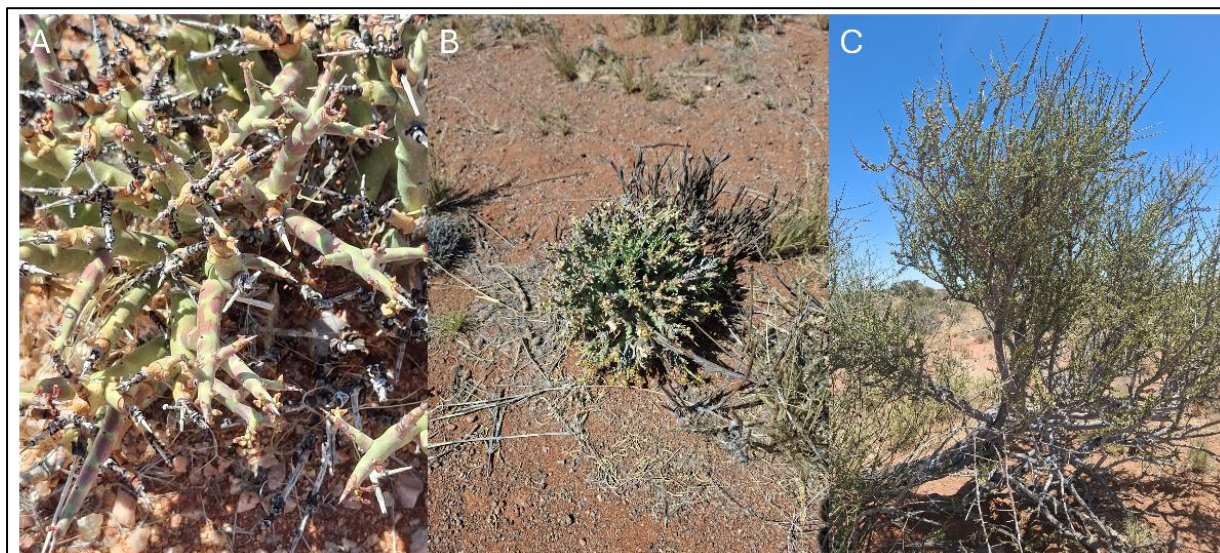


Figure 3-19 Provincially protected flora within the PAOI including A) *Euphorbia spinea* and B) *Euphorbia hamata* and C) *Boschia foetida*.

3.2.1.2 Alien Invasive Plants

Alien Invasive Plants (AIPs) species tend to dominate or replace indigenous flora, thereby transforming the structure, composition and functioning of ecosystems. Therefore, it is important that these plants are controlled by means of an eradication and monitoring programme. Some invader plants may also degrade ecosystems through superior competitive capabilities to exclude indigenous plant species.

The National Environmental Management: Biodiversity Act (NEMBA) is the most recent legislation pertaining to alien invasive plant species. In August 2014, the list of Alien Invasive Species was published in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) (Government Gazette No 78 of 2014). The Alien and Invasive Species Regulations were published in the Government Gazette No. 43735, 25 September 2020. The legislation calls for the removal and / or control of alien invasive plant species (Category 1 species). In addition, unless authorised thereto in terms of the National Water Act, 1998 (Act No. 36 of 1998), no land user shall allow Category 2 or 3 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Below is a brief explanation of the three categories in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA):

- Category 1a: Invasive species requiring compulsory control. Remove and destroy. Any specimens of Category 1a listed species need, by law, to be eradicated from the environment. No permits will be issued.
- Category 1b: Invasive species requiring compulsory control as part of an invasive species control programme. Remove and destroy. These plants are deemed to have such a high invasive potential that infestations can qualify to be placed under a government sponsored invasive species management programme. No permits will be issued.
- Category 2: Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones.
- Category 3: Invasive species regulated by activity. An individual plant permit is required to undertake any of the following restricted activities (import, possess, grow, breed, move, sell, buy or accept as a gift) involving a Category 3 species. No permits will be issued for Category 3 plants to exist in riparian zones.

Note that according to the regulations, a person who has under his or her control a category 1b listed invasive species must immediately: Notify the competent authority in writing, Take steps to manage the listed invasive species in compliance with: Section 75 of the Act; the relevant invasive species management programme developed in terms of regulation 4; and any directive issued in terms of section 73(3) of the Act.

One (1) AIP species was recorded within the PAOI (*Neltuma velutina*) (Figure 3-16).



Figure 3-20 Photograph presenting *Neltuma velutina*.

It is suggested that any AIP species that may colonise the developmental footprint in the future be controlled by implementing an AIP Management Programme in compliance of section 75 of the Act as stated above. During the development the aliens encountered should be removed and the displaced/disrupted soil be rehabilitated to avoid the influx of aliens that are likely to show up during the construction phase. The AIP Management Programme must implement the following monitoring framework to ensure that AIPs are continually monitored, and progress pertaining to their control is recorded (Table 3-6). The monitoring of the PAOI throughout the process is crucial to prevent AIPs growing and spreading out of control, thereby threatening the wellbeing of indigenous flora and fauna. It is also important to note that while herbicide application has been recommended for control, herbicide applications must align with the relevant Eskom standards: Herbicide usage in NTCSA: Prohibited and restricted areas, live chambers, telecommunication infrastructure yards and security fences (Document Identifier: 559 – 48447473). This includes the assessment of timing and sensitivity of herbicide applications adjacent to aquatic ecosystems which represent high risk. Furthermore, herbicide applications should not be used during windy days to prevent drift.

In response to the recommendation against using herbicides at high risk locations within the PAOI, alternative measures for controlling Alien Invasive Plant (AIP) species can include manual removal, mechanical control, and the use of biological control agents where appropriate.

- Manual removal involves physically uprooting or cutting the invasive plants, which is effective for smaller infestations and minimizes environmental impact.
- Mechanical control, such as mowing or cutting, can be employed for larger areas, ensuring that the plant material is disposed of properly to prevent regrowth.
- Additionally, biological control, which involves introducing natural predators or pathogens specific to the invasive species, can be considered as a sustainable long-term solution.

It is crucial to develop a comprehensive AIP Management Report that outlines specific management measures tailored to each AIP species present on the site. This report should include detailed strategies for monitoring, controlling, and preventing the spread of AIPs, ensuring the protection of indigenous flora and fauna while maintaining compliance with relevant environmental regulations.

Table 3-6 Proposed monitoring framework for the control of AIPs within the PAOI.

Metric	Frequency	Method	Response
How effective are the control methods?	4-6 months after every operation	Survey the cleared areas and look for regrowth. Taking before and after photographs of the areas are effective for this.	If the survey reveals that the control methods are effective, e.g., low levels of re-sprouting, continue following the herbicide mixtures and control methods. If non-target plants are dying off where herbicides were applied, ensure appropriate training for herbicide applicators, demonstrate the off-target effects to herbicide applicators to ensure they are using the correct methods and herbicides. (If the results show that the control methods are not effective, adapt by e.g., cutting lower above ground or changing herbicides or timing of herbicide application).
Do the infestation levels decrease?	Annually	Survey the cleared areas and record species, densities and size. Before and after pictures are very effective.	If the infestation levels are not decreasing, reconsider clearing intervals and look at clearing methods. If infestation levels are decreasing, then continue current control method.
Quantity of herbicides used	During every operation	Keep track of cost and ensure no wastage. Record herbicide usage	Track usage over time, it will reveal a certain trend in quantities for different infestation levels. Less herbicides should be used when the infestation levels are lower. Record herbicide cost.
Does the indigenous vegetation recover in the cleared areas?	Annually	Survey the cleared areas and look out for indigenous species variety and presence. Before and after pictures are effective.	If there is recovery of indigenous vegetation, then continue current control method. If there is no recovery, consider rehabilitation with local indigenous species.
How many jobs were created?	After every operation	Timesheets	Job creation figures are useful when asking for landowner assistance from WFW or to demonstrate contributions to jobs and socio-economic conditions
How many person days (PD) were spent per operations?	After every operation	Timesheets	Keep track of cost and assist with planning and budgeting. Determine cost per person per day (PD)

3.2.2 Faunal Assessment

3.2.2.1 Mammals and Herpetofauna

No amphibian species were recorded within the PAOI. Two (2) reptiles were recorded within the PAOI (Table 3-7).

Table 3-7 Reptile species observed within the PAOI.

Scientific Name	Common Name	Conservation Status	
		Regional	Global
<i>Trachylepis occidentalis</i>	Western Three-striped Skink	LC	LC
<i>Agama aculeata</i>	Ground Agama	LC	LC

Thirteen (13) mammal species were recorded during the survey (Table 3-8 and Figure 3-21). It is important to note that majority of the identification of carnivores within the PAOI was through skull identification as many skulls and carcasses were present. This indicates high predator persecution within the farming areas.

Table 3-8 Mammals found within the PAOI.

Family Name	Scientific Name	Common Name	Conservation Status	
			Regional	Global
<i>Bovidae</i>	<i>Raphicerus campestris</i>	Steenbok	LC	LC
<i>Bovidae</i>	<i>Antidorcas marsupialis</i>	Springbok	LC	LC
<i>Canidae</i>	<i>Otocyon megalotis</i>	Bat-eared Fox	LC	LC
<i>Canidae</i>	<i>Lupulella mesomelas</i>	Black-backed Jackal	LC	LC
<i>Herpestidae</i>	<i>Suricata suricatta</i>	Suricate	LC	LC
<i>Herpestidae</i>	<i>Cynictis penicillata</i>	Yellow Mongoose	LC	LC
<i>Hyaenidae</i>	<i>Proteles cristatus</i>	Aardwolf	LC	LC
<i>Hystriidae</i>	<i>Hystrix africae australis</i>	Cape Porcupine	LC	LC
<i>Leporidae</i>	<i>Lepus saxatilis</i>	Scrub Hare	LC	LC
<i>Orycteropodidae</i>	<i>Orycteropus afer</i>	Aardvark	LC	LC
<i>Procaviidae</i>	<i>Procavia capensis</i>	Rock Hyrax	LC	LC
<i>Sciuridae</i>	<i>Xerus inauris</i>	Cape Ground Squirrel	LC	LC

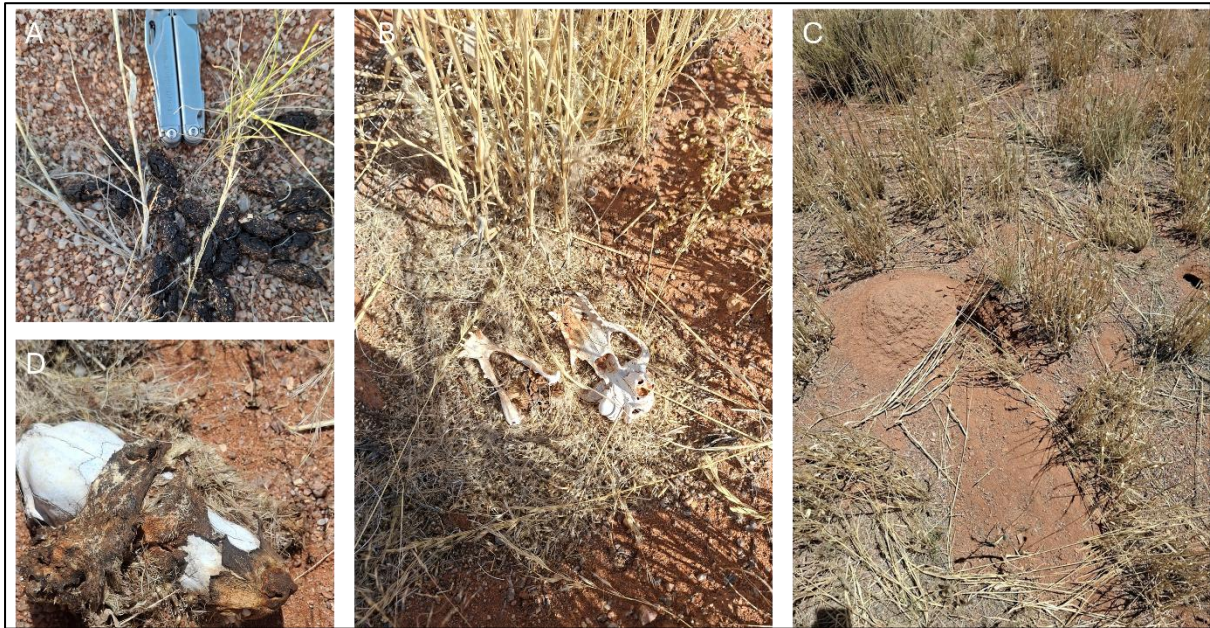


Figure 3-21 Evidence of some of the mammal species recorded within the PAOI including: A) *Hystrix africaeaustralis*, B) *Proteles cristatus*, C) *Orycteropus afer* and D) *Lupulella mesomelas*.

4 Site Sensitivity Verification

4.1 Habitat Assessment

The following sections discuss the results from the field survey that was conducted for the proposed project, which was undertaken from the 3rd to the 6th of November 2025. Habitats observed are described in Table 4-1 and shown in Figure 4-1 to Figure 4-3.

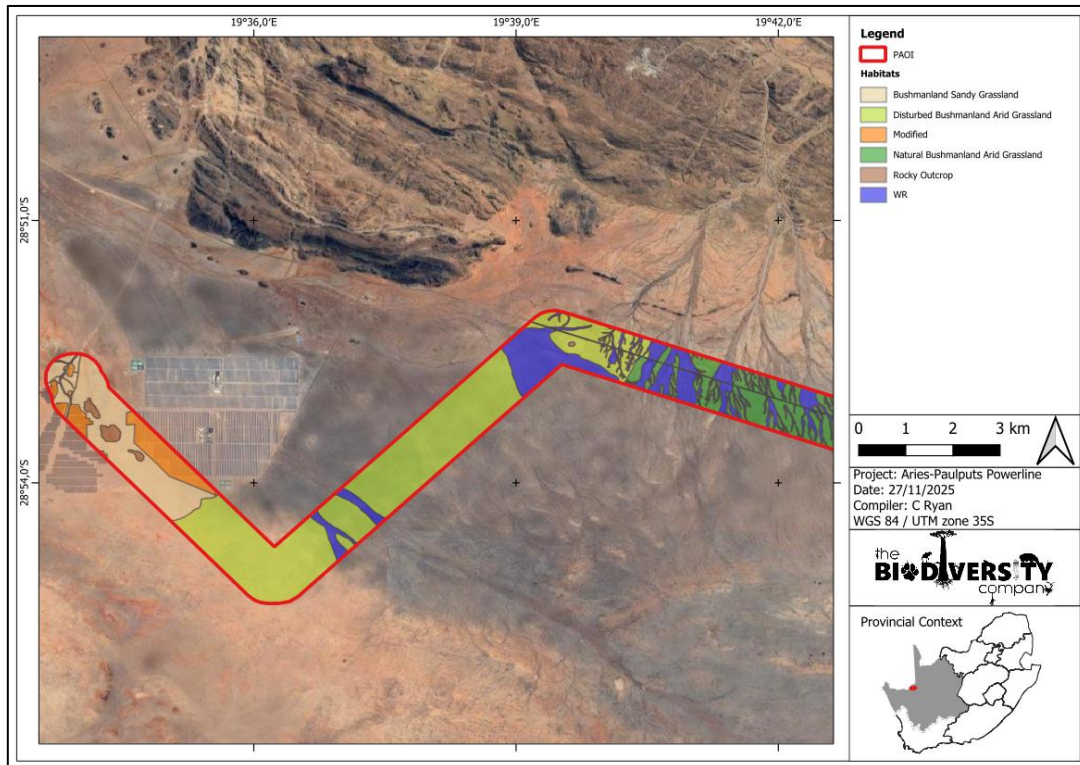


Figure 4-1 Habitats identified within the PAOI (Part 1, western portion).

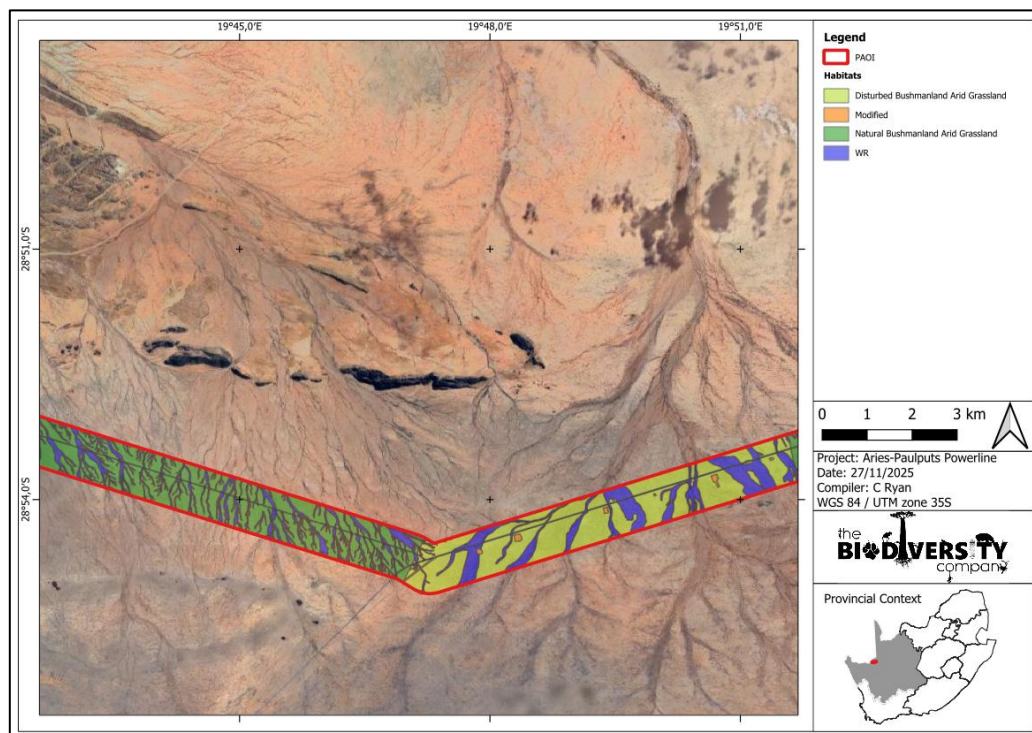


Figure 4-2 Habitats identified within the PAOI (Part 2, middle portion).

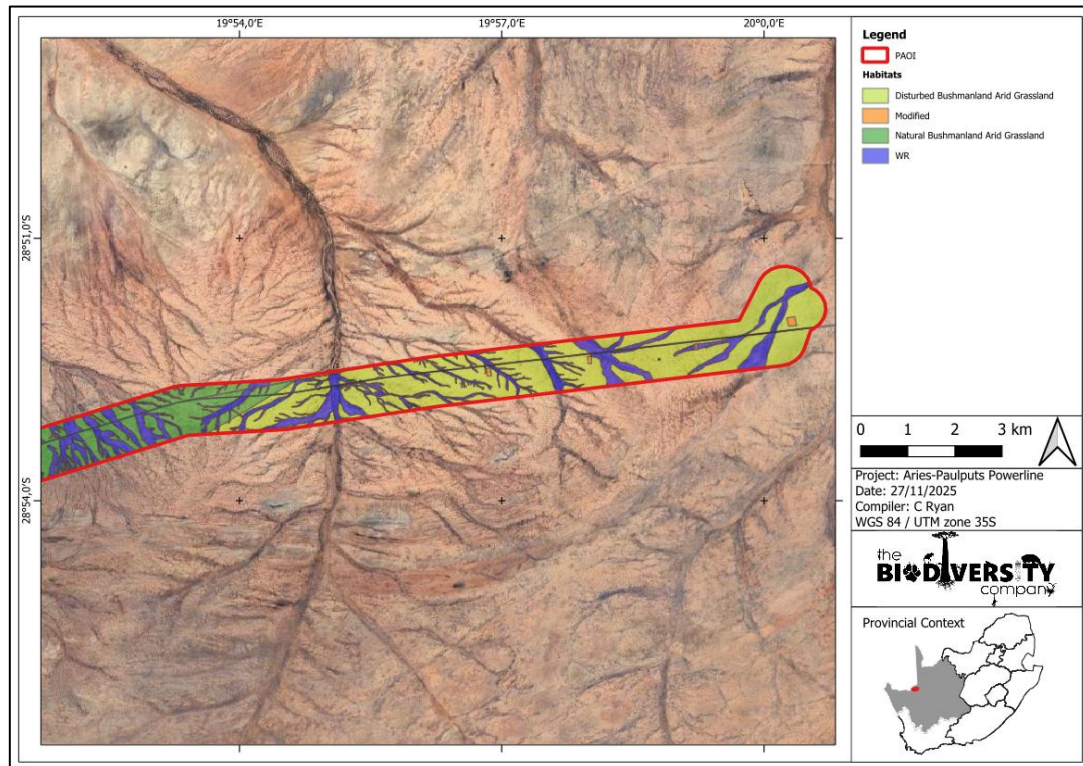
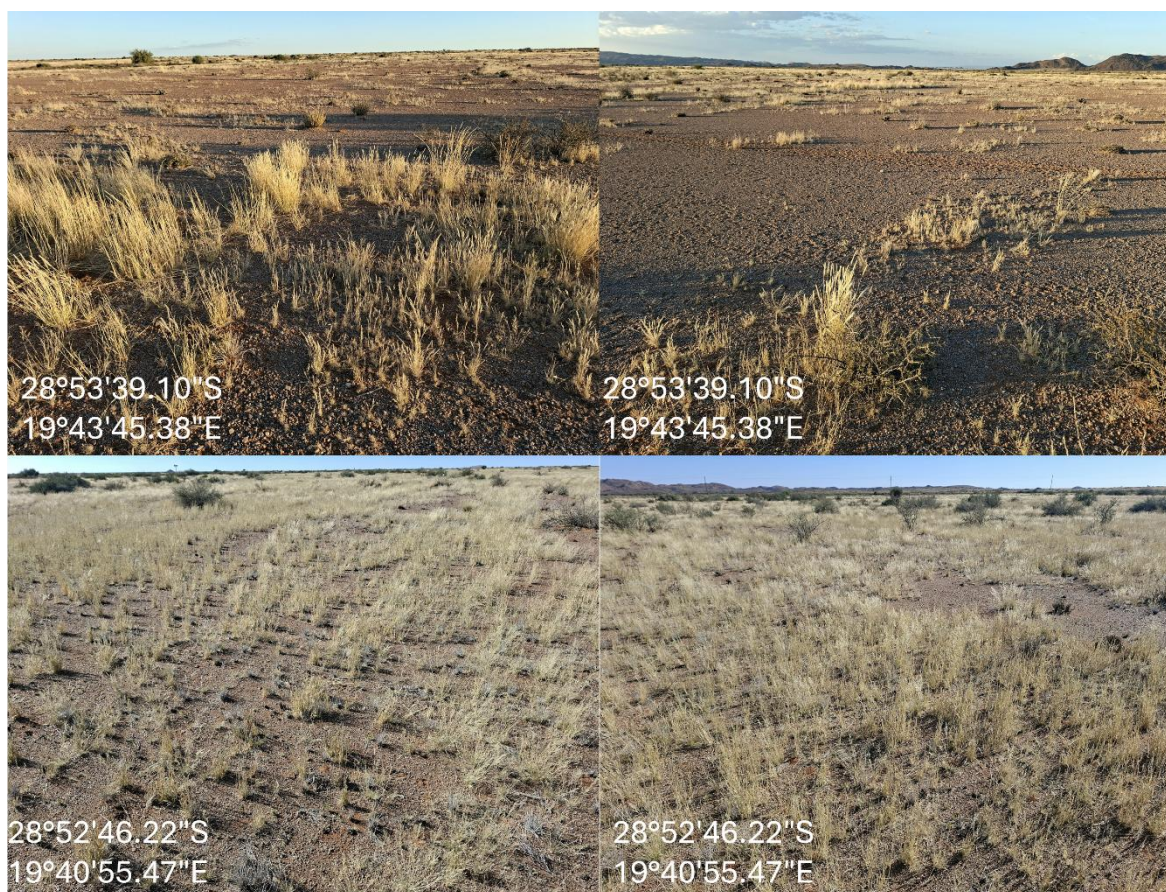


Figure 4-3 Habitats identified within the PAOI (Part 3, eastern portion).

Table 4-1 Sensitivity summary of the habitat types delineated within the PAOI.

Habitat	Description and condition	Ecosystem Services	Processes and
Natural Bushmanland Arid Grassland	This habitat is characterised by the dominance of <i>Stipagrostis</i> species and low shrubs.		
	Dominant indigenous species characteristic of the vegetation type are present, including <i>Enneapogon desvauxii</i> , <i>Stipagrostis ciliata</i> , <i>S. obtusa</i> , <i>Tribulus cristatus</i> , <i>Cucumis africanus</i> , <i>Boscia foetida</i> , <i>Acanthopsis hoffmannseggiana</i> and <i>Kleinia longiflora</i> .	This habitat supports primary production, soil stabilization, nutrient cycling, and water regulation, enhanced by its substantial vegetation cover.	
	Fauna observed within this habitat include <i>Vulpes chama</i> (Cape Fox), <i>Xerus inauris</i> (Cape Ground Squirrel), <i>Raphicerus campestris</i> (Steenbok), <i>Antidorcas marsupialis</i> (Sprinbuck), <i>Cynictis penicillata</i> (Yellow Mongoose) and <i>Herpestes pulverulentus</i> (Cape Grey Mongoose).	This habitat provides ecological functions by offering structurally diverse habitat and refugia for multiple faunal species, while supporting pollination and seed dispersal through its flowering forbs and shrubs.	
	Current impacts to this habitat type include historic excavations and farm roads or vehicle ingress. These impacts create edge effects to the surrounding natural habitat.		
	The main determining factor between the Natural Bushmanland Arid Grassland and the Disturbed Bushmanland Arid Grassland is the level of grazing pressure from agriculture depending on the management practices from different farm owners. The fence line between farms showed clear differences in grass cover. This leads to the overall straight lines present within the delineations as seen in Figure 4-3.	The mix of grasses and shrubs provides forage, and plant clumps offer shade and shelter, helping small mammals, reptiles, and ground-dwelling birds survive.	
	Two plant SCC (<i>Hoodia gordonii</i> and Sensitive species 144) were found within this habitat type.	The presence of SCC and protected plant species further underscores this habitat's importance in maintaining ecosystem functioning. It also facilitates the recruitment and dispersal of SCC into surrounding areas, supporting the persistence of these species and strengthening their population numbers.	
	Overlaps with CBA1, CBA 2 and ESA.		
	No faunal SCC were observed within the PAOI, however, suitable habitat for SCC is present and it is expected that they can use the area as a movement corridor and for foraging.		
	One (1) nationally protected tree species was found within this habitat type, <i>Vachellia erioloba</i> and three (3) provincially protected species (<i>Boscia foetida</i> , <i>Euphorbia hamata</i> , <i>E. spinea</i> and Sensitive species 144).		
	One AIP species was recorded (<i>Neltuma velutina</i>).		
	Images of the habitat are presented below.		





Disturbed Bushmanland Arid Grassland

This habitat is representative of Bushmanland Arid Grassland, but in a disturbed state. Overgrazing and mismanagement has led to the grass layer being reduced to short tufts with sparse vegetation in between.

Indigenous species observed within this habitat include *Stipagrostis ciliata*, *Stipagrostis Obtusa*, *Boscia foetida* and *Aptosimum indivisum*.

The floral species richness within this habitat type is diminished due to anthropogenic influences.

Current impacts include overgrazing, vehicle ingress and predator persecution.

Fauna observed within this habitat include *Otocyon megalotis* (Bat-eared fox), *Xerus inauris* (Cape Ground Squirrel), *Raphicerus campestris* (Steenbok), *Cynictis penicillata* (Yellow Mongoose) and *Orycteropus afer* (Aardvark).

Two (2) floral SCC were observed within this habitat unit (*Hoodia gordonii* and Sensitive species 144) and potential fauna SCC may use the habitat as a movement corridor.

Overlaps with ESA.

One (1) nationally protected tree species was found within this habitat type, *Vachellia erioloba* and three (3) provincially protected species (*Boscia foetida*, *Euphorbia hamata*, *E. spinea* and Sensitive Species 144).

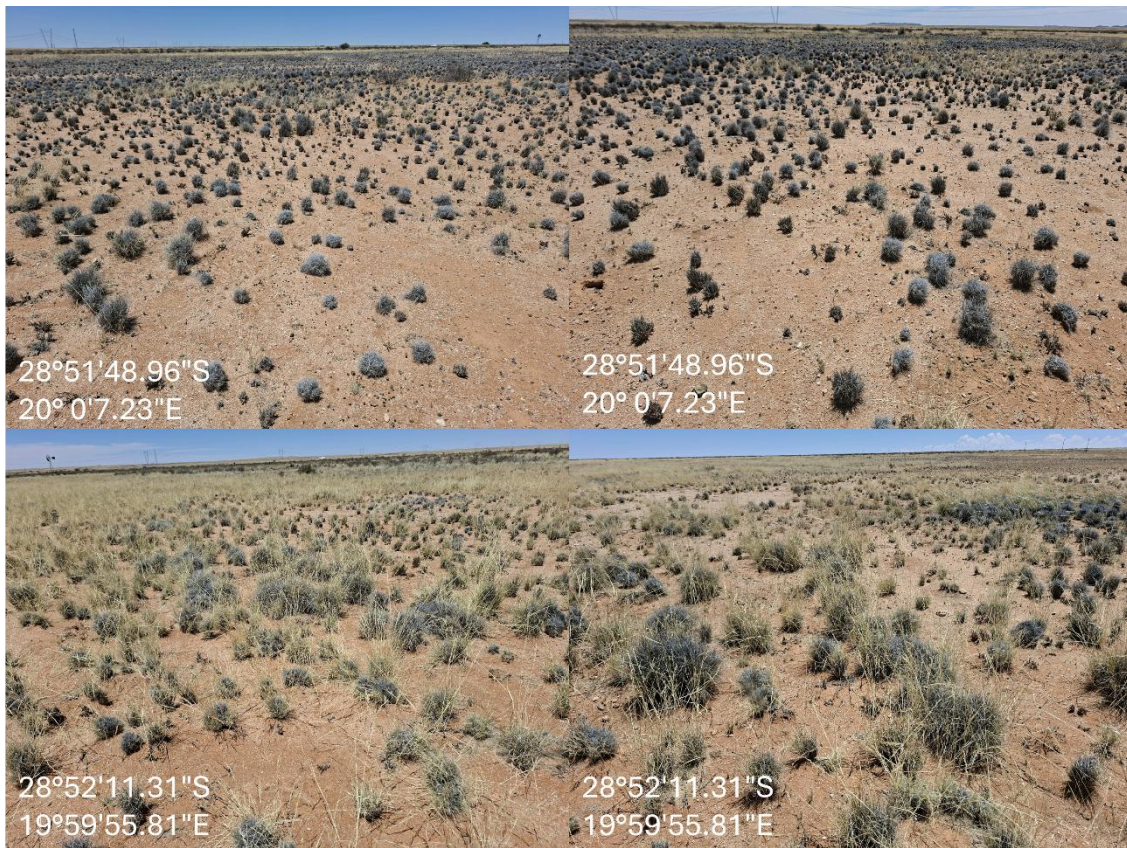
The ecosystem functioning and services of this habitat has been hindered due to the anthropogenic disturbances.

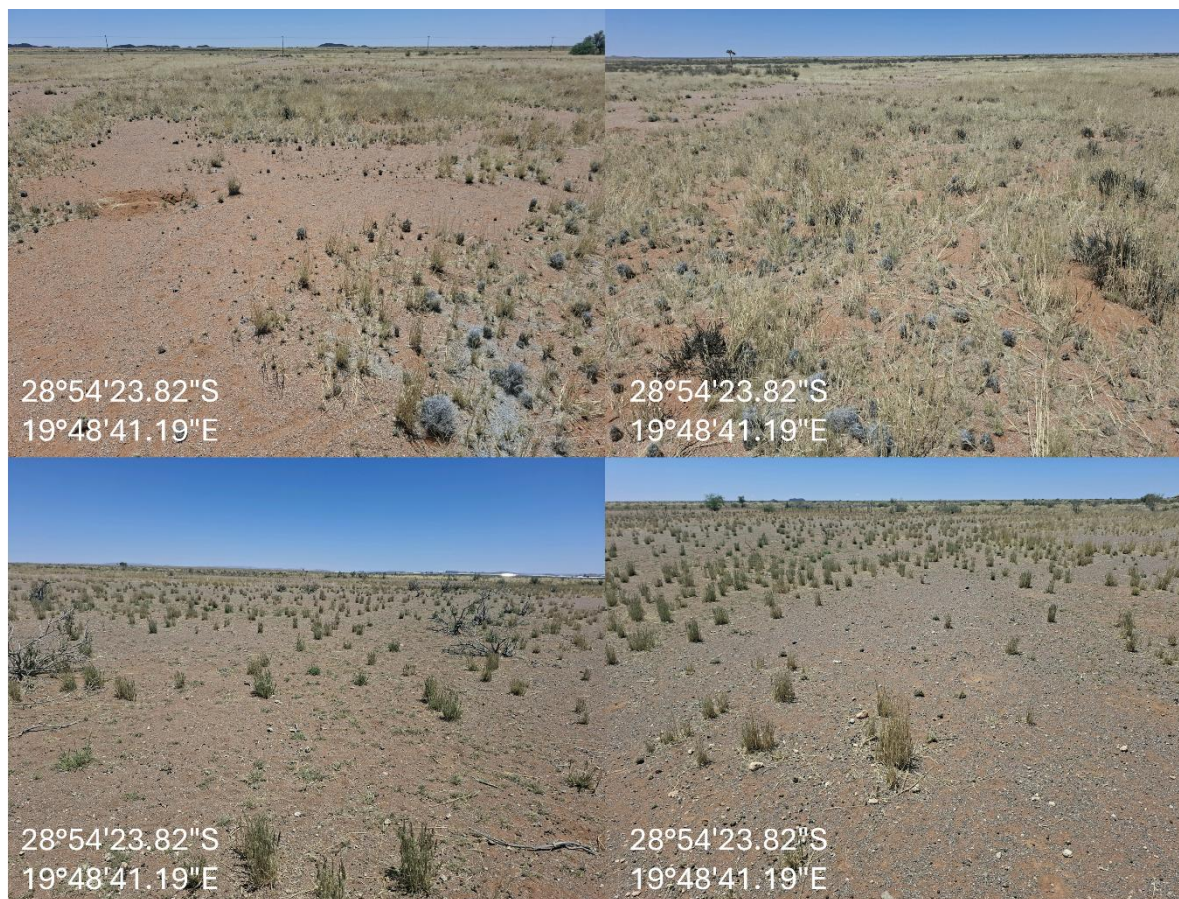
This disturbed Bushmanland Arid Grassland habitat still however provides important ecosystem services, including soil stabilization through remaining grass and shrub cover, which helps reduce wind and water erosion.

The habitat offers movement corridors for a variety of fauna such.

The area also contributes to biodiversity conservation by supporting indigenous and protected species including SCC.

Images of the habitat are presented below.





This habitat unit is defined by gently undulating patches of deep red sands >300 mm deep with dominating white grasses (*Stipagrostis* spp. and *Schmidtia* spp.) and abundant drought-resistant shrubs.

Indigenous species observed within this habitat include *Stipagrostis ciliata*, *S. obtusa*., *Schmidtia kalahariensis*, *Tribulus zehyri* and *Lycium* sp.

Fauna observed within this habitat include *Trachylepis occidentalis* (Western Three-striped Skink).

One flora SCC was found within this habitat (*Hoodia gordonii*).

This habitat is representative of the Bushmanland Sandy Grassland.

Current impacts include edge effects from existing infrastructure (substation, roads and neighbouring solar farm). Disturbance to fauna include vehicle collisions, light disturbance and noise disturbance.

Images of the habitat are presented below.

Even though current disturbances to fauna are present, this unit offers foraging and nesting habitat for species, including potential SCC.

This habitat provides erosion control and nutrient cycling. Carbon sequestration and nectar resources for pollinators is also provided. This habitat assists the neighbouring habitat with plant recruitment.

Bushmanland Grassland

Sandy





Rocky Outcrop

This habitat consists of zones with extensive rock cover, interspersed with vegetation typical of the Bushmanland Sandy Grassland. The size and structure of these areas vary, with some sections featuring flatter terrain and smaller rocks, while others are characterized by prominent outcrops and larger boulders.

Fauna observed include *Procavia capensis* (Rock Hyrax).

One SCC was found within this habitat (*Hoodia gordonii*).

No fauna SCC were observed; however, this habitat is suitable for *Psammobates tentorius veroxii* and other herpetofauna species that utilise rocky substrate.

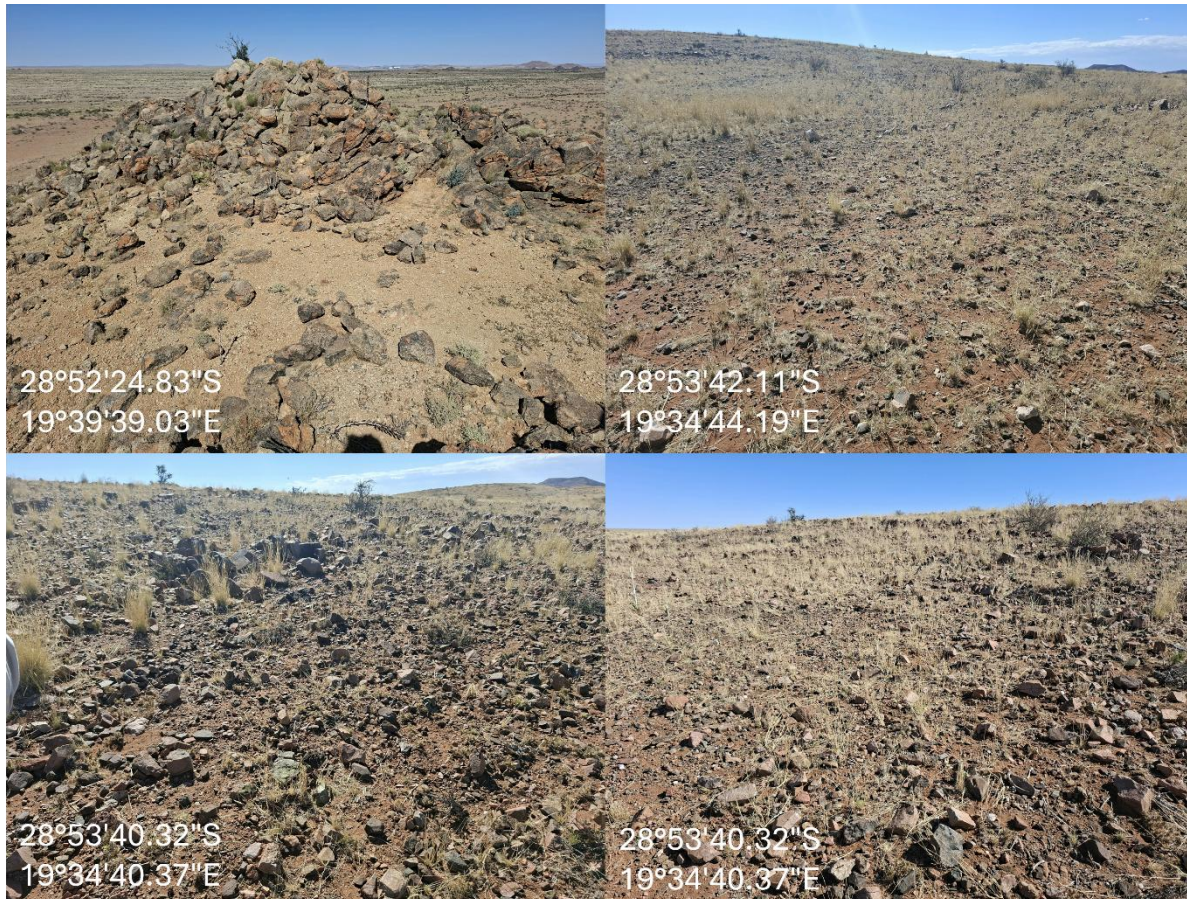
This habitat experiences minimal anthropogenic impacts, remains largely natural, and provides important habitat for local fauna, including herpetofauna that may be limited to certain microhabitats.

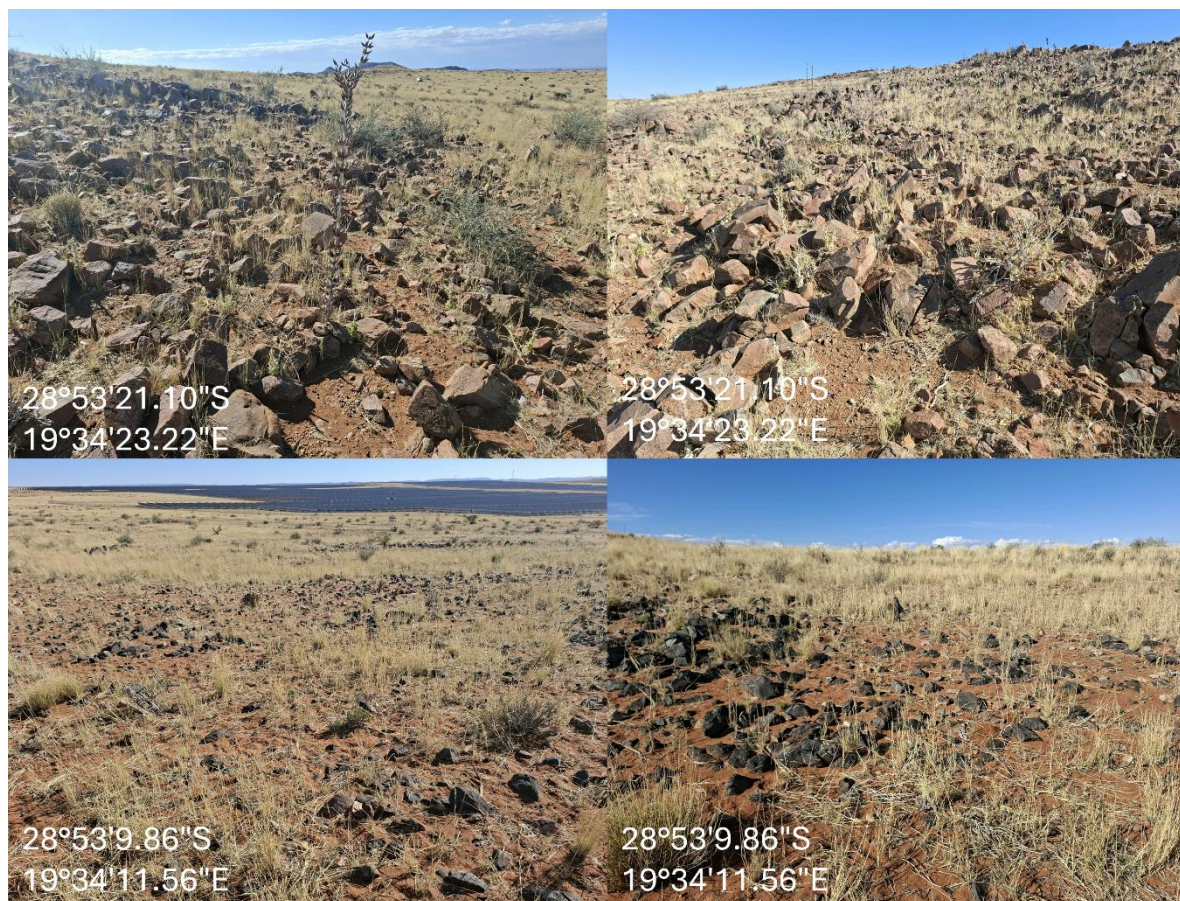
Images of the habitat are presented below.

This habitat provides key ecosystem services, microclimate regulation, and nutrient cycling through its unique combination of rock cover and indigenous vegetation.

The natural state and structural diversity of the habitat offer essential shelter for local fauna with the possibility of herpetofauna such as *Psammobates tentorius veroxii* (NT).

The presence of species of conservation concern like *Hoodia gordonii* highlights its role in supporting SCC populations.





Water Resources

Seasonally wet portions of land as delineated by the aquatic specialists. These include Rivers, Tributaries and a Temporary Depression Wetland.

Additional information regarding this habitat unit may be found in the accompanying Aquatics Report (TBC, 2025). Please note that the delineations of this habitat were provided by the Aquatic Specialist. All inferences made about the Water Resources should be made with the accompanying Aquatic Report.

Indigenous species observed within this habitat include *Rhigozum trichotomum* (dominant), *Boscia foetida* and *Parkinsonia africana*.

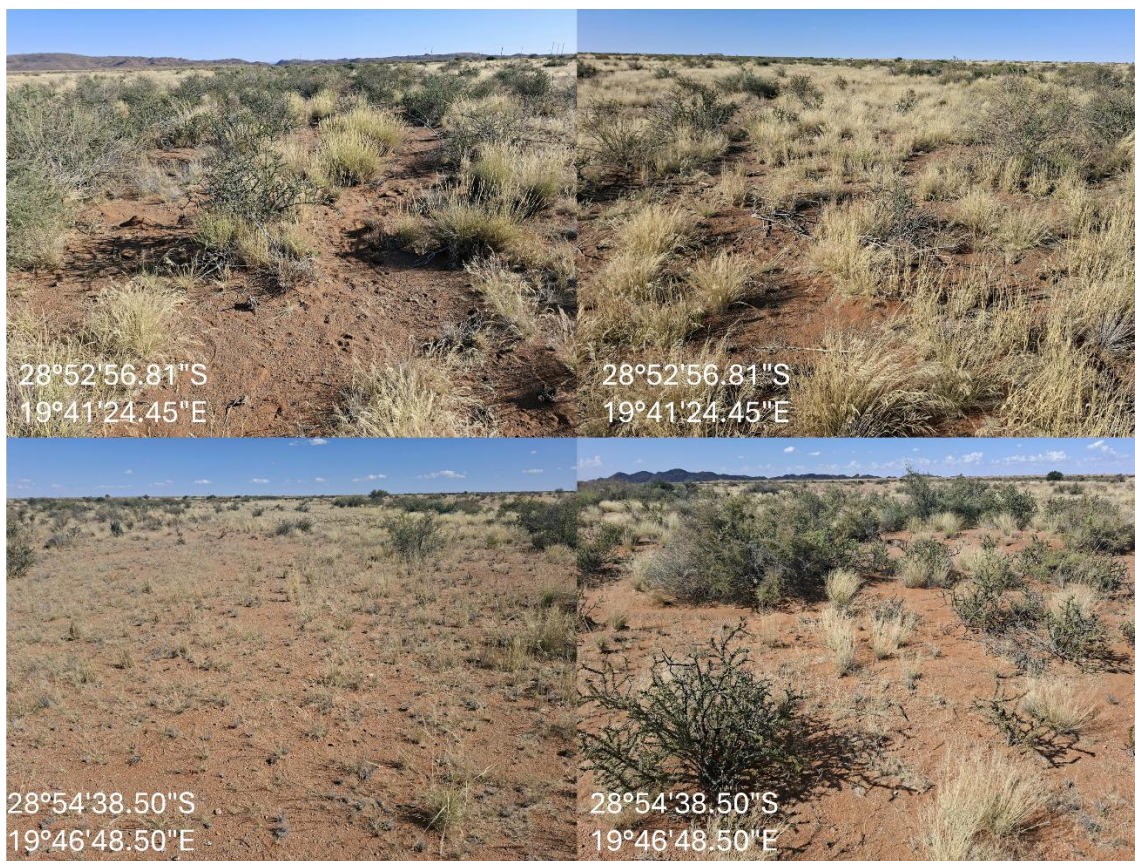
Two (2) floral SCC were observed within this habitat unit (*Hoodia gordonii* and Sensitive species 144) and potential fauna SCC may use the habitat as a movement corridor.

AIP observed include *Neltuma velutina*.

Images of this habitat are below

The Water Resources provide water to faunal species during time of flow.

Provides habitat for SCC plants.

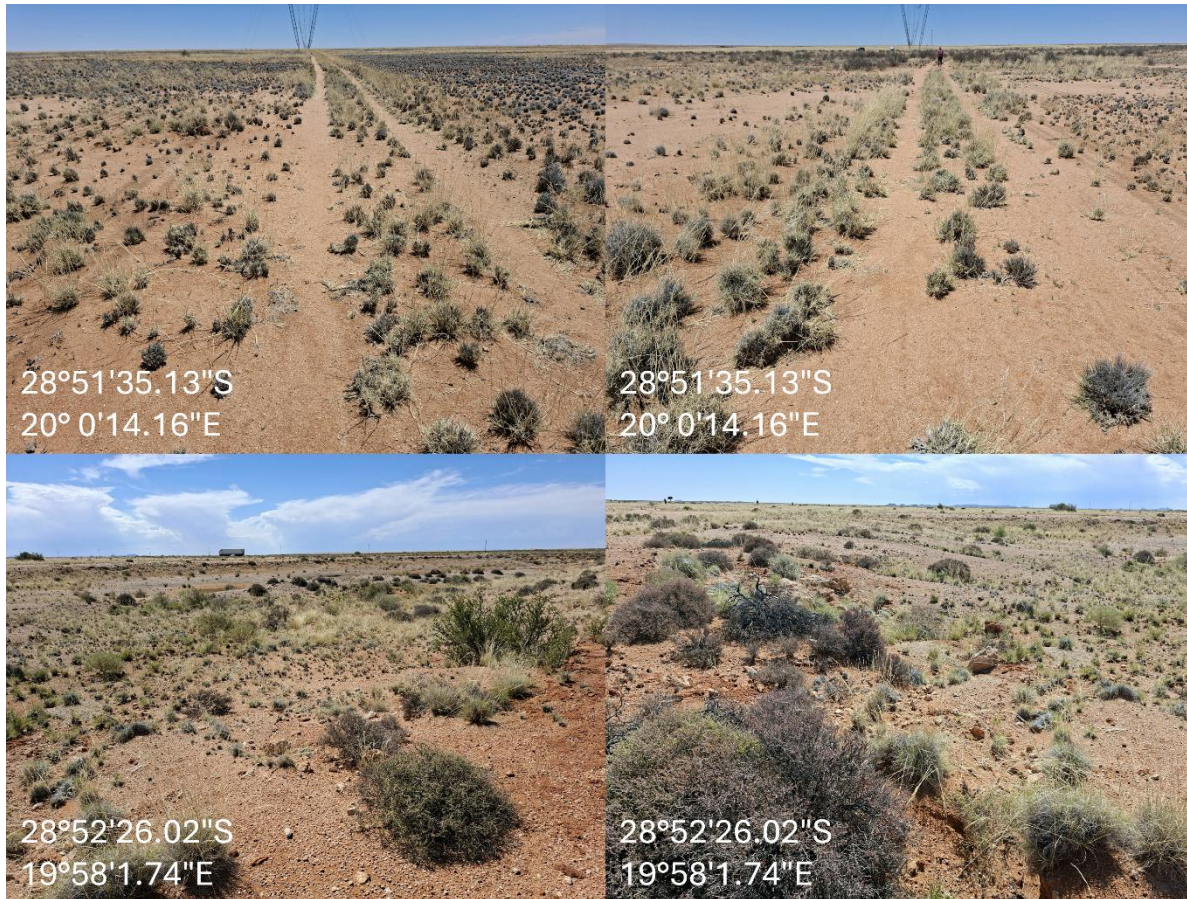


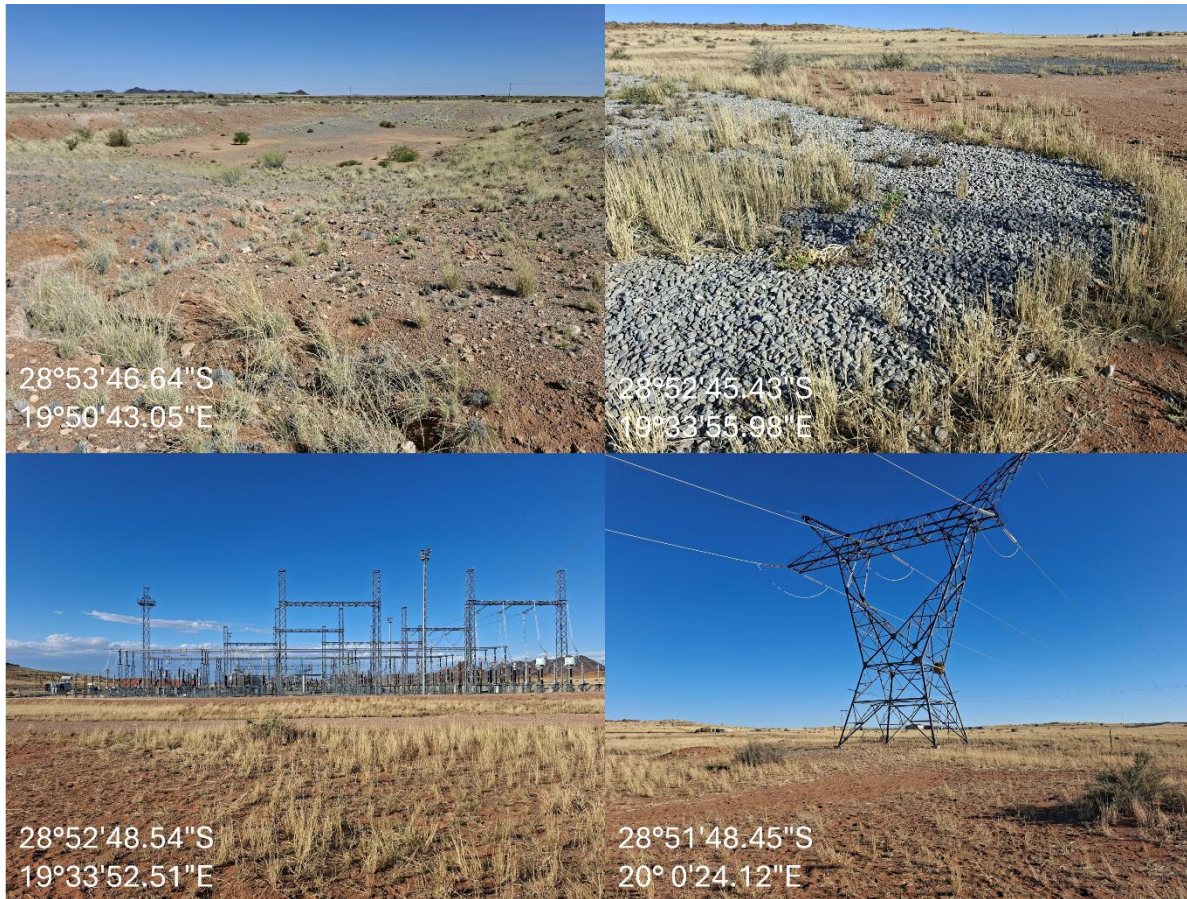
Modified

Modified habitats, in this instance, include, roads, historical excavations and infrastructure associated with the Paul-Puts Powerstation (substation and powerlines). They are largely ecologically dysfunctional and have plant species that are characteristic of disturbance (*Tetraena simplex*).

Images of the habitat are presented below.

The ecosystem functions and services of this habitat have been severely compromised due to modification. However, it still offers some benefits, particularly by supporting the dispersal of wind-borne plant seeds, which aids in plant recruitment in surrounding areas.





4.2 Site Ecological Importance

Based on the criteria provided in Appendix B (Terrestrial Site Ecological Importance) of this report, the habitats recorded and its flora and fauna within the PAOI were assigned a sensitivity category, i.e., a SEI category. The PAOI was categorised as possessing a 'High', 'Medium', 'Low' and 'Very Low' SEI across the five (5) habitats (Table 4-2 and Figure 4-4). This indicates that the average findings of this assessment are contrary to the Screening Tool with respect to the combined Terrestrial Biodiversity, Plant Species, and Animal Species Theme sensitivities. Please note that all inferences for the water resources (wetlands, rivers, and tributaries) should be made with the accompanying aquatics report (TBC, 2025). Please also note that the sensitivities assigned in the Aquatics Report supersede those assigned in this report.

Table 4-2 Sensitivity summary of the habitat types delineated within the PAOI.

Habitat Type	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI) Guidelines for interpreting SEI in the context of the proposed development activities
Natural Bushmanland Arid Grassland	Medium	High	Medium	Medium	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. > 50% of receptor contains natural habitat with potential to support SCC.	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.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Disturbed Bushmanland Arid grassland	Medium	Medium	Medium	Medium	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. > 50% of receptor contains natural habitat with potential to support SCC.	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.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
	Medium	Medium	Medium	Medium	Medium

Bushmanland Sandy Grassland	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. > 50% of receptor contains natural habitat with potential to support SCC.	Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity. Mostly minor current negative ecological impacts, with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.		Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Rocky Outcrop	Medium	High		Low	High
	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. > 50% of receptor contains natural habitat with potential to support SCC.	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	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	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.
Modified	Low	Very Low		High	Very Low
	No confirmed or highly likely populations of SCC. No confirmed or highly likely populations of range-restricted	No habitat connectivity except for flying species or flora with wind-dispersed seeds. Several major current negative ecological impacts.	Very Low	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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.
Water Resources (Rivers and Wetlands)	Medium	Very High		Medium	High
	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	No or minimal current negative ecological impacts, with no signs of major past disturbance.	High	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality	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.

	than 10 000 mature individuals.			Offset mitigation may be required for high impact activities.
	> 50% of receptor contains natural habitat with potential to support SCC.			
	Medium	High	Medium	Medium
Water Resources (Tributaries)	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.	Only minor current negative ecological impacts, with no signs of major past disturbance and good rehabilitation potential.	Medium	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality
	> 50% of receptor contains natural habitat with potential to support SCC.			Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.

4.2.1 Screening Tool Comparison

The allocated sensitivities for each of the relevant themes are either disputed or validated for the overall PAOI in Table 4-3 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. A map illustrating the overall SEI allocations (inclusive of all three aspects) for the PAOI can be seen in Figure 4-4 to Figure 4-6.

Table 4-3 Summary of the screening tool vs specialist assigned sensitivities.

Screening Tool Theme	Screening Tool	Habitat	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Terrestrial Biodiversity Theme	Very High	Natural Bushmanland Arid Grassland	Medium	Disputed - Habitat exists in a natural state. Viable constituent of Bushmanland Arid Grassland vegetation type. Viable ESA. Provides important ecological functions such as an important movement corridor for fauna.
		Disturbed Bushmanland Arid Grassland	Medium	Disputed - Habitat exists in a recovering state, however with reduced function. CBA 1, 2 and ESA areas fall within the boundaries of this habitat type. Is a viable constituent of Bushmanland Arid Grassland vegetation type, albeit in a disturbed state. Even though these areas are disturbed, it is up to the relevant departmental authorities to decide whether these areas are classified as intact CBA and whether offsets are required.
		Bushmanland Sandy Grassland	Medium	Disputed - Habitat remains in good condition and provides important ecological functions.
		Rocky Outcrop	High	Disputed – Exists in a natural state, providing important ecological functions.
		Water Resources (Wetland and Rivers)	High	Disputed – Habitat provides key ecosystem services to fauna and flora species.
		Water Resources (Drainage Features)	Medium	Disputed – Habitat provides ecosystem services to fauna and floral species. Nationally protected trees were found along this habitat.
		Modified	Very Low	Disputed - Habitat exists in a transformed state with little to no function. Habitat will not recover without human intervention and will continue to degrade over time without rehabilitation.
Animal Theme	High	Natural Bushmanland Arid Grassland	Medium	Disputed - No SCC were observed, however, fauna SCC may potentially move through the area sporadically and use the area for foraging and as a migration corridor.
		Disturbed Bushmanland Arid Grassland		
		Bushmanland Sandy Grassland		
		Water Resources	Low	Disputed – Highly modified habitat. Provides little to no habitat for animals.
Plant Theme	Medium	Rocky Outcrop	High	Validated – The habitat remains in an undisturbed state. Although no SCC were recorded, it provides refuge for fauna species and possible habitat for <i>Psammobates tentorius veroxii</i> (NT).
		Natural Bushmanland Arid Grassland	High	Disputed - Two (2) floral SCC (<i>Hoodia gordonii</i> and <i>Sensitive species 144</i>) were observed within these habitats regardless of the overgrazing in some areas.
		Disturbed Bushmanland Arid Grassland		
		Water Resources		
		Rocky Outcrops	High	

Bushmanland Sandy Grassland		Validated – One (1) floral SCC was present within these habitats [<i>Hoodia gordonii</i> (DDD)]. The habitat suitable for other SCC presence, and is why the sensitivity is high.
Modified	Low	Disputed – No SCC were observed, and none are expected.

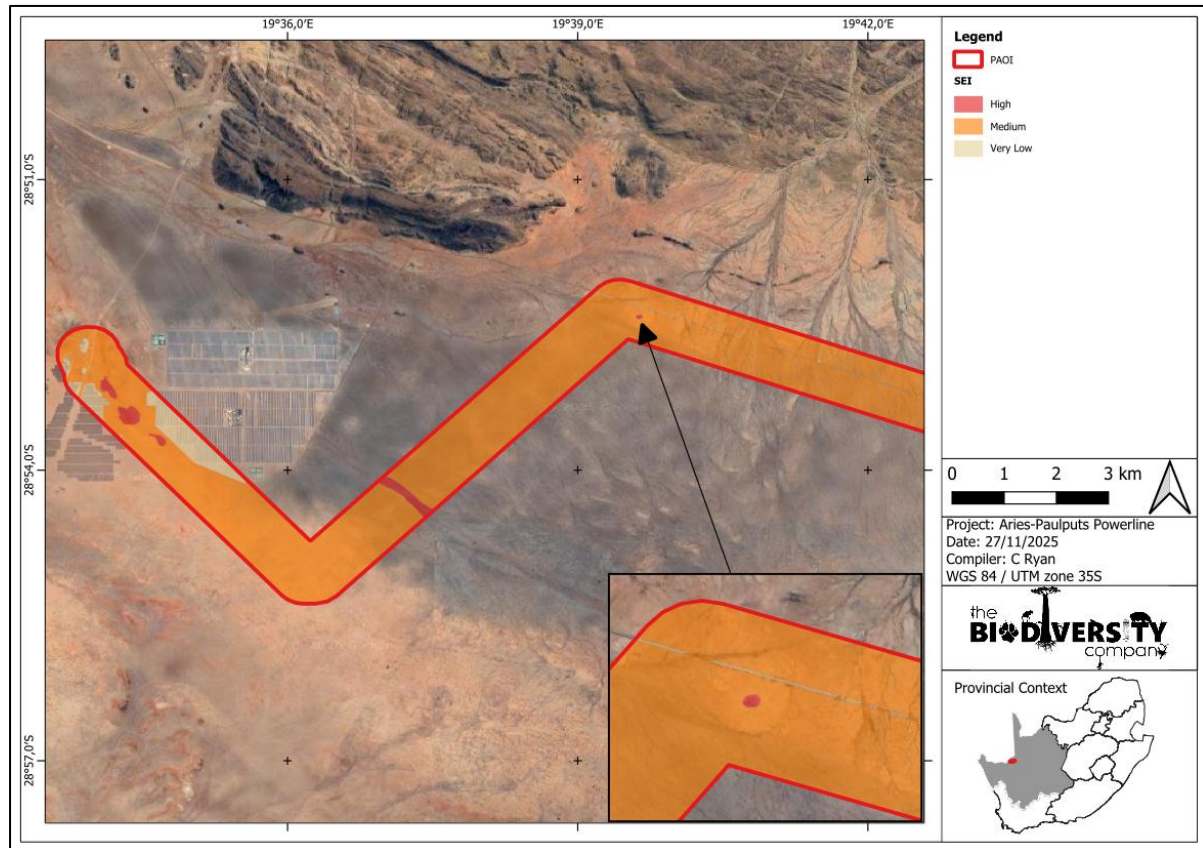


Figure 4-4 Map illustrating Site Ecological Importance (SEI) of the habitat types within the PAOI (Western Section).

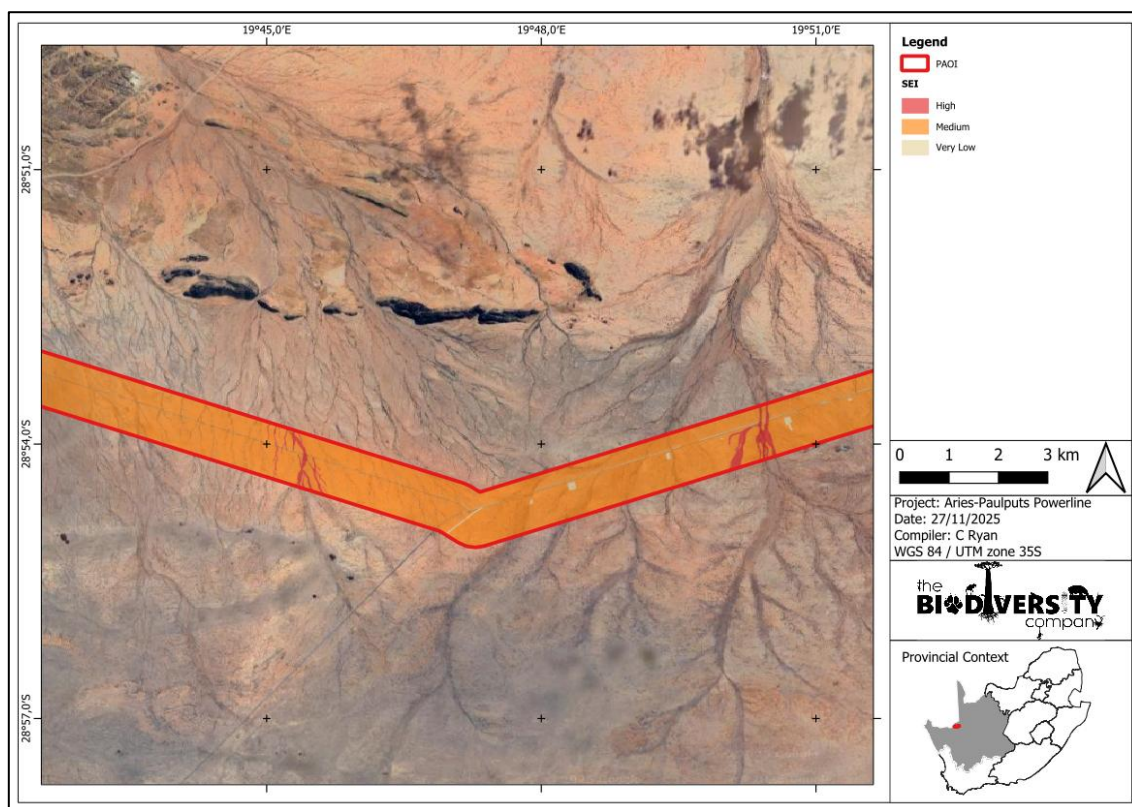


Figure 4-5 Map illustrating Site Ecological Importance (SEI) of the habitat types within the PAOI (Middle Section)

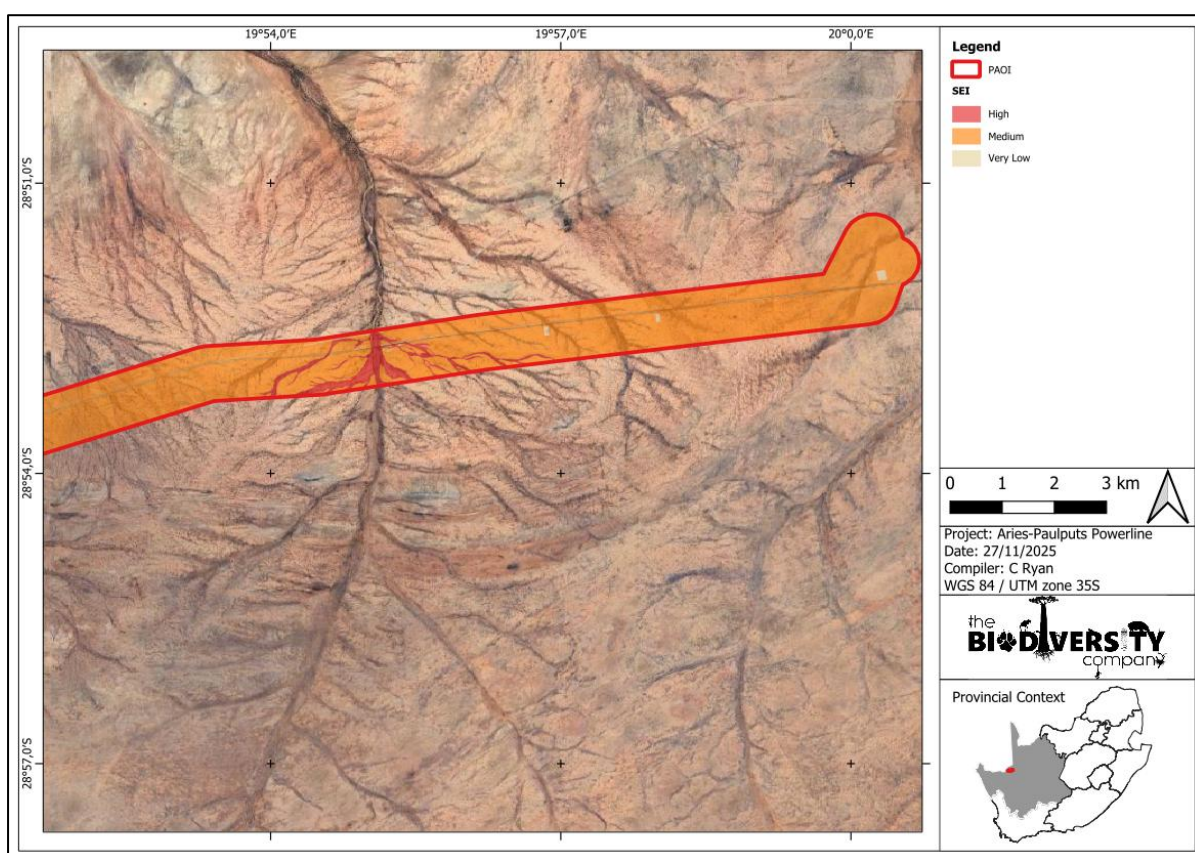


Figure 4-6 Map illustrating Site Ecological Importance (SEI) of the habitat types within the PAOI (Eastern Section).

5 Walkdown

An ecological walkdown was conducted simultaneously with the survey for the terrestrial biodiversity assessment. This could have limited the detection of SCC that are typically dormant during the dry season. However, the expected SCC were not dormant during this period, and those present within the PAOI were identifiable. Therefore, the walkdown was successful in locating SCC and protected species. Nevertheless, because the walkdown was conducted in the dry season, there remains a possibility that additional, unexpected SCC may have been missed.

The SCC and protected species identified within the PAOI are outlined in Section 3.2.1. Pylon locations were given a 10 m buffer and any sensitive features (SCC, protected species or high sensitivity habitats) within this radius was considered when making ecological recommendations for those pylon locations. All pylon locations that impacts 'High' SEI habitats, SSC, SCC buffers and protected species are discussed further in Table 5-1, please note that all movement recommendations that make reference to the servitude road are based off of the current layout and any changes to the layout would result in the changes of movement recommendations.

The pylon locations that are within CBA 1 include 1KOK/PAU004, 1ARI/PAU235, 1ARI/PAU236, 1KOK/PAU005, 1ARI/PAU237, 1KOK/PAU006, 1ARI/PAU238, 1KOK/PAU021 and 1ARI/PAU253.


The pylons within CBA 2 include



1KOK/PAU007, 1ARI/PAU239, 1KOK/PAU008, 1ARI/PAU240, 1KOK/PAU009, 1ARI/PAU241, 1KOK/PAU010, 1ARI/PAU242, 1KOK/PAU012, 1ARI/PAU244, 1KOK/PAU013, 1ARI/PAU245, 1KOK/PAU014, 1ARI/PAU246, 1KOK/PAU015, 1ARI/PAU247, 1KOK/PAU016, 1ARI/PAU248, 1KOK/PAU017, 1ARI/PAU249, 1KOK/PAU018 and 1ARI/PAU250.




The rest of the pylon locations were assessed and do not pose issues from a terrestrial perspective.



Current disturbances to the PAOI were predominantly a result of agricultural activities in the form of livestock grazing as well as farm roads and other impacts noted throughout the PAOI. These disturbances reduce the overall sensitivity of most areas assessed in the walkdown.



Table 5-1 Pylon locations and their associated sensitivities and recommendations for movement.




Pylon	Comments and recommendations	Photograph
1ARI/PAU236 28°52'13.23"S 19°59'54.46"E	Findings: One <i>Hoodia gordonii</i> individual was found within the 10 m pylon buffer. The pylon isolated within the 100 m sensitive species 144 buffer. Location: Located in previously designated	

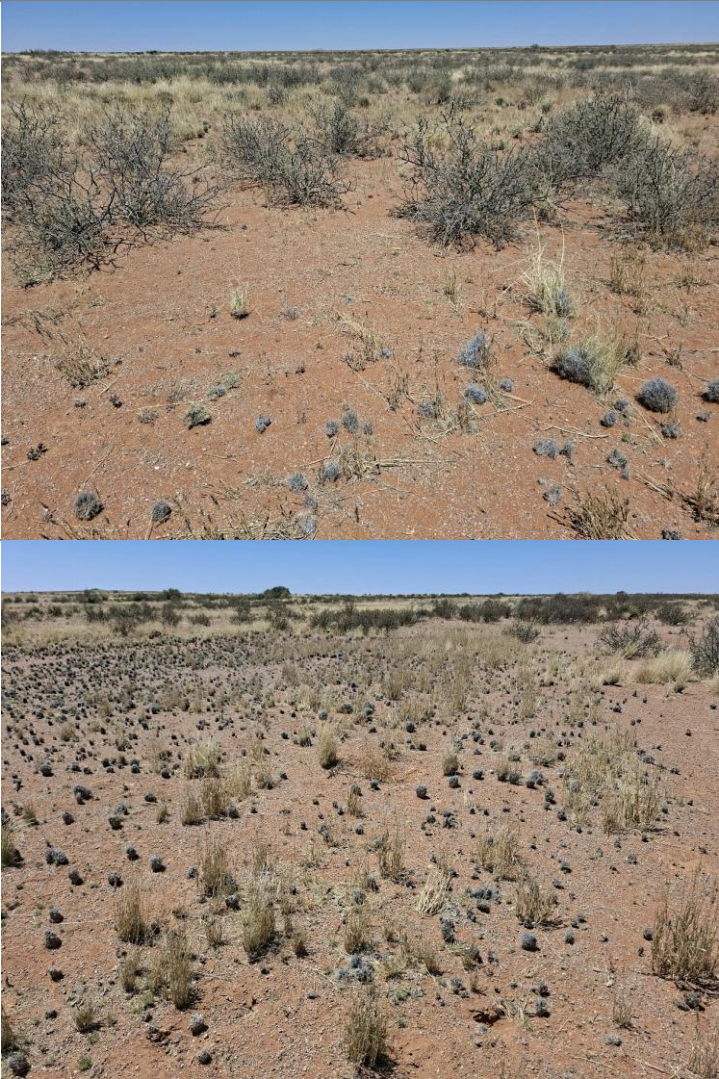

	<p>medium sensitivity area.</p> <p>Sensitivity area: Classified as a medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Avoidance of the SCC plants. Movement of the pylon Move the pylon 40m northwest to avoid both the <i>Hoodia</i> and the sensitive species 144 buffer (If the preferred movement of the pylon is parallel to the servitude road, it can be relocated 140 m east along the line, parallel to the servitude road).</p> <p>is. Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1KOK/PAU07</p> <p>28°52'17.42"S</p> <p>19°59'3.90"E</p>	<p>Findings: Three <i>Euphorbia spinea</i> individuals were found within the 10 m pylon buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as a medium sensitivity</p>	




	<p>area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Relocation or avoidance of the protected plants. If unavoidable destruction, however, apply for relevant permits.</p> <p>No fauna and/or flora SCC were observed.</p>	
<p>1ARI/PAU243</p> <p>28°52'27.45"S</p> <p>19°57'54.38"E</p>	<p>Findings: The pylon is found within the 100m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Movement of the pylon by 80m northeast (parallel to the access road) along the line so the pylon and 10m buffer is outside of the 100m buffer. The servitude road for this pylon is located directly on a Sensitive Species 144 individual. It is recommended that the road is moved to avoid it and the 100 m buffer. Permits for destruction or relocation of Sensitive species 144 is not available.</p>	 



<p>1 KOK/PAU16</p> <p>28°52'35.99"S 19°56'26.90"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Movement of the pylon outside of the buffer (80m southwest, along the line – parallel to the servitude road). Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1ARI/PAU263</p> <p>28°53'12.59"S 19°52'37.85"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Movement of the pylon outside of the buffer (55m southwest along the line, parallel to the servitude road). Permits for destruction or relocation of Sensitive species 144 is not available.</p>	




<p>1 KOK/PAU41</p> <p>28°53'59.34"S 19°50'0.45"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Movement of the pylon outside of the buffer 60m southwest along the line, parallel to the servitude road). Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1ARI/PAU273</p> <p>28°54'0.96"S 19°50'1.19"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing</p>	



	<p>and farming activity.</p> <p>Recommendation: Movement of the pylon outside of the buffer 40m southwest along the line, parallel to the servitude road): Permits for destruction or relocation of Sensitive species 144 is not available.</p>		
<p>1 KOK/PAU42 25°49'30.13"S 29° 5'11.52"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p>		
	<p>Recommendation: Movement of the pylon outside of the buffer 45m southwest along the line, parallel to the servitude road): Permits for destruction or relocation of Sensitive species 144 is not available.</p>		




<p>1ARI/PAU274</p> <p>28°54'5.92"S 19°49'45.12"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Movement of the pylon outside of the buffer 45m southwest along the line, parallel to the servitude road): Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1 KOK/PAU47</p> <p>28°54'29.06"S 19°48'23.97"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing</p>	



	<p>and farming activity.</p> <p>Recommendation: Movement of the pylon outside of the buffer 10m southwest along the line, parallel to the servitude road): Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1ARI/PAU279</p> <p>28°54'30.75"S</p> <p>19°48'24.63"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Movement of the pylon outside of the buffer 20m southwest along the line, parallel to the servitude road): Permits for destruction or relocation of Sensitive species 144 is not available.</p>	 




<p>1 KOK/PAU53</p> <p>28°54'36.78"S 19°46'49.30"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon outside of the buffer (40m northwest along the line, parallel to the servitude road). Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1ARI/PAU286</p> <p>28°54'33.62"S 19°46'33.09"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon outside of the buffer (55m northwest along the</p>	




	line, parallel to the servitude road): Permits for destruction or relocation of Sensitive species 144 is not available.	
1 KOK/PAU55 28°54'27.00"S 19°46'17.98"E	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p>	
	<p>Recommendation: Movement of the pylon outside of the buffer (80m northwest along the line, parallel to the servitude road): Permits for destruction or relocation of Sensitive species 144 is not available.</p>	




<p>1ARI/PAU287</p> <p>28°54'28.72"S 19°46'17.43"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon outside of the buffer (75m northwest along the line, parallel to the servitude road): Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1 KOK/PAU59</p> <p>28°54'6.17"S 19°45'11.35"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon outside of the buffer (55m southeast along the line, parallel to the</p>	



	<p>servitude road): Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1 ARI/PAU291 28°54'7.85"S 19°45'10.65"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer has one <i>E. spinea</i> individual within its 10m buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon outside of the buffer (35m southeast along the line, parallel to the servitude road). Relocation or avoidance of the protected plants. If unavoidable destruction, however, apply for relevant permits. Permits for destruction or relocation of Sensitive species 144 is not available.</p>	 




<p>1KOKI/PAU61</p> <p>28°53'56.21"S 19°44'39.48"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon outside of the buffer (35m southeast along the line, parallel to the servitude road. Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1ARI/PAU293</p> <p>28°53'57.89"S 19°44'38.79"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon outside of the buffer (30m southeast along the line, parallel to the</p>	



	servitude road). Permits for destruction or relocation of Sensitive species 144 is not available.	
1 KOK/PAU64 28°53'39.28"S 19°43'45.36"E	<p>Findings: Five <i>E. spinea</i> individuals are within the 10 m pylon buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Avoidance of the protected plants. If unavoidable destruction, however, apply for relevant permits.</p>	 




<p>1 KOK/PAU65 28°53'33.52"S 19°43'26.94"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p>	
	<p>Recommendation: Movement of the pylon outside of the buffer (88m northwest along the line, parallel to the servitude road). Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1ARI/PAU303 28°53'3.53"S 19°41'45.09"E</p>	<p>Findings: One <i>Hoodia gordonii</i> individual was found within the 10 m pylon buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon so that the <i>H. gordonii</i> individual is outside of the 10</p>	



	<p>m pylon buffer (move 7m northwest along the line, parallel to the servitude road).</p>	
<p>1 ARI/PAU 304 28°52'58.33"S 19°41'28.48"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p>	
	<p>Recommendation: Movement of the pylon outside of the buffer (move 20m northwest along the line, parallel to the servitude road). Permits for destruction or relocation of Sensitive species 144 is not available.</p>	




<p>1 KOK/PAU75 28°52'40.93"S 19°40'38.98"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon outside of the buffer (85m northwest along the line, parallel to the servitude road). Permits for destruction or relocation of Sensitive species 144 is not available.</p>	
<p>1ARI/PAU307 28°52'42.62"S 19°40'38.32"E</p>	<p>Findings: The pylon is found within the 100 m sensitive species 144 buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon outside of the buffer (100m northwest along the</p>	



	line, parallel to the servitude road). Permits for destruction or relocation of Sensitive species 144 is not available.	
1 ARI/PAU 310 28°52'26.95"S 19°39'48.33"E	<p>Findings: One <i>E. spinea</i> individual was found within the 10 m pylon buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Avoidance of the protected plants. If unavoidable destruction, however, apply for relevant permits.</p>	
		



<p>1 ARI/PAU 311 28°52'23.18"S 19°39'36.31"E</p>	<p>Findings: The access road near this pylon intersects a High SEI rocky outcrop.</p> <p>Location: Located in previously designated medium sensitivity area, but near habitat that is of High sensitivity.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Deviation of the access road to avoid the rocky outcrop. The pylon can remain in the same location.</p>	
<p>1 ARI/PAU 312 28°52'20.07"S 19°39'26.38"E</p>	<p>Findings: One (1) <i>Boscia foetida</i> individual was found within the 10 m pylon buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing</p>	



	<p>and farming activity.</p> <p>Recommendation: Avoidance of the protected plants. If unavoidable destruction, however, apply for relevant permits.</p>		
<p>1 KOK/PAU 81 28°52'26.81"S 19°39'15.82"E</p>	<p>Findings: Two <i>Hoodia gordonii</i> individual was found within the 10m pylon buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon so the <i>H. gordonii</i> individual is outside of the pylon buffer (20m southwest along the line, parallel to the servitude road).</p>		
			




<p>1 ARI/PAU 324 28°54'29.63"S 19°36'58.80"E</p>	<p>Findings: One <i>Hoodia gordonii</i> individual was found within the 10 m pylon buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area.</p> <p>Recommendation: Movement of the pylon so the <i>H. gordonii</i> individual is outside of the pylon buffer (10m southwest along the line, parallel to the servitude road).</p>	
<p>1 KOK/PAU 94 28°54'50.65"S 19°36'31.97"E</p>	<p>Findings: One <i>Hoodia gordonii</i> individual was found within the 10 m pylon buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing</p> <p>Recommendation: Movement of the</p>	



	<p>pylon so the <i>H. gordonii</i> individual is outside of the pylon buffer (15m northeast along the line, parallel to the servitude road).</p>	
<p>1 KOK/PAU101 28°54'21.22"S 19°35'25.46"E</p>	<p>Findings: One <i>Hoodia gordonii</i> individual was found within the 10 m pylon buffer.</p> <p>Location: Located in previously designated medium sensitivity area.</p> <p>Sensitivity area: Classified as medium sensitivity area. Disturbed area due to other livestock grazing and farming activity.</p> <p>Recommendation: Movement of the pylon so the <i>H. gordonii</i> individual is outside of the pylon buffer (15m northwest along the line, parallel to the servitude road).</p>	 

<p>1 KOK/PAU105 28°53'39.24"S 19°34'41.77"E</p>	<p>Findings: One <i>Hoodia gordonii</i> individual was found within the 10 m pylon buffer and is located within the High SEI rocky outcrop</p> <p>Location: Located in previously designated High sensitivity area.</p> <p>Sensitivity area: Classified as High sensitivity.</p> <p>Recommendation: Movement of the pylon so the <i>H. gordonii</i> individual is outside of the pylon buffer and the pylon and access road should be moved to avoid the rocky outcrop (move 45m northeast along the line, parallel to the servitude road).</p>	
<p>1 ARI/PAU 337 28°53'40.37"S 19°34'40.34"E</p>	<p>Findings: The pylon and access road is located within the High SEI rocky outcrop.</p> <p>Location: Located in previously designated High sensitivity area.</p> <p>Sensitivity area: Classified as High sensitivity.</p> <p>Recommendation: Movement of the pylon and access road to avoid the rocky outcrop (75m southwest, if the</p>	

	<p>preferred movement is parallel to the servitude road then the pylon can be moved 180m southeast along the line, parallel to the servitude road).</p>	
<p>1 KOK/PAU 107 28°53'21.25"S 19°34'23.13"E</p>	<p>Findings: The pylon and access road are located within the High SEI rocky outcrop.</p> <p>Location: Located in previously designated High sensitivity area.</p> <p>Sensitivity area: Classified as High sensitivity.</p> <p>Recommendation: Movement of the pylon and access road to avoid the rocky outcrop (80m northeast along the line, parallel to the servitude road).</p>	
		

<p>1 ARI/PAU 339 28°53'22.41"S 19°34'21.68"E</p>	<p>Findings: The pylon and access road are located within the High SEI rocky outcrop.</p> <p>Location: Located in previously designated High sensitivity area.</p> <p>Sensitivity area: Classified as High sensitivity.</p> <p>Recommendation: Movement of the pylon and access road to avoid the rocky outcrop (65m northwest along the line, parallel to the servitude road).</p>	
<p>1 KOK/PAU 108 28°53'10.03"S 19°34'11.53"E</p>	<p>Findings: One <i>Hoodia gordonii</i> individual was found within the 10 m pylon buffer and the pylon and access road is located within the High SEI rocky outcrop.</p> <p>Location: Located in previously designated High sensitivity area.</p>	

	<p>Sensitivity area: Classified as High sensitivity.</p> <p>Recommendation: Movement of the pylon and access road to avoid the rocky outcrop and <i>H. gordonii</i> individual (55m northeast). If the preferred movement of the pylon is along the line then the pylon can be moved 125m southeast along the line, parallel to the servitude road.</p>	
<p>1 ARI/PAU 340 28°53'11.22"S 19°34'10.06"E</p>	<p>Findings: The pylon and access road is located within the High SEI rocky outcrop.</p> <p>Location: Located in previously designated High sensitivity area.</p> <p>Sensitivity area: Classified as High sensitivity.</p>	
	<p>Recommendation: Movement of the pylon and access road to avoid the rocky outcrop (65m southwest). If the preferred movement of the pylon is along the line then the pylon can be moved 180 m southeast along the line, parallel to the servitude road.</p>	

<p>Substation 28°52'43.38"S 19°33'53.56"E</p>	<p>Findings: Two (2) <i>Boscia foetida</i> individuals are located within the proposed substation footprint.</p> <p>Location: Located in previously designated Medium sensitivity area.</p>	
	<p>Sensitivity area: Classified as Medium sensitivity.</p> <p>Recommendation: Avoidance of the protected plants. If unavoidable destruction, however, apply for relevant permits.</p>	

6 Impact Assessment

6.1 Biodiversity Risk Assessment

Anthropogenic activities drive habitat destruction causing displacement of fauna and flora, and possibly direct mortality. Land clearing destroys local wildlife habitat and can lead to the loss of local breeding grounds, nesting sites and wildlife movement corridors, such as rivers, streams and drainage lines, or other locally important features. The removal of natural vegetation may reduce the habitat available for fauna species and may reduce animal populations and species compositions within the area.

Potential impacts were evaluated against the data captured during the desktop and field assessment to identify relevance to the PAOI. The relevant impacts associated with the construction and operation of the development were then subjected to a prescribed impact assessment method. Impacts were assessed in terms of the construction and operational phases. The operational phase refers to that phase of the project where the construction has been completed. It should be noted that the impacts described are not exhaustive, and more impacts may be identified at a later stage. Mitigation measures were only applied to impacts deemed relevant based on the impact analysis.

Impacts were assessed for the following activities:

- Construction Phase;
- Operational Phase; and

The sections below serve to outline and summarise the types of perceived impacts from the proposed activities on the terrestrial biodiversity and ecology of the PAOI. The associated significance of each impact is evaluated as relevant to the local biodiversity and the likely project activities.

6.2 Present Impacts to Biodiversity

Considering the anthropogenic activities and influences within the landscape, negative impacts to biodiversity were observed within the PAOI. These include:

- Overgrazing;
- Present energy distribution infrastructure, including powerlines;
- Predator persecution by farmers;
- Possible plant poaching (Sensitive species 144);
- Fences;
- Infrastructure associated with agriculture; and
- Roads and associated vehicle traffic and road kills.

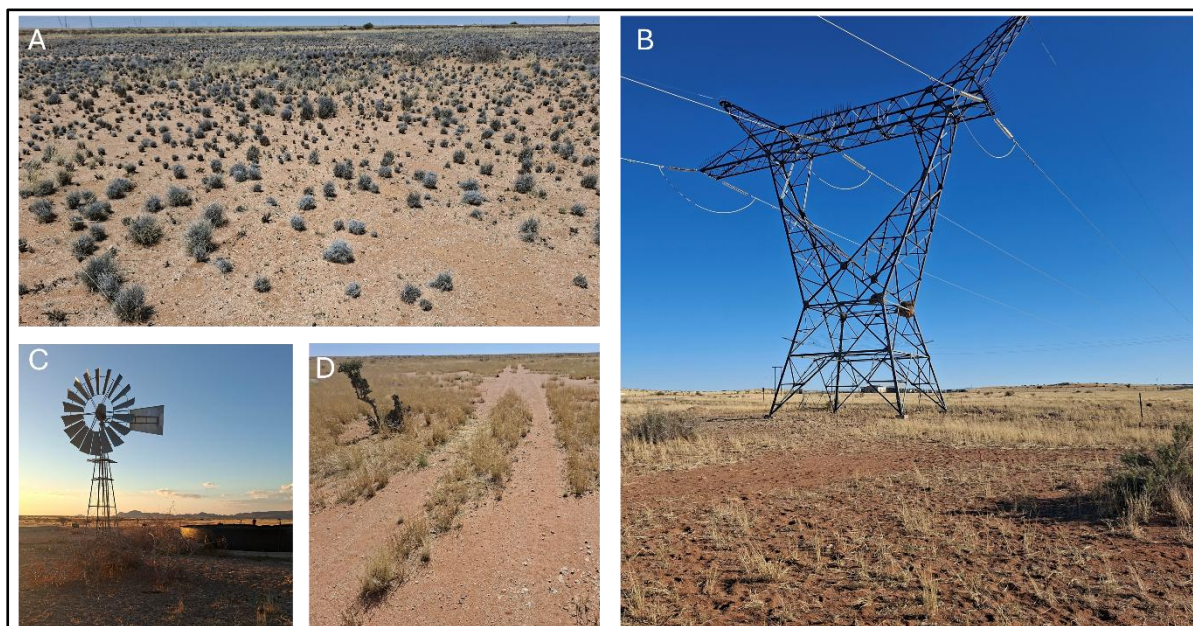


Figure 6-1 Photographs illustrating some of the current negative impacts associated with the PAOI: A) Overgrazing, B) Energy distribution infrastructure, C) Agricultural infrastructure and D) Roads.

6.3 Loss of Irreplaceable Resources

Any development within the PAOI will result in the irreplaceable loss of:

- Portions of CBA 1, CBA 2, and ESA;
- Water resources; and
- Flora and fauna SCC.

6.4 Unplanned Events

The planned activities will have anticipated impacts as discussed; however, unplanned events may occur on any project and may have potential impacts which will need management.

Table 6-1 is a summary of the findings of an unplanned event assessment from a terrestrial ecology perspective. Note, not all potential unplanned events may be captured herein, and this must therefore be managed throughout all phases according to recorded events.

Table 6-1 Summary of unplanned events for terrestrial biodiversity

Unplanned Event	Potential Impact	Mitigation
Spills into the surrounding environment	Contamination of habitat as well as water resources associated with a spillage.	A spill response kit must be available at all times. The incident must be reported on and if necessary, a biodiversity specialist must investigate the extent of the impact and provide rehabilitation recommendations.
Fire	Uncontrolled/unmanaged fire that spreads to the surrounding natural areas	Appropriate/Adequate fire management plan need to be implemented.
Erosion caused by water runoff from the surface	Erosion on the side of the road	Storm water and erosion management plans must be compiled and implemented.

6.4.1 Identification of Additional Potential Impacts

The potential impacts during the construction and operation phases of the project are presented in Table 6-2.

Table 6-2 Potential impacts to biodiversity associated with the proposed activity.

Main Impact	Project activities that can cause loss/impacts to habitat (especially with regard to the proposed infrastructure areas):	Secondary impacts anticipated
1. Destruction, fragmentation and degradation of habitats and ecosystems (Loss of CBA1, 2 and ESA)	Physical removal of vegetation, including protected species.	Displacement/loss of flora & fauna (including possible SCC)
	Access roads and servitudes	Increased potential for soil erosion
	Soil dust precipitation	Habitat fragmentation
	Dumping of waste products	Increased potential for establishment of alien & invasive vegetation
	Random events such as fire (cooking fires or cigarettes)	Erosion
Main Impact	Project activities that can cause the spread and/or establishment of alien and/or invasive species	Secondary impacts anticipated
2. Spread and/or establishment of alien and/or invasive species	Vegetation removal	Habitat loss for native flora & fauna (including SCC)
	Vehicles potentially spreading seed	Spreading of potentially dangerous diseases due to invasive and pest species
	Unsanitary conditions surrounding infrastructure promoting the establishment of alien and/or invasive rodents	Alteration of fauna assemblages due to habitat modification
	Creation of infrastructure suitable for breeding activities of alien and/or invasive birds	
Main Impact	Project activities that can cause direct mortality of fauna	Secondary impacts anticipated
3. Direct mortality of fauna	Clearing of vegetation	Loss of habitat
		Loss of ecosystem services
	Roadkill due to vehicle collision	
	Pollution of water resources due to dust effects, chemical spills, etc.	Increase in rodent populations and associated disease risk
	Intentional killing of fauna for food (hunting)	
Main Impact	Project activities that can cause reduced dispersal/migration of fauna	Secondary impacts anticipated
4. Reduced dispersal/migration of fauna	Loss of landscape used as corridor	Reduced dispersal/migration of fauna
		Loss of ecosystem services
	Compacted roads	
	Removal of vegetation	Reduced plant seed dispersal
Main Impact	Project activities that can cause pollution in watercourses and the surrounding environment	Secondary impacts anticipated
5. Environmental pollution due to water runoff, spills from vehicles and erosion	Chemical (organic/inorganic) spills	Pollution in watercourses and the surrounding environment
		Faunal mortality (direct and indirectly)
	Erosion	Groundwater pollution
		Loss of ecosystem services
Main Impact	Project activities that can cause disruption/alteration of ecological life cycles due to sensory disturbance.	Secondary impacts anticipated
6. Disruption/alteration of ecological life cycles (breeding,	Operation of machinery (Large earth moving machinery, vehicles)	Disruption/alteration of ecological life cycles due to noise

migration, feeding) due to noise, dust and light pollution.		Loss of ecosystem services
	Project activities that can cause disruption/alteration of ecological life cycles due to dust	Secondary impacts associated with disruption/alteration of ecological life cycles due to dust
	Vehicles	Loss of ecosystem services
Main Impact	Project activities that can cause staff to interact directly with potentially dangerous fauna	Secondary impacts anticipated
7. Staff and others interacting directly with fauna (potentially dangerous) or poaching of animals	All unregulated/supervised activities outdoors	Loss of SCCs

6.4.2 Assessment of Impact Significance

The various identified impacts are assessed below for the different phases of the development. The linear infrastructure (OHL and servitude roads) and substation were assessed separately.

6.4.2.1 Linear Infrastructures

The linear infrastructure refers mainly to the powerline and associated roads, considered for access and maintenance roads. Due to the nature of the project, the actual footprint of the pole/pylon infrastructure has a small, localised impact in comparison to the creation of access/service roads which is an important aspect to note. The OHL and access road route is available. However, due to portions of the PAOI being largely undisturbed one could assume that the powerline route will transverse large areas of undisturbed vegetation. This would increase the potential impact of the powerlines and the associated roads on the terrestrial biodiversity. The water resources along the route, which are sensitive systems, can be spanned by the powerline. Rocky outcrop areas which occur within the PAOI which and are considered to be of a high sensitivity will be impacted the infrastructure. The main significant risk to these habitats is the creation of roads as the outcrop areas will have to be completely modified to allow for the construction of roads. The presence of an existing overhead powerline (700kV Aries-Kokerboom) within the eastern portion of the PAOI should be noted. This line does not run parallel to the proposed line but the proposed line loops into this one, and back out, creating a connection with the Paulputs Substation (Figure 6-2).

The following impacts are expected throughout the different phases:

- Destruction, further loss and fragmentation of the vegetation community/ecosystems. The proposed use of the existing road may lead the widening of existing roads/servitudes which will physically remove vegetation as well as remove and fragment communities/ ecosystems for flora species. Human movements, which lead to soil disturbance and the introduction of invasive and alien plant species, along with disruptions in natural areas of phytomass, will further enhance the likelihood and potential for these invasive plants to establish themselves;
- The removal of vegetation will result in the direct loss of habitat forcing fauna species (including expected and confirmed SCC) to move into new areas leading to disruption of faunal populations by interfering with their movements and/or breeding activities. Direct mortalities may result from vehicles and increased traffic due to construction work and the transportation of staff/materials. The unregulated movement of local people will also increase the likelihood of poaching of species in what was previously seen as secluded habitat for fauna species;
- Continued habitat degradation (dust, pollution, infringement and alien vegetation encroachment) are the main impacts considered for the operational phase. The edges of the linear infrastructure, especially the access roads and servitudes will likely be degraded by impacts such as dust (reduces the effectiveness of photosynthesis and pollination), livestock and alien vegetation will become a concern in these disturbed areas. The unregulated movement of local people into the areas surrounding the footprint will likely result in plant

poaching, this is especially true for areas not under management. The continued use of the road surface will result in severe erosion, ultimately loss in topsoil over time. There is a high potential for spills, leaks of fuel and hydrocarbons., ultimately polluting the environment, and further spreading during rainfall events; and

- Ongoing displacement and mortality due to sensory disturbance and collisions during operation (noise, light, traffic, dust, pollution and vibrations) from the maintenance vehicles. The footprint area will likely be impacted by poaching and poaching. Increased mortalities of fauna through collisions with vehicles is also anticipated.



Figure 6-2 *Photo illustrating the existing overhead powerline within the PAOI. Note the existing vegetation clearance.*

6.4.2.2 Construction Phase

The following potential main impacts on the biodiversity (based on above) were considered for the construction phase of the project. This phase refers to the period when construction of the proposed infrastructure is built/installed. This phase usually has the largest direct impact on biodiversity. The construction phase is expected to have the following impacts in general:

- Destruction, further loss and fragmentation of the habitats, ecosystems vegetation community, and the loss of floral SCC;
- Destruction of non-resilient habitats (Rocky Outcrops);
- Direct loss and displacement of faunal community due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna;
- Clearing of vegetation leading to soil erosion and loss of topsoil;
- Increased risk of contamination (soil and water resource) from fuel spills, construction waste, and hazardous materials; and
- Introduction of alien species, especially plants

6.4.2.3 Operational Phase

This phase refers to when construction has been completed, and the proposed infrastructure has been built and is functional. Due to the use of the, and most likely not being decommissioning the of the linear features, the following impacts in general can be expected:

- Continued destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community;

- Ongoing loss and displacement of faunal community due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna;
- Continued encroachment by alien and invasive plant species;
- Continued risk of contamination (soil and water resource) from fuel spills and hazardous materials; and
- Continuous stripping of topsoil, leading to ongoing land degradation, including erosion.

Table 6-3 *Summary assessment of significance of potential impacts on terrestrial biodiversity associated with the project for the proposed linear infrastructure (OHL and access roads)*

Impact	Phase	Pre-Mitigation Significance	Post-Mitigation Significance	Final Significance
Destruction, further loss and fragmentation of the habitats, ecosystems vegetation community, and the loss of floral SCC.	Construction	High -	Medium to low -	Medium to low -

Mitigation Measures

- Pylon locations must avoid all floral SCC and buffers found within the PAOI. It is imperative that the recommended pylon movements mentioned in section 5 is adhered to. This will ensure no SCC are destroyed by vegetation clearance (OHL and servitude roads). All floral SCC located directly outside of the 10 m pylon buffer should be marked with high visibility flags to ensure that they are not affected by vehicles and machinery.
- A 100 m buffer placed around individuals of Sensitive Species 144 must be considered for pylon and servitude road placement. A revised layout must show that the servitude road has avoided SCC and Sensitive Species 144 buffers.
- It is recommended that the pylons be moved out of CBA's. Construction within CBA's may trigger offsets according to the National Offset Guidelines. Discussion of potential offsets with the relevant authorities are required. Offsets are at the discretion of the department.
- Existing access roads must be made use of and any new roads need to be two track roads and the construction of gravel roads should be avoided. Clearing of vegetation for the servitude roads needs to be limited.
- The development areas and access roads should be specifically demarcated so that during the construction phase, only the demarcated areas may be impacted upon.
- Proposed new servitude roads should be constructed on existing roads, where possible, to limit clearance of vegetation and impacts. Existing roads and servitudes need to be used before new areas are considered. All new roads must be authorised.
- Areas of indigenous vegetation, even secondary communities outside of the direct pylon and servitude road footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible.
- No unnecessary further loss of high sensitivity areas should be permitted. It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon.
- All structure footprints are to be rehabilitated and landscaped after installation is complete. Rehabilitation of the disturbed areas existing in the proposed development area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type.
- Mitigation measures and buffers outlined in the Aquatic assessments should be adhered to (TBC, 2025).
- Any individual of any protected plant species that is present needs a relocation or destruction permit in order for any individual that may be removed or destroyed due to the development. High visibility flags must be placed near any threatened/protected plants in order to avoid any damage or destruction of the species. If left undisturbed, the sensitivity and importance of these species needs to be part of the environmental awareness program. Infrastructure, development areas and routes where protected plants cannot be avoided should be removed from the soil and relocated/ re-planted in similar habitats.
- Vegetation clearing commences only after the necessary permits have been obtained. Vegetation clearing must be isolated to pylon locations.
- Environmental Officer (EO) to provide supervision and oversight of vegetation clearing activities.
- Alien Invasive management must be undertaken in accordance with the Vegetation Management and Maintenance within Eskom Land, Servitudes and Rights of Way (Unique identifier: 240-70172585). This should be regularly updated to reflect the annual changed in AIP composition.
- Inspect vehicles and machinery on a daily basis for fuel and oil leakages and repair such.
- There should be follow-up rehabilitation and re-vegetation of any remaining denuded areas with local indigenous plants from the area. Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and bare (unvegetated) areas.

- Reduce the dust generated by vehicles/machines, creating of 'speed bumps', putting up signs to enforce speed limits to enforce reduced speeds.
- No non-environmentally friendly suppressants may be used as this could result in pollution of water sources and the ecosystem.
- Any materials may not be stored for extended periods of time and must be removed from the PAOI once the construction phase has been concluded. No permanent construction phase structures, apart from approved structures, must be permitted. Construction buildings should preferably be prefabricated or constructed of re-usable/recyclable materials. No storage of vehicles or equipment will be allowed outside of the designated areas.
- A suitable stormwater plan must be compiled for the development footprint. This plan should include mitigation measures for the construction as well as the operational phase. This plan must attempt to displace and divert stormwater from the road network and construction areas and discharge the water into adjacent areas without eroding the receiving areas. It is preferable that run-off velocities be reduced with energy dissipaters and flows discharged into the local watercourses.
- It must be made an offence for any staff to take/ bring any plant species into/out of any portion of the PAOI apart from rehabilitation purposes. No plant species whether indigenous or exotic should be brought into/taken from the PAOI, to prevent the spread of exotic or invasive species or the illegal collection of plants.

Destruction of non-resilient habitats (Rocky Outcrops)	Construction	High -	Medium to high -	Medium to high -
Mitigation Measures				

- All terrestrial areas designated as High SEI must be avoided, the pylons and access roads should deviate around these areas.
- Existing access roads must be made use of. The development areas and access roads should be specifically demarcated so that during the construction phase, only the demarcated areas may be impacted upon.
- Proposed new servitude roads should be constructed on existing roads, where possible, to limit clearance of vegetation and impacts. Existing roads and servitudes need to be used before new areas are considered. All new roads must be authorised.

Direct loss and displacement of faunal community due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna	Construction	Medium to high -	Medium to low -	Medium to low -
Mitigation Measures				

- A qualified environmental control officer must be on site when construction begins.
- No trapping, killing, or poisoning of any wildlife is to be permitted. This should be included in Environmental Awareness Training and signs must be put up to enforce this.
- Outside lighting, if used, should 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 (green/red) lights should be used wherever possible.
- Considering that many of the mammal fauna recorded within the PAOI are nocturnal, no road activity is to occur at night.
- Where possible, work should be restricted to one area at a time and be systematic. This is to reduce the number and extent of on-site activities, allowing fauna to move off as the Project progresses. This will give the smaller birds, mammals and reptiles a chance to weather the disturbance in an undisturbed zone close to their natural territories.
- Any holes/deep excavations must be dug in a progressive manner and shouldn't be left open overnight. If any excavations are to be dug these must not be left open for more than a few hours without ramps for trapped fauna to leave and must be filled at night. Holes must be subsequently inspected for fauna prior to backfilling.
- All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings and erosion is limited.
- All vehicles should adhere to a speed limit of maximum 40 km/h to avoid collisions. Appropriate speed control measures and signs must be erected.
- Environmental Awareness Training discussions/training must include (but not limited to): Speed limits, General rules of road use, not limited to Avoiding the widening of the road and Environmental sensitivity of surrounding habitat.
- The areas to be disturbed must be specifically and responsibly demarcated to prevent the movement of staff or any individual into the surrounding environments, signs must be put up to enforce this.
- The duration of the activities should be minimised to as short a term as possible, to reduce the period of disturbance on fauna.

Clearing of vegetation leading to soil erosion and loss of topsoil.	Construction	Medium to high -	Medium to low -	Medium to low -
Mitigation Measures				

- A habitat rehabilitation and revegetation plan must be developed and implemented to reduce the occurrence of bare soil areas and the associated damage due excessive erosion.

Aries-Paulputs: Aries Kokerboom 400kV LIL Oand Substation Upgrade

- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation according to a habitat rehabilitation plan, to prevent erosion during flood and wind events and to promote the regeneration of functional habitat.
- Speed limits must be put in place to reduce erosion. Soil surfaces must be wetted as necessary to reduce the dust generated by the project activities. Speed bumps and signs must be erected to enforce slow speeds where relevant.
- Only existing access routes and walking paths may be made use of.

Increased risk of contamination (soil and water resource) from fuel spills, construction waste, and hazardous materials.	Construction	Medium to high -	Medium to low -	Medium to low -
--	--------------	------------------	-----------------	-----------------

Mitigation Measures

- A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. The water resources must be protected and all activities that could result in a spill should occur away from them.
- Compile and implement a Solid Waste Management Plan. Waste management must be a priority, and all waste must be collected, stored and disposed of adequately. It is recommended that all waste be removed from site on a weekly basis as a minimum
- Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.
- No servicing of equipment on site.
- All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers.
- Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment.
- All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the PAOI.
- All construction waste must be removed from site at the closure of the construction phase.
- Cement mixing may not be performed on the ground. It is recommended that only closed side drum or pan type concrete mixers be utilised. Any spills must be immediately contained and isolated from the natural environment, before being removed from site.

Introduction of alien species, especially plants	Construction	Medium to high -	Low -	Medium to low -
--	--------------	------------------	-------	-----------------

Mitigation Measures

- Alien Invasive management must be undertaken in accordance with the Vegetation Management and Maintenance within Eskom Land, Servitudes and Rights of Way (Unique identifier: 240-70172585). This should be regularly updated to reflect the annual changed in AIP composition.
- It must be made an offence for any staff member to remove any indigenous plant species from the PAOI or bring any alien species in. This is to prevent the spread of exotic or alien species or the illegal collection of plants.
- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation according to a habitat rehabilitation plan, to prevent erosion during flood and wind events and to promote the regeneration of functional habitat. This will also reduce the likelihood of encroachment by alien invasive plant species.
- A pest control plan must be put in place and implemented; it is imperative that poisons not be used to control pests.

Continued destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community.	Operational	Medium to high -	Medium to low -	Medium to low -
---	-------------	------------------	-----------------	-----------------

Mitigation Measures

- **Vehicles and machinery should only utilise authorized access roads and servitude roads.**
- **Servicing of the powerlines should only be done from the authorized servitude roads to prevent the destruction of SCC within the PAOI and to prevent the further fragmentation of habitat.**
- It must be made an offence for any staff member to remove any indigenous plant species (especially SCC) from the PAOI.
- Restrict all activities to authorised footprint areas only.
- Implement stormwater management plan.
- Address any observed erosion promptly using suitable erosion control structures and revegetation methods.
- Conduct follow-up rehabilitation and re-vegetation of any bare areas with local indigenous grasses, shrubs, and trees.

Ongoing loss and displacement of faunal community due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna	Operational	Medium to high -	Medium to low -	Medium to low -
--	-------------	------------------	-----------------	-----------------

Mitigation Measures

- All vehicles should adhere to a speed limit of maximum 40 km/h to avoid collisions with animals. Appropriate speed control measures and signs must be erected.
- **To mitigate potential impacts on faunal species it is recommended that vehicle movements are avoided at night. If night driving is unavoidable, vehicle speed should be reduced to a maximum of 20 km/h to minimize the risk of harm to wildlife.**
- No trapping, killing, or poisoning of any wildlife is to be permitted and must be made a punishable offense.
- All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited.
- Waste management must be a priority and a Solid Waste Management Plan must be developed and implemented. All waste must be collected and stored effectively. All solid waste collected shall be disposed of at a licensed disposal facility.
- Litter, spills, fuels, chemical and human waste in and around the PAOI must be minimised and controlled according to the waste management plan.
- Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all areas of construction or bare ground. This includes wetting of exposed soft soil surfaces.

Continued encroachment by alien and invasive plant species	Operational	Medium to High	Low -	Low -
--	-------------	----------------	-------	-------

Mitigation Measures

- Alien Invasive management must be undertaken in accordance with the Vegetation Management and Maintenance within Eskom Land, Servitudes and Rights of Way (Unique identifier: 240-70172585).should be regularly updated to reflect the annual change in AIP composition.
- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation according to a habitat rehabilitation plan, to prevent erosion during flood and wind events and to promote the regeneration of functional habitat. This will also reduce the likelihood of encroachment by alien invasive plant species.
- It must be made an offence for any staff member to remove any indigenous plant species from the PAOI or bring any alien species in. This is to prevent the spread of exotic or alien species or the illegal collection of plants.

Table 6-4 Summary assessment of significance of potential impacts on terrestrial biodiversity associated with the project for the substation expansion.

Impact	Phase	Pre-Mitigation Significance	Post-Mitigation Significance	Final Significance
Destruction, further loss and fragmentation of the habitats, ecosystems vegetation community, and the loss of floral SCC.	Construction	High -	Medium to high -	Medium to high -

Mitigation Measures

- **Areas of indigenous vegetation, even secondary communities outside of the substation road footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible. This is especially important as one SCC (*Hoodia gordonii*) individual was located 70 m north of the proposed substation footprint.**
- Existing access roads must be made use of. The development areas and access roads should be specifically demarcated so that during the construction phase, only the demarcated areas may be impacted upon.
- Proposed new roads should be constructed on existing roads, where possible, to limit clearance of vegetation and impacts. Existing roads and servitudes need to be used before new areas are considered. All new roads must be authorised.
- All structure footprints are to be rehabilitated and landscaped after construction is complete. Rehabilitation of the disturbed areas existing in the proposed development area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type.
- Mitigation measures and buffers outlined in the Aquatic assessments should be adhered to (TBC, 2025).
- Any individual of any protected plant species that are present needs a relocation or destruction permit in order for any individual that may be removed or destroyed due to the development. High visibility flags must be placed near any threatened/protected plants in order to avoid any damage or destruction of the species. If left undisturbed, the sensitivity and importance of these species needs to be part of the environmental awareness program. Infrastructure, development areas and routes where protected plants cannot be avoided should be removed from the soil and relocated/ re-planted in similar habitats.
- Vegetation clearing commences only after the necessary permits have been obtained.
- Environmental Officer (EO) to provide supervision and oversight of vegetation clearing activities.
- There should be follow-up rehabilitation and re-vegetation of any remaining denuded areas with local indigenous plants from the area. Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and bare (unvegetated) areas.
- Reduce the dust generated by vehicles/machines, creating of 'speed bumps', putting up signs to enforce speed limits to enforce reduced speeds.
- Any materials may not be stored for extended periods of time and must be removed from the PAOI once the construction phase has been concluded. No permanent construction phase structures, apart from approved structures, must be permitted. Construction buildings should preferably be prefabricated or constructed of re-usable/recyclable materials. No storage of vehicles or equipment will be allowed outside of the designated areas.
- A suitable stormwater plan must be compiled for the development footprint. This plan should include mitigation measures for the construction as well as the operational phase. This plan must attempt to displace and divert stormwater from the road network and construction areas and discharge the water into adjacent areas without eroding the receiving areas. It is preferable that run-off velocities be reduced with energy dissipaters and flows discharged into the local watercourses.
- It must be made an offence for any staff to take/ bring any plant species into/out of any portion of the PAOI apart from rehabilitation purposes. No plant species whether indigenous or exotic should be brought into/taken from the PAOI, to prevent the spread of exotic or invasive species or the illegal collection of plants.

Direct loss and displacement of faunal community due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna	Construction	High	Medium to high -	Medium to high -
---	--------------	------	------------------	------------------

Mitigation Measures

- A qualified environmental control officer must be on site when construction begins.
- No trapping, killing, or poisoning of any wildlife is to be permitted. This should be included in Environmental Awareness Training and signs must be put up to enforce this.
- Outside lighting, if used, should be designed and limited to minimise impacts on fauna. Fluorescent and mercury vapor lighting should be avoided and sodium vapor (green/red) lights should be used wherever possible.
- Considering that many of the mammal fauna recorded within the PAOI are nocturnal, no road activity is to occur at night.
- Where possible, work should be restricted to one area at a time and be systematic. This is to reduce the number and extent of on-site activities, allowing fauna to move off as the Project progresses. This will give the smaller birds, mammals and reptiles a chance to weather the disturbance in an undisturbed zone close to their natural territories.

Aries-Paulputs: Aries Kokerboom 400kV LIL Oand Substation Upgrade

- Any holes/deep excavations must be dug in a progressive manner and shouldn't be left open overnight. If any excavations are to be dug these must not be left open for more than a few hours without ramps for trapped fauna to leave and must be filled at night. Holes must be subsequently inspected for fauna prior to backfilling.
- All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings and erosion is limited.
- All vehicles should adhere to a speed limit of maximum 40 km/h to avoid collisions. Appropriate speed control measures and signs must be erected.
- Environmental Awareness Training discussions/training must include (but not limited to): Speed limits, General rules of road use, not limited to Avoiding the widening of the road and Environmental sensitivity of surrounding habitat.
- The areas to be disturbed must be specifically and responsibly demarcated to prevent the movement of staff or any individual into the surrounding environments, signs must be put up to enforce this.
- The duration of the activities should be minimised to as short a term as possible, to reduce the period of disturbance on fauna.

Clearing of vegetation leading to soil erosion and loss of topsoil.	Construction	Medium to high -	Medium to low -	Medium to low -
---	--------------	------------------	-----------------	-----------------

Mitigation Measures

- A habitat rehabilitation and revegetation plan must be developed and implemented to reduce the occurrence of bare soil areas and the associated damage due excessive erosion.
- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation according to a habitat rehabilitation plan, to prevent erosion during flood and wind events and to promote the regeneration of functional habitat.
- Speed limits must be put in place to reduce erosion. Soil surfaces must be wetted as necessary to reduce the dust generated by the project activities. Speed bumps and signs must be erected to enforce slow speeds where relevant.
- Only existing access routes and walking paths may be made use of.

Increased risk of contamination (soil and water resource) from fuel spills and hazardous materials.	Construction	Medium to high	Medium to low	Medium to low
---	--------------	----------------	---------------	---------------

Mitigation Measures

- A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. The water resources must be protected and all activities that could result in a spill should occur away from them.
- Inspect vehicles and machinery on a daily basis for fuel and oil leakages and repair such, although no servicing of equipment on site.
- No non-environmentally friendly suppressants may be used as this could result in pollution of water sources and the ecosystem.
- Compile and implement a Solid Waste Management Plan. Waste management must be a priority, and all waste must be collected, stored and disposed of adequately. It is recommended that all waste be removed from site on a weekly basis as a minimum.
- Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.
- Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment.
- All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the PAOI.

Introduction of alien species, especially plants	Construction	Medium to high	Low	Low
--	--------------	----------------	-----	-----

Mitigation Measures

- Alien Invasive management must be undertaken in accordance with the Vegetation Management and Maintenance within Eskom Land, Servitudes and Rights of Way (Unique identifier: 240-70172585). This should be regularly updated to reflect the annual changed in AIP composition.
- It must be made an offence for any staff member to remove any indigenous plant species from the PAOI or bring any alien species in. This is to prevent the spread of exotic or alien species or the illegal collection of plants.
- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation according to a habitat rehabilitation plan, to prevent erosion during flood and wind events and to promote the regeneration of functional habitat. This will also reduce the likelihood of encroachment by alien invasive plant species.
- A pest control plan must be put in place and implemented; it is imperative that poisons not be used to control pests.

Continued destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community.	Operational	Medium to high -	Medium to low -	Medium to low -
---	-------------	------------------	-----------------	-----------------

Mitigation Measures

- Vehicles and machinery should only utilise authorized access roads.
- It must be made an offence for any staff member to remove any indigenous plant species (especially SCC) from the PAOI.
- Restrict all activities to authorised footprint areas only.
- Address any observed erosion promptly using suitable erosion control structures and revegetation methods.
- Conduct follow-up rehabilitation and re-vegetation of any bare areas with local indigenous grasses, shrubs, and trees.

Ongoing loss and displacement of faunal community due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna	Operational	Medium to high -	Medium to low -	Medium to low -
--	-------------	------------------	-----------------	-----------------

Mitigation Measures

- No trapping, killing, or poisoning of any wildlife is to be permitted and must be made a punishable offense.
- All maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited.
- All vehicles accessing the site should adhere to a max 40 km/h max to avoid collisions.
- Litter, spills, fuels, chemical and human waste in and around the PAOI must be minimised and controlled according to the waste management plan.
- Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all areas of construction or bare ground. This includes wetting of exposed soft soil surfaces.

Continued encroachment by alien and invasive plant species	Operational	Medium to High	Low -	Low -
--	-------------	----------------	-------	-------

Mitigation Measures

- Alien Invasive management must be undertaken in accordance with the Vegetation Management and Maintenance within Eskom Land, Servitudes and Rights of Way (Unique identifier: 240-70172585). This should be regularly updated to reflect the annual change in AIP composition.
- It must be made an offence for any staff member to remove any indigenous plant species from the PAOI or bring any alien species in. This is to prevent the spread of exotic or alien species or the illegal collection of plants.

Continued risk of contamination (soil and water resource) from fuel spills and hazardous materials.	Operational	Medium to High	Low -	Low -
---	-------------	----------------	-------	-------

Mitigation Measures

- A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. The water resources must be protected and all activities that could result in a spill should occur away from them.
- Compile and implement a Solid Waste Management Plan. Waste management must be a priority, and all waste must be collected, stored and disposed of adequately. It is recommended that all waste be removed from site on a weekly basis as a minimum.
- Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.
- No servicing of equipment on site.
- Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment.
- All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the PAOI.

Continuous stripping of topsoil, leading to ongoing land degradation, including erosion	Operational	Medium to High	Medium to low	Medium to low
---	-------------	----------------	---------------	---------------

Mitigation Measures

- **All vehicles must utilize the authorized access routes only.**
- **Environmental awareness training should be conducted, with strict enforcement of a zero-tolerance policy on wildlife poaching, especially for tortoises.**
- A habitat rehabilitation and revegetation plan must be developed and implemented to reduce the occurrence of bare soil areas and the associated damage due excessive erosion.
- Areas that are denuded during construction need to be re-vegetated with indigenous vegetation according to a habitat rehabilitation plan, to prevent erosion during flood and wind events and to promote the regeneration of functional habitat.
- Only existing access routes and walking paths may be made use of.

6.5 Cumulative Impacts

After taking all of the phases into consideration, the cumulative impact rating could be calculated and a final significance produced for each (Table 6-5).

Table 6-5 Cumulative impacts for the linear infrastructure (OHL and roads).

Impact	Phase	Event	Cumulative Impact	Irreplaceable loss	Priority Factor	Final score	Final Significance
Destruction, further loss and fragmentation of the habitats, ecosystems vegetation community, and the loss of floral SCC.	Construction	Normal operations or events	1	2	1,13	-10,13	Medium to high -
Introduction of invasive and alien species, especially plants	Construction	Normal operations or events	1	1	1,13	-4,50	Medium to low -
Direct loss and displacement of faunal community (including SCC) due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna	Construction	Normal operations or events	2	3	1,25	-5,63	Medium to low -
Destruction of non-resilient habitats (Rocky Outcrops)	Construction	Normal operations or events	1	2	1,13	-10,13	Medium to high -
Increased risk of contamination (soil and water resource) from fuel spills, construction waste, and hazardous materials.	Construction	Normal operations or events	1	2	1,13	-8,44	Medium to low -
Clearing of vegetation leading to soil erosion and loss of topsoil.	Construction	Normal operations or events	1	1	1,00	-8,25	Medium to low -
Continued destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community.	Operation	Normal operations or events	1	2	1,13	-8,44	Medium to low -
Continued encroachment by alien and invasive plant species	Operation	Normal operations or events	1	1	1,00	-4,00	Low -
Ongoing loss and displacement of faunal community due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna	Operation	Normal operations or events	1	2	1,13	-6,75	Medium to low -

Table 6-6 Cumulative impacts for the substation.

Impact	Phase	Event	Confidence	Cumulative Impact	Irreplaceable loss	Priority Factor	Final score	Final Significance
Continued destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community.	Operation	Normal operations or events	High	2	1	1,13	-7,59	Medium to low -
Continued encroachment by alien and invasive plant species	Operation	Normal operations or events	High	2	1	1,13	-3,94	Low -
Ongoing loss and displacement of faunal community due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna	Operation	Normal operations or events	High	1	1	1,00	-8,25	Medium to low -
Continued risk of contamination (soil and water resource) from fuel spills and hazardous materials.	Operation	Normal operations or events	High	1	1	1,00	-4,00	Low -
Continuous stripping of topsoil, leading to ongoing land degradation, including erosion	Operation	Normal operations or events	High	1	1	1,00	-6,75	Medium to low -

7 Conclusion

Given the fact that the proposed development is largely composed of linear infrastructure, which refers mainly to an overhead powerline and associated access/service roads, the actual footprint of the pole/pylon infrastructure has a small, localised impact on the terrestrial biodiversity. In comparison, the creation of access/service roads is a more important aspect to note. By minimising impacts in these areas and implementing strict mitigation measures, they will continue to support and sustain biodiversity. The substation in contrast has an overall higher impact on the terrestrial biodiversity as full clearance is to occur, it is therefore important to follow the mitigations outlined in this report to reduce the overall impacts.

The PAOI has been altered both historically and currently, primarily due to historic agricultural activities and current livestock grazing. These activities have impacted both the fauna and flora, with notable disturbances to the Bushmanland Arid Grassland habitat characteristics. Even the disturbed habitats are important within the local and regional landscape. They serve as fauna habitat, foraging grounds, and movement corridors in a landscape fragmented by anthropogenic influence.

The terrestrial biodiversity assessment confirms the varied sensitivity of the PAOI but disputes the screening report's findings. The habitat sensitivity of these areas varies, with Rocky Outcrop habitat being of 'High' SEI due:

- Having a lower resilience to development;
- Supporting various organisms, including flora SCC (*Hoodia gordonii*) and protected species (*Boscia foetida*); and
- Providing potential habitat for fauna SCC (*Psammobates tentorius verroxii*).

The ecological integrity, importance, and functioning of these areas are crucial for various fauna and flora. Preservation and enhancement of these systems are vital, especially given their sensitivity and limited availability. The other habitat types identified in the PAOI are of lower ecological functionality and value, and with the correct impact mitigation implementation, are more viable localities for this development to take place. The Screening Tool theme sensitivities for the associated habitats are seen in Table 7-1.

Table 7-1 Habitats and their associated specialist assignment sensitivities for the Screening Tool Themes (the sensitivities are either disputed or validated).

Habitat	Specialist Assignment		
	Terrestrial Biodiversity	Animal Theme	Plant Theme
Natural Bushmanland Arid Grassland	Medium (Disputed)	Medium (Disputed)	High (Disputed)
Disturbed Bushmanland Arid Grassland	Medium (Disputed)	Medium (Disputed)	High (Disputed)
Bushmanland Sandy Grassland	Medium (Disputed)	Medium (Disputed)	High (Disputed)

Rocky outcrop	High (Disputed)	High (Validated)	High (Disputed)
Water Resources	Medium (Disputed)	Medium (Disputed)	High (Disputed)
Water Resources	High (Disputed)	Medium (Disputed)	High (Disputed)
Modified	Very Low (Disputed)	Low (Disputed)	Low (Disputed)

7.1 Impact Statement

It is the opinion of the specialists that the proposed project may be favourably considered, provided all prescribed mitigation measures and supporting recommendations are implemented (including all protected species and SCC mitigations), particularly adjusting layouts to incorporate predominantly 'Very Low' sensitivity areas, with 'High' and 'Medium' areas demonstrating avoidance mitigation and reducing the impacts associated with the project.

7.2 Specialist Opinion

The specialist proposes that the development can proceed only under the following conditions:

- The development adheres to all mitigation measures outlined in this and other specialist reports, as well as the recommendations made in the walkdown reports (and section);
 - It is recommended that the pylons be moved out of CBA's. Construction within CBA's may trigger offsets according to the National Offset Guidelines. Discussion of potential offsets with the relevant authorities are required. Offsets are at the discretion of the department.
 - Offset mitigation may be required for residual impacts higher than medium within CBAs.
 - Servitude roads need to be two track roads to reduce their overall impact.
- All 'High' SEI habitats are to be avoided. Consider 'Very Low' and 'Medium' SEI areas for development;
- All SCC (and associated buffers) are avoided by development infrastructure (pylons, roads and substation);
- Protected species are to be avoided by the 10m pylon buffer or permits will be required;
- Alien Invasive management must be undertaken in accordance with the Vegetation Management and Maintenance within Eskom Land, Servitudes and Rights of Way (Unique identifier: 240-70172585). The use of herbicide usage should be restricted near water resources and on windy days and in line with NTCSA procedures; and
- The following environmental management and compliance frameworks/plans should be developed and implemented:
 - Biodiversity Monitoring Plan: A plan to monitor biodiversity, including flora and fauna, to assess the effectiveness of mitigation measures and adapt them as necessary.

- Erosion and Sedimentation Control Plan: A plan to implement erosion control measures and prevent sedimentation in nearby water resources.
- Fire Management Plan: A plan developed in consultation with a fire expert to minimize the risk of veld fires and manage fire-related risks around the project site.
- Rehabilitation and Revegetation Plan: A plan for the rehabilitation of disturbed areas, including the use of indigenous vegetation for revegetation and stabilization.
- Environmental Awareness Training Program: A program to provide training to all personnel and contractors on environmental management practices, sensitive receptors, and mitigation measures.

8 References

Auwah, A. 2018. NBA 2018 Rivers and NBA 2018 National Wetland Map 5. South African National Biodiversity Institute (SANBI), Newlands, Cape Town.

Bates, M.F., Branch, W.R., Bauer, A.M., Burger, M., Marais, J., Alexander, G.J & de Villiers, M.S. (Eds). 2014. Atlas and Red List of Reptiles of South Africa, Lesotho and Swaziland. Suricata 1. South African Biodiversity Institute, Pretoria.

BirdLife International, 2023. IUCN Red List for birds. <http://datazone.birdlife.org> (Accessed: December, 2023).

Branch, B. 1998. Field Guide to Snakes and Other Reptiles of Southern Africa. Struik Nature, Cape Town.

Bromilow, C., 2018. Problem plants and alien weeds of Southern Africa, third ed. Briza Publications, Pretoria, South Africa.

Department of Forestry, Fisheries and the Environment (DFFE). 2025. 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). 2022. National Protected Areas Expansion Strategy <http://egis.environment.gov.za>.

Du Preez, L.H. & Carruthers, V. 2009. A Complete Guide to the Frogs of Southern Africa. Struik Nature, Cape Town.

Fish, ö., Mashau, A.C., Moeaha, M.J. & Nembudani, M.T. 2015. Identification Guide to Southern African Grasses: An Identification Manual with Keys, Descriptions, and Distributions. SANBI, Pretoria.

GBIF.org [15 July 2025] GBIF Occurrence Download <https://doi.org/10.15468/dl.jyekc3>

IUCN. 2021. The IUCN Red List of Threatened Species. Version 2021-3. <https://www.iucnredlist.org>. The International Union for Conservation of Nature. Accessed: December 2025.

KZN Wildlife, 2013. Guidelines for Biodiversity Impact Assessment in KwaZulu Natal were consulted to determine buffers for the forest. http://www.kznwildlife.com/Documents/ekznw_handbookbiodiversityassess_130213_ab.pdf (Accessed: November 2023).

Le Maitre, D.C., Seyler, H., Holland, M., Smith-Adao, L.B., Nel, J.L., Maherry, A. & Witthüser, K. 2018. Identification, Delineation and Importance of the Strategic Water Source Areas of South Africa, Lesotho and Swaziland for Surface Water and Groundwater. WRC Report No TT 754/1/18, Water Research Commission, Pretoria.

Lötter, M.C. & Le Maitre, D. 2021. Fine-scale delineation of Strategic Water Source Areas for surface water in South Africa using Empirical Bayesian Kriging Regression Prediction: Technical report. Prepared for the South African National Biodiversity Institute (SANBI), Pretoria. 33 pages.

Manning, J., 2013. Field guide to wild flowers of South Africa, first ed. Penguin Random House, South Africa.

Marais, J., 2022. A complete guide to the snakes of southern Africa, first ed. Penguin Random House South Africa.

Minter, L., Burger, M., Harrison, J.A. & Kloepfer, D. (2004). Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland. Smithsonian Institute Avian Demography Unit, Washington; Cape Town.

Mucina, L. & Rutherford, M.C. (Eds.). 2006. The vegetation of South Africa, Lesotho and Swaziland. Strelizia 19. South African National Biodiversity Institute, Pretoria, South African.

Mucina, L., Rutherford, M.C. & Powrie, L.W. (Eds.). 2007. Vegetation map of South Africa, Lesotho and Swaziland. 1:1 000 000 scale sheet maps. 2nd ed. South African National Biodiversity Institute, Pretoria.

Mucina, L., Scott-Shaw, C.R., Rutherford, M.C., Camp, K.G.T., Matthews, W.S., Powrie, L.W. and Hoare, D.B. Indian Ocean Coastal Belt. IN Mucina, L. & Rutherford, M.C. (Eds.). 2006. The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria, South African.

NBA (2018). National Biodiversity Assessment spatial data. <http://bgis.sanbi.org/>. (Accessed: October, 2023).

Nel J.L., Murray K.M., Maherry A.M., Petersen C.P., Roux D.J., Driver A., Hill L., Van Deventer H., Funke N., Swartz E.R., Smith-Adao L.B., Mbona N., Downsborough L. and Nienaber S. 2011. Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. K5/1801.

NEMBA. 2014. Government Gazette, Volume 584. No 37320. . Accessed December 2025.

NPAES. (2011). National Protected Areas Expansion Strategy. www.environment.gov.za/. (Accessed: October, 2023).

Pooley, E., (first edition), 1998. A field guide to wildflowers: KwaZulu-Natal and the eastern region. The Floa Publications Trust, Durban, South Africa.

Raimondo, D., von Staden, L., Foden, W., Victor, J.E., Helme, N.A., Turner, R.C., Kamundi, D.A. and Manyama, P.A. 2009. Red List of South African Plants. Strelitzia 25. South African National Biodiversity Institute, Pretoria.

SANBI. 2023. Red List of South African Plants version 2020. redlist.sanbi.org (Accessed: December 2025)

SANBI-BGIS. 2017. Technical guidelines for CBA Maps: Guidelines for developing a map of Critical Biodiversity Areas & Ecological Support Areas using systematic biodiversity planning.

SAPAD (South Africa Protected Areas Database) and SACAD (South Africa Conservation Areas Database) (2025). <http://egis.environment.gov.za>

Skinner, J.D. & Chimimba, C.T. 2005. The Mammals of the Southern African Sub-region. Cambridge University Press, Cape Town.

Skowno, A.L. & Monyeki, M.S. 2021. South Africa's Red List of Terrestrial Ecosystems (RLEs). Land, 10, 1048, 1-14.

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.

Smith, G., 2017. Field guide to succulents of southern Africa. Penguin Random House South Africa.

Stuart, C & Stuart, M. A. 2013. Field guide to the tracks & signs of Southern, Central & East African Wildlife. Penguin Random House, Cape Town.

Stuart, C & Stuart, M. A. 2015. Stuarts' Field Guide to Mammals of Southern Africa including Angola, Zambia & Malawi. Struik Nature, Cape Town.

9 Appendix Items

9.1 Appendix A: Methodology

9.1.1 Desktop Baseline

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

9.1.1.1 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:

- National Biodiversity Assessment 2018 (Skowno et al, 2019) (NBA)- The purpose of the NBA is to assess the state of South Africa's biodiversity based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors. The NBA deals with all three components of biodiversity: genes, species and ecosystems; and assesses biodiversity and ecosystems across terrestrial, freshwater, estuarine and marine environments. The two headline indicators assessed in the NBA are:
 - Ecosystem Threat Status – 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 – indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems.
- Conservation/Biodiversity Sector Plans:
 - Northern Cape Critical Biodiversity Areas (CBAs) (SANBI, 2024) - The identification of Critical Biodiversity Areas for the Northern Cape was undertaken using a Systematic Conservation Planning approach. Available data on biodiversity features (incorporating both pattern and process, and covering terrestrial and inland aquatic realms), their condition, current Protected Areas and Conservation Areas, and

opportunities and constraints for effective conservation were collated. Priorities from existing plans such as the Namakwa District Biodiversity Plan, the Succulent Karoo Ecosystem Plan, National Estuary Priorities, and the National Freshwater Ecosystem Priority Areas were incorporated. Targets for terrestrial ecosystems were based on established national targets, while targets used for other features were aligned with those used in other provincial planning processes. CBA categories are based on their biodiversity characteristics, spatial configuration and requirement for meeting targets for both biodiversity pattern and ecological processes:

- Critical Biodiversity Area (CBA) – An area that must be maintained in a good ecological condition (natural or near-natural state) in order to meet biodiversity targets. CBAs collectively meet biodiversity targets for all ecosystem types as well as for species and ecological processes that depend on natural or near-natural habitat, that have not already been met in the protected area network (SANBI, 2016).
- Ecological Support Area (ESA) – An area that must be maintained in at least fair ecological condition (semi-natural/moderately modified state) in order to support the ecological functioning of a CBA or protected area, or to generate or deliver ecosystem services, or to meet remaining biodiversity targets for ecosystem types or species when it is not possible or no necessary to meet them in natural or near-natural areas (SANBI, 2016).
- Other Natural Area (ONA) – An area in good or fair ecological condition (natural, near-natural or semi-natural) that is not required to meet biodiversity targets for ecosystem types, species or ecological processes (SANBI, 2016).
- Protected areas:
 - South Africa Protected Areas Database (SAPAD) (Department of Environmental Affairs (DEA), 2025) – The (SAPAD) Database contains spatial data for the conservation of South Africa. 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 (NEMPAA).
 - The Department of Forestry, Fisheries and the Environment (DFFE) maintains a spatial database on PAs and Conservation Areas. Protected Areas and Conservation Areas (PACA) Database scheme that used for classifying protected areas (South Africa Protected Areas Database-SAPAD) and conservation areas (South Africa Conservation Areas Database-(SACAD)) into types and sub-types in South Africa.
 - 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.
- A new set of Key Biodiversity Areas (KBA) specific to South Africa has been identified using the Global Standard for the Identification of Key Biodiversity Areas version 1.2 (IUCN 2016), applied to South African species and ecosystems. KBAs are critical sites that play a vital role in maintaining global biodiversity by serving as essential habitats for species. The identification of KBAs enables governments and civil society to pinpoint key locations crucial for species and their habitats worldwide. This understanding facilitates collaborative efforts to manage and conserve these areas, thereby safeguarding global biological diversity and supporting international biodiversity objectives.

Unlike the Important Bird Areas (IBAs), which primarily focus on birds, the KBA framework encompasses a broader spectrum of biodiversity, including mammals, amphibians, plants, and other taxa. BirdLife South Africa (BLSA), in consultation with the KBA National Coordination Group, has opted to retire IBAs and integrate KBAs into its conservation strategy. This strategic shift acknowledges the necessity of investing resources effectively to protect avian and other macroecological elements at the site level within a comprehensive framework of biodiversity conservation (KBA NCG, 2024); and

- Hydrological Setting:
 - South African Inventory of Inland Aquatic Ecosystems (SAIIAE) (Van Deventer et al, 2018) – A South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was established during the National Biodiversity Impact Assessment of 2018. It is a collection of data layers that represent the extent of river and inland wetland ecosystem types, as well as pressures on these systems.
 - Strategic Water Source Areas (SWSAs) (Le Maitre et al, 2021) – SWSAs are defined as areas of land that supply a quantity of mean annual surface water runoff in relation to their size and therefore, contribute considerably to the overall water supply of the country. These are key ecological infrastructure assets and the effective protection of surface water SWSAs areas is vital for national security because a lack of water security will compromise national security and human wellbeing.
 - National Freshwater Ecosystem Priority Area (NFEPA) (Nel et al., 2011) – The NFEPA database provides strategic spatial priorities for conserving the country's freshwater ecosystems and associated biodiversity as well as supporting sustainable use of water resources.

9.1.1.2 Spatially Relevant Legislative Boundaries

Two aspects of legislation apply with regards to the development of certain project types within South Africa, and these have important implications for the EA processes for these project types. These two aspects are briefly discussed below. Where relevant the spatial orientation of the proposed project is referenced with respect to these important legislative boundaries, as the applicable legislation may be relevant to not only the overall EIA process, but also the specialist assessment process that is to be followed.

- Strategic Transmission Corridors (EGI):

On the 16th of February 2018 Minister Edna Molewa published Government Notice No. 113 in *Government Gazette* No. 41445 which identified 5 strategic transmission corridors important for the planning of electricity transmission and distribution infrastructure as well as procedure to be followed when applying for environmental authorisation for electricity transmission and distribution expansion when occurring in these corridors.

On the 29th of April 2021, Minister Barbara Dallas Creecy published Government Notice No. 383 in *Government Gazette* No. 44504, which expanded the eastern and western transmission corridors and gave notice of the applicability of the application procedures identified in Government Notice No. 113, to these expanded corridors.

In June 2022 the Standard for the Development and Expansion of Power Lines and Substations within Identified Geographical Areas Revision 2, Prepared by the CSIR and SANBI, was published. This standard was then adopted as per Government Notice No. 2313 of *Government Gazette* No. 47095 of 27 July 2022. The Standard was prepared to allow a proponent to achieve planning, routing, siting and remediation objectives that will ensure the acceptability of the impacts of the development of EGI

(including substations) on the environment, independently from the need for an assessment by the competent authority. The standard enforces the following key environmental principles as part of its application with regards to the planning of powerline routes and substation positions (Note: several additional principles apply as relevant to avifauna assessments, however these are not included below):

- There must be no removal of threatened plant species;
- There must be no impact on Tier 1 plant species (i.e. threatened species reliant on critical habitat) identified through the screening process and site verification process;
- Clear-cutting during construction must be kept to a maximum of 8 m; and
- Wetlands must be avoided or, where wetland crossing is unavoidable, the power line should be routed over the narrowest part of the wetland. For the most part, wetlands and rivers can be traversed by the power line with little to no impact by placing the pylons outside of the wetland.
- Renewable Energy Development Zones (REDZs):

On 16 February 2018, Minister Edna Molewa published Government Notice No. 114 in *Government Gazette* No. 41445 which identified 8 renewable energy development zones important for the development of large scale wind and solar photovoltaic facilities. The Government Notice included the procedure to be followed when applying for environmental authorisation for large scale wind and solar photovoltaic energy facilities when occurring in these REDZs.

On 26 February 2021, Minister Barbara Dallas Creecy, published Government Notice No. 142, 144 and 145 in *Government Gazette* No. 44191 which identified 3 additional REDZs for implementation as well as the procedures to be followed when applying for environmental authorisation for electricity transmission or distribution infrastructure or large scale wind and solar photovoltaic energy facilities in these REDZs

9.1.1.3 Desktop Flora and Fauna Baseline

The Vegetation of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006) was used in order to identify the vegetation type that would have occurred under natural or pre-anthropogenically altered conditions. Furthermore, the GBIF database (*GBIF.org (26 November 2025) GBIF Occurrence Download <https://doi.org/10.15468/dl.rmfwna>*) was accessed to compile a list of expected flora and fauna species within the proposed development area and surrounding landscape, in conjunction with those plant and animal species listed by the screening tool (Figure 3-10 and Figure 3-11). The Red List of South African Plants (Raimondo et al., 2009; SANBI, 2023) was utilised to provide the most current national conservation status of flora species.

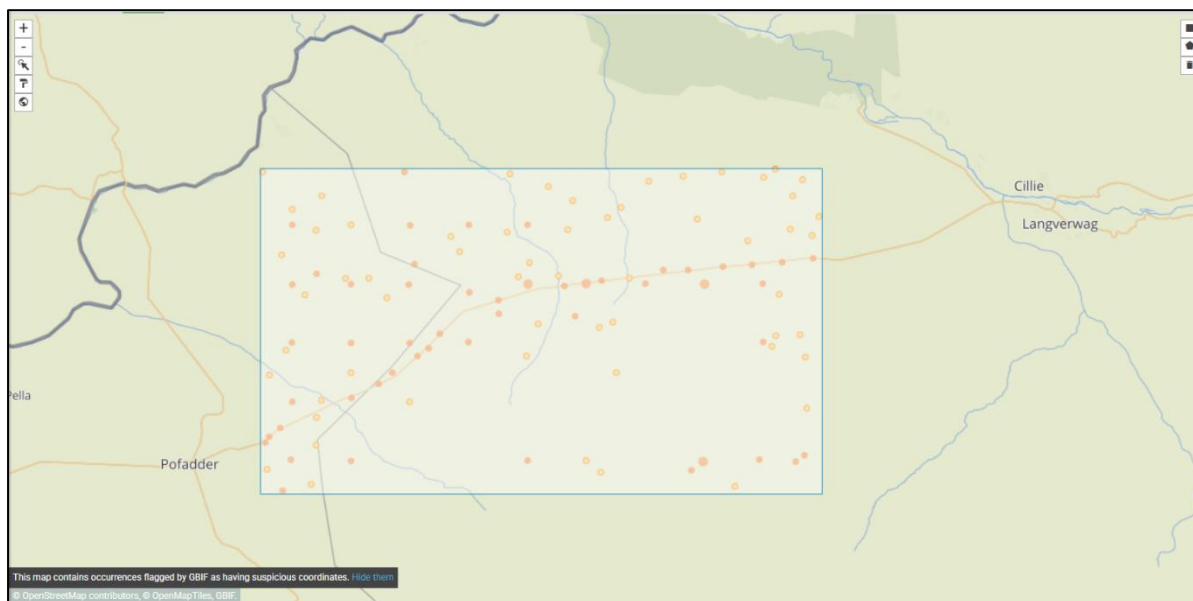


Figure 9-1 *Map illustrating the extent of area used to obtain the expected flora species list from the GBIF database. Black line indicates the approximate area of the POAI*

The latest information regarding provincially, and nationally protected flora was obtained from the following published legislative sources:

- Provincially Protected Plant Species (Schedule 1 and 2 of the Northern Cape Nature Conservation Act, 2009 (Act 9 of 2009).);
- Nationally Protected plant species (The 2007 lists of Threatened or Protected Species (TOPS), published in terms of Section 56(1) of the NEM:BA No. 10 of 2004); and
- List of Nationally Protected Tree Species (DEFF, 2022).

9.1.2 Field Assessment

9.1.2.1 Flora Survey

The fieldwork and sample sites were placed within targeted areas (i.e. target sites) perceived as ecologically sensitive based on the preliminary interpretation of satellite imagery (Google Corporation) and GIS analysis (which included the latest applicable biodiversity datasets) available prior to the fieldwork. The focus of the fieldwork was therefore to maximise coverage and navigate to each target site in the field, to perform a rapid vegetation and ecological assessment at each sample site. Emphasis was placed on sensitive habitats, especially those overlapping with the proposed PAOI.

Homogenous vegetation units were subjectively identified using satellite imagery and existing land cover maps. The floristic diversity and search for flora SCC were conducted through timed meanders within representative habitat units delineated during the scoping fieldwork. Emphasis was placed mostly on sensitive habitats overlapping with the proposed PAOIs.

The timed random meander method is highly efficient for conducting floristic analysis, specifically in detecting flora SCC and maximising floristic coverage. In addition, the method is time and cost effective and highly suited for compiling flora species lists and therefore gives a rapid indication of flora diversity. The timed meander search was performed based on the original technique described by Goff *et al.* (1982). Suitable habitat for SCC were identified according to Raimondo *et al.* (2009) and targeted as part of the timed meanders.

At each sample site notes were made regarding current impacts (e.g. livestock grazing, erosion etc.), subjective recording of dominant vegetation species and any sensitive features (e.g. wetlands, outcrops etc.). In addition, opportunistic observations were made while navigating through the PAOI.

Relevant field guides and texts consulted for identification purposes in the field during the survey and included the following:

- Identification Guide to Southern African Grasses: An Identification Manual with Keys, Descriptions, and Distributions (Fish *et al*, 2015);
- iNaturalist;
- Problem Plants and Alien Weeds of South Africa (Bromilow, 2010);
- Field Guide to Succulents in Southern Africa (Smith *et al*, 2017);
- Guide to the Aloes of South Africa (Van Wyk & Smith, 2014);
- Medicinal Plants of South Africa (Van Wyk *et al.*, 2013).

Vegetation of the PAOI was classed into relatively homogeneous units based on Vegetation Type Units (Mucina & Rutherford 2006). Planned points were made in each vegetation unit identified, to record vegetation and plant species present and also on the habitat condition, land use, and dominant species. Special features were identified as major river crossings, wetlands, rocky ridges or any other features considered to be of importance for the biodiversity assessment.

9.1.2.2 Faunal Survey

The faunal assessment within this report pertains to herpetofauna (amphibians and reptiles) and mammals. The faunal field survey comprised of the following techniques:

- Visual and auditory searches - This typically comprises of meandering and using binoculars to view species from a distance without them being disturbed; and listening to species calls;
- Active hand-searches - Used for species that shelter in or under particular micro-habitats (typically rocks, exfoliating rock outcrops, fallen trees, leaf litter, bark etc.); and

Relevant field guides and texts that were consulted for identification purposes included the following:

- Field Guide to Snakes and other Reptiles of Southern Africa (Branch, 1998);
- A Complete Guide to the Snakes of Southern Africa (Marais, 2004);
- Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland (Bates *et al*, 2014);
- A Complete Guide to the Frogs of Southern Africa (du Preez and Carruthers, 2009);
- Smithers' Mammals of Southern Africa (Apps, 2000); and
- A Field Guide to the Tracks and Signs of Southern and East African Wildlife (Stuart and Stuart, 2000).

9.2 Terrestrial 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 Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of species of conservation concern and their ecosystem processes.

Site Sensitivity Verification (SSV) 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 in Table 9-1 and Table 9-2, respectively.

Table 9-1 Summary of Conservation Importance (CI) criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of Critically Endangered (CR), Endangered (EN), Vulnerable (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 9-2 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 9-3.

Table 9-3 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 9-4.

Table 9-4 Summary of Resource Resilience (RR) criteria

Resilience	Fulfilling Criteria
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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) 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: (i) remain at a site even when a disturbance or impact is occurring, or (ii) return to a site once the disturbance or impact has been removed.

Subsequent to the determination of the BI and RR, the SSV can be ascertained using the matrix as provided in Table 9-5.

Table 9-5 *Matrix used to derive Site Sensitivity Verification (SSV) from Receptor Resilience (RR) and Biodiversity Importance (BI)*

Site Sensitivity Verification (SSV)		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 SSV in the context of the proposed project is provided in Table 9-6.

Table 9-6 *Guidelines for interpreting Site Sensitivity Verification (SSV) in the context of the proposed development activities*

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

9.3 Appendix D: Flora species expected

Figure 9-2 Expected plant species within the PAOI.

Family Name	Scientific Name	RSA Status	Conservation status (Regional)
Aizoaceae	<i>Galenia africana</i>	Indigenous	LC
Aizoaceae	<i>Galenia fruticosa</i>	Indigenous	LC
Aizoaceae	<i>Galenia meziana</i>	Indigenous	LC
Aizoaceae	<i>Galenia sarcophylla</i>	Indigenous	LC
Aizoaceae	<i>Galenia secunda</i>	Indigenous	LC
Aizoaceae	<i>Dinteranthus vanzylii</i>	Indigenous; Endemic	DDT
Aizoaceae	<i>Drosanthemum fulleri</i>	Indigenous; Endemic	DDT
Aizoaceae	<i>Hereroa pallens</i>	Indigenous; Endemic	LC
Aizoaceae	<i>Ihlenfeldtia vanzylii</i>	Indigenous; Endemic	LC
Aizoaceae	<i>Lithops dorotheae</i>	Indigenous; Endemic	EN
Aizoaceae	<i>Lithops julii</i> subsp. <i>fulleri</i>	Indigenous; Endemic	LC
Aizoaceae	<i>Mesembryanthemum articulatum</i>	Indigenous	LC
Aizoaceae	<i>Mesembryanthemum coriarium</i>	Indigenous	LC
Aizoaceae	<i>Mesembryanthemum crystallinum</i>	Indigenous	LC
Aizoaceae	<i>Mesembryanthemum inachabense</i>	Indigenous	LC
Aizoaceae	<i>Mesembryanthemum subnodosum</i>	Indigenous	LC
Aizoaceae	<i>Phyllobolus lignescens</i>	Indigenous	LC
Aizoaceae	<i>Prenia tetragona</i>	Indigenous	LC
Aizoaceae	<i>Psilocaulon coriarium</i>	Indigenous	LC
Aizoaceae	<i>Psilocaulon subnodosum</i>	Indigenous	LC
Aizoaceae	<i>Ruschia spinosa</i>	Indigenous	LC
Aizoaceae	<i>Tetragonia calycina</i>	Indigenous	LC
Aizoaceae	<i>Tetragonia fruticosa</i>	Indigenous	LC
Aizoaceae	<i>Trianthema parvifolia</i>	Indigenous	LC
Aizoaceae	<i>Trianthema parvifolia</i> var. <i>parvifolia</i>	Indigenous	LC
Aizoaceae	<i>Trianthema parvifolia</i> var. <i>rubens</i>	Indigenous	LC
Amaranthaceae	<i>Hermbstaedtia glauca</i>	Indigenous	LC
Amaranthaceae	<i>Leucosphaera bainesii</i>	Indigenous	LC
Amaranthaceae	<i>Salsola armata</i>	Indigenous	LC
Amaranthaceae	<i>Salsola barbata</i>	Indigenous	LC
Amaranthaceae	<i>Salsola columnaris</i>	Indigenous	LC
Amaranthaceae	<i>Salsola melanantha</i>	Indigenous	LC
Amaranthaceae	<i>Sericocoma avolans</i>	Indigenous	LC
Amaranthaceae	<i>Sericocoma pungens</i>	Indigenous	LC
Anacardiaceae	<i>Searsia burchellii</i>	Indigenous	LC
Anacardiaceae	<i>Searsia populifolia</i>	Indigenous	LC
Apocynaceae	<i>Fockea sinuata</i>	Indigenous	LC
Apocynaceae	<i>Cryptolepis decidua</i>	Indigenous	LC
Apocynaceae	<i>Hoodia gordonii</i>	Indigenous	DDD
Apocynaceae	<i>Microlooma incanum</i>	Indigenous	LC
Apocynaceae	<i>Microlooma sagittatum</i>	Indigenous; Endemic	LC
Apocynaceae	<i>Pergularia daemia</i> subsp. <i>daemia</i>	Indigenous	LC
Apocynaceae	<i>Sarcostemma viminalis</i> subsp. <i>viminalis</i>	Indigenous	LC

Aries-Paulputs: Aries Kokerboom 400kV LIL Oand Substation Upgrade

Asphodelaceae	Gonialoe variegata	Indigenous	LC
Asphodelaceae	Trachyandra saltii	Indigenous	LC
Asteraceae	<i>Eriocephalus decussatus</i>	Indigenous; Endemic	LC
Asteraceae	<i>Eriocephalus merxmuelleri</i>	Indigenous	LC
Asteraceae	<i>Eriocephalus pauperrimus</i>	Indigenous	LC
Asteraceae	<i>Euryops dregeanus</i>	Indigenous	LC
Asteraceae	<i>Felicia clavipilosa</i> subsp. <i>clavipilosa</i>	Indigenous	LC
Asteraceae	<i>Felicia hirsuta</i>	Indigenous	LC
Asteraceae	<i>Foveolina dichotoma</i>	Indigenous	LC
Asteraceae	<i>Dicoma capensis</i>	Indigenous	LC
Asteraceae	<i>Dimorphotheca pinnata</i>	Indigenous	LC
Asteraceae	<i>Dimorphotheca sinuata</i>	Indigenous	LC
Asteraceae	<i>Gazania jurineifolia</i> subsp. <i>scabra</i>	Indigenous	LC
Asteraceae	<i>Gazania lichtensteinii</i>	Indigenous	LC
Asteraceae	<i>Geigeria filifolia</i>	Indigenous	LC
Asteraceae	<i>Geigeria ornativa</i>	Indigenous	LC
Asteraceae	<i>Geigeria vigintisquamea</i>	Indigenous	LC
Asteraceae	<i>Helichrysum argyrosphaerum</i>	Indigenous	LC
Asteraceae	<i>Helichrysum gariepinum</i>	Indigenous	LC
Asteraceae	<i>Helichrysum herniarioides</i>	Indigenous	LC
Asteraceae	<i>Helichrysum pumilio</i> subsp. <i>pumilio</i>	Indigenous; Endemic	LC
Asteraceae	<i>Hirpicium echinus</i>	Indigenous	LC
Asteraceae	<i>Ifloga molluginoides</i>	Indigenous	LC
Asteraceae	<i>Kleinia longiflora</i>	Indigenous	LC
Asteraceae	<i>Lasiopogon muscoides</i>	Indigenous	LC
Asteraceae	<i>Leysera tenella</i>	Indigenous	LC
Asteraceae	<i>Myxopappus acutilobus</i>	Indigenous	LC
Asteraceae	<i>Nolletia chrysocomoides</i>	Indigenous	LC
Asteraceae	<i>Osteospermum armatum</i>	Indigenous	LC
Asteraceae	<i>Osteospermum microcarpum</i> subsp. <i>microcarpum</i>	Indigenous	LC
Asteraceae	<i>Osteospermum pinnatum</i> var. <i>breve</i>	Indigenous	NE
Asteraceae	<i>Osteospermum pinnatum</i> var. <i>pinnatum</i>	Indigenous	NE
Asteraceae	<i>Osteospermum rigidum</i> var. <i>rigidum</i>	Indigenous; Endemic	LC
Asteraceae	<i>Pentzia lanata</i>	Indigenous	LC
Asteraceae	<i>Pteronia leucoclada</i>	Indigenous	LC
Asteraceae	<i>Pteronia mucronata</i>	Indigenous	LC
Asteraceae	<i>Senecio arenarius</i>	Indigenous	LC
Asteraceae	<i>Senecio consanguineus</i>	Indigenous	LC
Asteraceae	<i>Senecio niveus</i>	Indigenous	LC
Boraginaceae	<i>Heliotropium ciliatum</i>	Indigenous	LC
Boraginaceae	<i>Trichodesma africanum</i>	Indigenous	LC
Brassicaceae	<i>Coronopus integrifolius</i>	Not indigenous	NE
Brassicaceae	<i>Heliophila deserticola</i>	Indigenous	LC
Brassicaceae	<i>Heliophila deserticola</i> var. <i>deserticola</i>	Indigenous	LC
Brassicaceae	<i>Heliophila deserticola</i> var. <i>micrantha</i>	Indigenous	LC
Brassicaceae	<i>Heliophila seselifolia</i> var. <i>seselifolia</i>	Indigenous	NE

Aries-Paulputs: Aries Kokerboom 400kV LIL Oand Substation Upgrade

Brassicaceae	<i>Heliophila trifurca</i>	Indigenous	LC
Campanulaceae	<i>Wahlenbergia psammophila</i>	Indigenous	LC
Capparaceae	<i>Maerua gilgii</i>	Indigenous	LC
Colchicaceae	<i>Ornithoglossum vulgare</i>	Indigenous	LC
Crassulaceae	<i>Crassula corallina</i> subsp. <i>macrorrhiza</i>	Indigenous	LC
Crassulaceae	<i>Tylecodon rubrovenosus</i>	Indigenous	LC
Cucurbitaceae	<i>Corallocarpus dissectus</i>	Indigenous	LC
Cucurbitaceae	<i>Cucumis africanus</i>	Indigenous	LC
Cucurbitaceae	<i>Cucumis sagittatus</i>	Indigenous	LC
Ebenaceae	<i>Diospyros acocksii</i>	Indigenous	LC
Euphorbiaceae	<i>Euphorbia friedrichiae</i>	Indigenous	LC
Euphorbiaceae	<i>Euphorbia glanduligera</i>	Indigenous	LC
Euphorbiaceae	<i>Euphorbia inaequilatera</i>	Indigenous	LC
Euphorbiaceae	<i>Euphorbia mauritanica</i>	Indigenous	LC
Euphorbiaceae	<i>Euphorbia namaquensis</i>	Indigenous	NE
Euphorbiaceae	<i>Euphorbia spinea</i>	Indigenous	LC
Euphorbiaceae	<i>Euphorbia virosa</i>	Indigenous	LC
Fabaceae	<i>Indigastrium argyroides</i>	Indigenous	LC
Fabaceae	<i>Indigofera alternans</i> var. <i>alternans</i>	Indigenous	LC
Fabaceae	<i>Indigofera heterotricha</i>	Indigenous	LC
Fabaceae	<i>Indigofera heterotricha</i> subsp. <i>pechuelii</i>	Indigenous	LC
Fabaceae	<i>Indigofera pungens</i>	Indigenous	LC
Fabaceae	<i>Calobota angustifolia</i>	Indigenous	LC
Fabaceae	<i>Leobordea platycarpa</i>	Indigenous	LC
Fabaceae	<i>Lessertia annularis</i>	Indigenous	LC
Fabaceae	<i>Lessertia frutescens</i>	Indigenous	LC
Fabaceae	<i>Lessertia frutescens</i> subsp. <i>frutescens</i>	Indigenous	LC
Fabaceae	<i>Lessertia frutescens</i> subsp. <i>microphylla</i>	Indigenous	LC
Fabaceae	<i>Lotononis rabenaviana</i>	Indigenous	LC
Fabaceae	<i>Melolobium adenodes</i>	Indigenous	LC
Fabaceae	<i>Melolobium candicans</i>	Indigenous	LC
Fabaceae	<i>Melolobium humile</i>	Indigenous; Endemic	LC
Fabaceae	<i>Melolobium microphyllum</i>	Indigenous	LC
Fabaceae	<i>Prosopis velutina</i>	Not indigenous; Naturalised; Invasive	NE
Fabaceae	<i>Pomaria lactea</i>	Indigenous	LC
Fabaceae	<i>Prosopis glandulosa</i> var. <i>glandulosa</i>	Not indigenous; Naturalised	NE
Fabaceae	<i>Requienia sphaerosperma</i>	Indigenous	LC
Fabaceae	<i>Senegalia mellifera</i>	Indigenous	LC
Fabaceae	<i>Tephrosia dregeana</i> var. <i>dregeana</i>	Indigenous	LC
Fabaceae	<i>Vachellia erioloba</i>	Indigenous	LC
Geraniaceae	<i>Monsonia crassicaulis</i>	Indigenous	LC
Geraniaceae	<i>Monsonia luederitziana</i>	Indigenous	LC
Geraniaceae	<i>Monsonia parvifolia</i>	Indigenous	LC
Geraniaceae	<i>Monsonia salmoniflora</i>	Indigenous	LC
Gisekiaceae	<i>Gisekia pharnaceoides</i> var. <i>pharnaceoides</i>	Indigenous	LC
Hyacinthaceae	<i>Dipcadi gracillimum</i>	Indigenous	LC

Aries-Paulputs: Aries Kokerboom 400kV LIL Oand Substation Upgrade

Iridaceae	<i>Gladiolus orchidiflorus</i>	Indigenous	LC
Iridaceae	<i>Tritonia karoica</i>	Indigenous; Endemic	LC
Kewaceae	<i>Kewa salsoloides</i>	Indigenous	LC
Lamiaceae	<i>Stachys burchelliana</i>	Indigenous	LC
Limeaceae	<i>Limeum aethiopicum</i>	Indigenous	LC
Limeaceae	<i>Limeum aethiopicum</i> var. <i>lanceolatum</i>	Indigenous	NE
Limeaceae	<i>Limeum argute-carinatum</i> var. <i>argute-carinatum</i>	Indigenous	LC
Limeaceae	<i>Limeum myosotis</i> var. <i>myosotis</i>	Indigenous	LC
Lophiocarpaceae	<i>Lophiocarpus polystachyus</i>	Indigenous	LC
Loranthaceae	<i>Septulina glauca</i>	Indigenous	LC
Loranthaceae	<i>Tapinanthus oleifolius</i>	Indigenous	LC
Malvaceae	<i>Hermannia abrotanoides</i>	Indigenous	LC
Malvaceae	<i>Hermannia bicolor</i>	Indigenous	LC
Malvaceae	<i>Hermannia gariepina</i>	Indigenous	LC
Malvaceae	<i>Hermannia grandiflora</i>	Indigenous	LC
Malvaceae	<i>Hermannia marginata</i>	Indigenous; Endemic	LC
Malvaceae	<i>Hermannia minutiflora</i>	Indigenous	LC
Malvaceae	<i>Hermannia modesta</i>	Indigenous	LC
Malvaceae	<i>Hermannia spinosa</i>	Indigenous	LC
Malvaceae	<i>Hermannia stricta</i>	Indigenous	LC
Malvaceae	<i>Radyera urens</i>	Indigenous	LC
Meliaceae	<i>Nymania capensis</i>	Indigenous	LC
Molluginaceae	<i>Kewa salsoloides</i>	Indigenous	LC
Molluginaceae	<i>Hypertelis cerviana</i>	Indigenous	LC
Molluginaceae	<i>Pharnaceum brevicaulis</i>	Indigenous	LC
Molluginaceae	<i>Pharnaceum croceum</i>	Indigenous	LC
Molluginaceae	<i>Suessenguthiella scleranthoides</i>	Indigenous	LC
Montiniaceae	<i>Montinia caryophyllacea</i>	Indigenous	LC
Neuradaceae	<i>Grielum humifusum</i> var. <i>humifusum</i>	Indigenous	LC
Neuradaceae	<i>Grielum humifusum</i> var. <i>parviflorum</i>	Indigenous	LC
Nyctaginaceae	<i>Phaeoptilum spinosum</i>	Indigenous	LC
Ophioglossaceae	<i>Ophioglossum polyphyllum</i> var. <i>polyphyllum</i>	Indigenous	LC
Oxalidaceae	<i>Oxalis pocockiae</i>	Indigenous; Endemic	LC
Pedaliaceae	<i>Rogeria longiflora</i>	Indigenous	LC
Pedaliaceae	<i>Sesamum capense</i>	Indigenous	LC
Phyllanthaceae	<i>Phyllanthus parvulus</i> var. <i>garipensis</i>	Present	LC
Poaceae	<i>Eragrostis procumbens</i>	Indigenous	LC
Poaceae	<i>Eragrostis rotifer</i>	Indigenous	LC
Poaceae	<i>Dactyloctenium aegyptium</i>	Indigenous	LC
Poaceae	<i>Enneapogon cenchroides</i>	Indigenous	LC
Poaceae	<i>Enneapogon desvauxii</i>	Indigenous	LC
Poaceae	<i>Enneapogon scaber</i>	Indigenous	LC
Poaceae	<i>Eragrostis annulata</i>	Indigenous	LC
Poaceae	<i>Eragrostis biflora</i>	Indigenous	LC
Poaceae	<i>Eragrostis homomalla</i>	Indigenous	LC
Poaceae	<i>Eragrostis nindensis</i>	Indigenous	LC

Poaceae	Eragrostis porosa	Indigenous	LC
Poaceae	Leucophrys mesocoma	Indigenous	LC
Poaceae	Microchloa kunthii	Indigenous	LC
Poaceae	Oropetium capense	Indigenous	LC
Poaceae	Schmidtia kalahariensis	Indigenous	LC
Poaceae	Setaria verticillata	Indigenous	LC
Poaceae	Sporobolus ioclados	Indigenous	LC
Poaceae	Sporobolus nervosus	Indigenous	LC
Poaceae	Stipagrostis ciliata	Indigenous	LC
Poaceae	Stipagrostis ciliata var. capensis	Indigenous	LC
Poaceae	Stipagrostis hochstetteriana var. secalina	Indigenous	LC
Poaceae	Stipagrostis obtusa	Indigenous	LC
Poaceae	Stipagrostis uniplumis var. uniplumis	Indigenous	LC
Poaceae	Tragus berteronianus	Indigenous	LC
Poaceae	Tragus racemosus	Indigenous	LC
Poaceae	Tricholaena capensis subsp. capensis	Indigenous	LC
Poaceae	Triraphis ramosissima	Indigenous	LC
Resedaceae	Oligomeris dipetala var. dipetala	Indigenous	LC
Rubiaceae	Kohautia caespitosa subsp. brachyloba	Indigenous	LC
Rubiaceae	Kohautia cynanchica	Indigenous	LC
Ruscaceae	<i>Eriospermum flagelliforme</i>	Indigenous	LC
Santalaceae	Lacomucinaea lineata	Indigenous	LC
Santalaceae	Thesium lineatum	Indigenous	LC
Santalaceae	Viscum capense	Indigenous	LC
Sapindaceae	Pappea capensis	Indigenous	LC
Scrophulariaceae	Diascia engleri	Indigenous	LC
Scrophulariaceae	Jamesbrittenia aridicola	Indigenous	LC
Scrophulariaceae	Lyperia tristis	Indigenous	LC
Scrophulariaceae	Manulea schaeferi	Indigenous	LC
Scrophulariaceae	Nemesia anisocarpa	Indigenous	LC
Scrophulariaceae	Nemesia maxii	Indigenous; Endemic	LC
Scrophulariaceae	Peliostomum leucorrhizum	Indigenous	LC
Scrophulariaceae	Selago divaricata	Indigenous	LC
Scrophulariaceae	Zaluzianskya diandra	Indigenous	LC
Solanaceae	Lycium bosciifolium	Indigenous	LC
Solanaceae	Lycium horridum	Indigenous	LC
Solanaceae	Lycium pilifolium	Indigenous	LC
Solanaceae	Solanum burchellii	Indigenous	LC
Solanaceae	Solanum namaquense	Indigenous	LC
Talinaceae	Talinum cafferum	Indigenous	LC
Tecophilaeaceae	Cyanella lutea	Indigenous	LC
Urticaceae	<i>Forsskaolea candida</i>	Indigenous	LC
Vahliaceae	Vahlia capensis	Indigenous	LC
Vahliaceae	Vahlia capensis subsp. vulgaris	Indigenous	LC
Verbenaceae	Chascanum garipense	Present	LC
Zygophyllaceae	Sisyndite sparteae	Indigenous	LC
Zygophyllaceae	Tetraena decumbens	Indigenous	LC

Aries-Paulputs: Aries Kokerboom 400kV LIL Oand Substation Upgrade

Zygophyllaceae	Tribulus cristatus	Indigenous	LC
Zygophyllaceae	Tribulus pterophorus	Indigenous	LC
Zygophyllaceae	Tribulus zeyheri subsp. zeyheri	Indigenous	LC

9.4 Appendix E: Amphibian species expected

Table 9-7 Expected amphibian species within the PAOI. LC = Least Concern

Family	Species	Common Name	Conservation Status	
			Regional	Global
Pyxicephalidae	Tornopterna tandyi	Tandy's Sand Frog	LC	LC

9.5 Appendix F: Reptile species expected.

Table 9-8 Expected reptile species within the PAOI. LC = Least Concern and NT = Near Threatened.

Family	Scientific Name	Common Name	Conservation Status	
			Regional (SANBI)	Global(IUCN)
Scincidae	Acontias lineatus	Striped Legless Skink	LC	LC
Gekkonidae	Chondrodactylus turneri	Turner's Gecko	LC	LC
Gekkonidae	Pachydactylus purcelli	Purcell's Gecko	LC	LC
Scincidae	Trachylepis occidentalis	Western Three-striped Skink	LC	LC
Gekkonidae	Lygodactylus bradfieldi	Bradfield's Dwarf Gecko	LC	LC
Scincidae	Trachylepis sulcata	Western Rock Skink	LC	LC
Gekkonidae	Chondrodactylus bibronii	Bibron's Gecko	LC	LC
Cordylidae	Karusasaurus polyzonus	Karoo Girdled Lizard	LC	LC
Typhlopidae	Rhinotyphlops schinzi	Schinz's Beaked Blind Snake	LC	LC
Agamidae	Agama aculeata	Ground Agama	LC	LC
Psammophiidae	Psammophis leightoni	Variable Sand Snake	LC	LC
Testudinidae	Stigmochelys pardalis	Leopard Tortoise	LC	LC
Viperidae	Bitis caudalis	Horned Adder	LC	LC
Gekkonidae	Chondrodactylus laevigatus	Button-scaled Gecko	LC	LC
Gekkonidae	Pachydactylus montanus	Namaqua Mountain Gecko	LC	LC
Psammophiidae	Dipsina multimaculata	Dwarf Beaked Snake	LC	LC
Scincidae	Trachylepis occidentalis	Western Three-striped Skink	LC	LC
Psammophiidae	Psammophis notostictus	Karoo Sand Snake	LC	LC
Agamidae	Agama atra	Southern Rock Agama	LC	LC
Testudinidae	Psammobates tentorius verroxii	Tent Tortoise	NT	NT
Cordylidae	Karusasaurus polyzonus	Karoo Girdled Lizard	LC	LC
Lacertidae	Pedioplanis lineocellata	Spotted Sand Lizard	LC	LC
Gekkonidae	Pachydactylus mariquensis	Common Banded Gecko	LC	LC
Gekkonidae	Chondrodactylus laevigatus	Button-scaled Gecko	LC	LC
Scincidae	Trachylepis occidentalis	Western Three-striped Skink	LC	LC
Agamidae	Agama aculeata	Ground Agama	LC	LC

9.6 Appendix G: Expected Mammal species.

Table 9-9 *Expected Mammal species within the PAOI.*

Family	Species	Common Name	Conservation Status	
			Regional	Global
Bovidae	<i>Oreotragus oreotragus</i>	Klipspringer	LC	LC
Canidae	<i>Otocyon megalotis</i>	Bat-eared Fox	LC	LC
Hyaenidae	<i>Proteles cristatus</i>	Aardwolf	LC	LC
Procaviidae	<i>Procavia capensis</i>	Rock Hyrax	LC	LC

9.7 Appendix C: Impact Assessment

9.7.1 Impact Assessment Considerations and Procedure

Table 9-10 Assessment of significance of potential impacts on terrestrial biodiversity associated with the project for the OHL and servitude roads.

Impact	Phase	Pre-Nature	Pre-Extent	Pre-Duration	Pre-Magnitude	Pre-Reversibility	Consequence	Pre-Probability	Pre-Mitigation Significance Score	Pre-Mitigation Significance	Post-Nature	Post-Extent	Post-Duration	Post-Magnitude	Post-Reversibility	Consequence2	Post-Probability	Post-mitigation Significance Score	Post-Mitigation Significance	Confidence	Cumulative Impact	Irreplaceable loss	Priority Factor	Final score	Final Significance
Destruction, further loss and fragmentation of the habitats, ecosystems vegetation community, and the loss of floral SCC.	Construction	-1	3	4	4	3	-3,5	4	-14	High -	-1	3	3	3	3	-3	3	-9	Medium to high -	High	1	2	1,13	-10,13	Medium to high -
Introduction of invasive and alien species, especially plants	Construction	-1	4	3	2	2	-2,75	4	-11	Medium to high -	-1	3	2	2	1	-2	2	-4	Low -	Medium	1	1	1,13	-4,50	Medium to low -

Aries-Paulputs: Aries Kokerboom 400kV LIL O and Substation Upgrade

Continued destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community.	Clearing of vegetation leading to soil erosion and loss of topsoil.	Increased risk of contamination (soil and water resource) from fuel spills, construction waste, and hazardous materials.	Destruction of non-resilient habitats (Rocky Outcrops)	Direct loss and displacement of faunal community (including SCC) due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna
Operation	Construction	Construction	Construction	Construction
-1	-1	-1	-1	-1
3	2	2	2	4
3	4	3	4	4
3	4	3	4	3
4	3	3	4	2
-3,25	-3,25	-2,75	-3,5	-3,25
3	3	4	4	4
-9,75	-9,75	-11	-14	-13
Medium to high -	Medium to high -	Medium to high -	High -	Medium to high -
-1	-1	-1	-1	-1
2	2	2	2	3
3	3	3	3	2
3	3	2	3	3
2	3	3	4	1
-2,5	-2,75	-2,5	-3	-2,25
3	3	3	3	2
-7,5	-8,25	-7,5	-9	-4,5
Medium to low -	Medium to low -	Medium to low -	Medium to high -	Medium to low -
High	High	High	High	High
1	1	1	1	2
2	1	2	2	3
1,13	1,00	1,13	1,13	1,25
-8,44	-8,25	-8,44	-10,13	-5,63
Medium to low -	Medium to low -	Medium to low -	Medium to high -	Medium to low -

Aries-Paulputs: Aries Kokerboom 400kV LIL O and Substation Upgrade

Continued encroachment by alien and invasive plant species	Operation	-1	3	3	2	2	-2,5	4	-10	Medium to high -
Ongoing loss and displacement of faunal community due to habitat loss, mortality and disturbance (road collisions, noise, dust, vibration), including the reduced dispersal/migration of fauna	Operation	-1	4	3	2	2	-2,75	4	-11	Medium to high -
Destruction of non-resilient habitats (Rocky Outcrops)	Operation	-1	2	3	2	2	-2,25	3	-6,75	Medium to low -
		-1	2	3	2	2	-1,75	2	-3,5	
		-1	2	3	2	2	-2	2	-4	
		Low -	Medium to low -	High	Medium	1	2	1,13	-6,75	Medium to low -
		High	High	High	High	1	2	1,13	-3,94	Low -
		1	2	1	2	1	2	1,13	-4,00	Low -
		Low -	Medium to low -	High	Medium	1	2	1,13	-4,00	Low -

www.thebiodiversitycompany.com

Aries-Paulputs: Aries Kokerboom 400kV LIL Oand Substation Upgrade

Continued risk of contamination (soil and water resource) from fuel spills and hazardous materials.	Operation	-1	2	2	3	3	-2,5	4	-10	Medium to high -	-1	2	2	2	2	-2	2	-4	Low -	High	1	1	1,00	-4,00	Low -
Continuous stripping of topsoil, leading to ongoing land degradation, including erosion	Constructi	-1	2	2	4	3	-2,75	4	-11	Medium to high -	-1	2	2	3	2	-2,25	3	-6,75	Medium to low -	High	1	1	1,00	-6,75	Medium to low -

9.8 Appendix H: Specialist Declaration of Independence

I, Connor Ryan, 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.



Connor Ryan


Terrestrial Ecologist

The Biodiversity Company

December 2025

I, Andine de Villiers , 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.



Andine de Villiers

Terrestrial Ecologist

The Biodiversity Company

December 2025

I, Sarah Newman, 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.



Terrestrial Ecologist

The Biodiversity Company

December 2025

9.9 Appendix I: Specialist CVs

Connor Ryan

B.Sc.Hons. – Plant sciences
(Candidate Natural Scientist)

Cell: +27 713823005

Email: connor@thebiodiversitycompany.com

Identity Number: 0010275154085

Date of birth: 27 October 2000



Profile Summary

Ecologist with experience in sampling grassland and savanna plants. Passionate about protecting South African flora and fauna

Areas of Interest

Sustainability & Conservation
Plant Ecology
Plant species identification
Invasive plant species management
Terrestrial habitat delineation

Key Experience

- Terrestrial Ecological Assessments
- Environmental Impact Assessments (EIA)
- Plant Ecological Assessments
- Plant identification
- Field work and research
- Data Analysis
- Plant collection and herbarium curation
- Fire Management Plans

Countries worked in

South Africa
Botswana
Lesotho

Nationality

South African

Languages

English – Proficient
Afrikaans - Basic

Qualifications and Courses

- BSc Hons Plant Sciences (Cum Laude), University of Pretoria
- BSc Ecology, University of Pretoria
- Cand Sci Nat (174067)

Sarah Newman

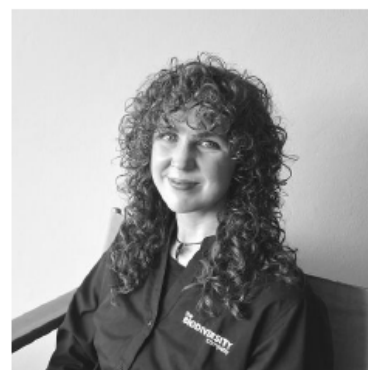
M.Sc. Entomology (*Pr Sci Nat*)

Cell: +27 73 391 6933

Email: sarah@thebiodiversitycompany.com

Identity Number: 9312170034086

Date of birth: 17 December 1993



Profile Summary

Work experience throughout South Africa, as well as Lesotho, Angola, Mauritius and Costa Rica.

Extensive experience working in the Sani Pass region of southern Africa investigating the patterns and drivers of ant diversity across an elevation gradient.

Experience with sea turtle monitoring and conservation in Costa Rica.

Experience conducting terrestrial biodiversity specialist assessments throughout South Africa.

Areas of Interest

Entomology, Zoology, Biodiversity, Conservation and Community Ecology.

Key Experience

- Terrestrial Ecological Assessments
- Rehabilitation plans and monitoring
- Field work and research
- Taxonomic classification of insects

Country Experience

South Africa
Lesotho
Angola
Zambia
Mauritius
Costa Rica

Nationality

South African

Languages

English – Proficient
Afrikaans – Conversational
Spanish – Conversational

Qualifications

- MSc Entomology (*Distinction*), University of Pretoria
- BSc (Hons) Zoology, University of Pretoria
- BSc Zoology, University of Pretoria
- Pr Sci Nat (158474)

Andine de Villiers

M.Sc. Zoology

Candidate Natural Scientist 164894

Cell: +27 64 417 6320

Email: andine@thebiodiversitycompany.com

Identity Number: 9504080028089

Date of birth: 8 April 1995



Profile Summary

Work experience in South Africa and Mauritius.

Biodiversity specialist experience in projects related to infrastructure development, renewable energy, mining, and prospecting.

Specific expertise includes terrestrial ecology, including mammals, herpetofauna, avifauna and flora, as well as report writing for environmental compliance, monitoring, management, and rehabilitation.

Areas of Interest

Zoology, Biodiversity, Conservation, Rehabilitation and Marine Biology.

Key Experience

- Terrestrial Ecological Assessments
- Rehabilitation plans and monitoring
- Habitat delineation
- Field work and research
- Environmental Management Programs (EMPr)
- Invasive Species Plans

Country Experience

South Africa
Mauritius
Zambia

Nationality

South African

Languages

English – Proficient
Afrikaans – Proficient

Qualifications

- MSc Zoology (*Cum Laude*), University of Pretoria
- BSc (Hons) Zoology, University of Pretoria
- BSc Zoology, University of Pretoria
- Cand Sci Nat (164894)
- Africa Land-Use Training, Grass Identification (2024)