Kimberley Phase 3 Ferrum Mookodi Powerline - Avifauna Basic Assessment and Walkdown

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Declaration	The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Environmental Impact Assessment Regulations, Amended. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principals of science.

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1 Introduction

The Biodiversity Company was appointed to conduct an avifaunal walkdown and assessment for the proposed 262 km powerline between the Ferrum and Mookodi substations as part of the Kimberley Strengthening Phase 3 scheme. The powerline section assessed in this report is within the John Taolo Gaetsewe District Municipality in the Northern Cape Province and the Dr Ruth Segomotsi Mompati District Municipality in the North West Province (Figure 1-1). 562 towers are proposed to be erected along the powerline section, which are numbered from the Ferrum substation to the Mookodi substation (Figure 1-2 to Figure 1-6). The ful scope of work entails the following:

i. Construction of a 400kV transmission powerline of ±260km from Ferrum Substation to Mookodi Substation.
ii. Upgrade the Mookodi Substation by installing:
    - 1 x 100MVAr busbar reactor at Mookodi 400kV busbar.
    - 1 x 400kV Mookodi feeder bay.
    - 1 x 400kV Line reactor at Mookodi 400kV.
iii. Upgrade the Ferrum Substation by installing
    - 1 x 100MVAr busbar reactor at Ferrum 400kV busbar.
    - 1 x 400kV Ferrum feeder bay.
    - 1 x 400kV Line reactor at Ferrum 400kV.

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

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

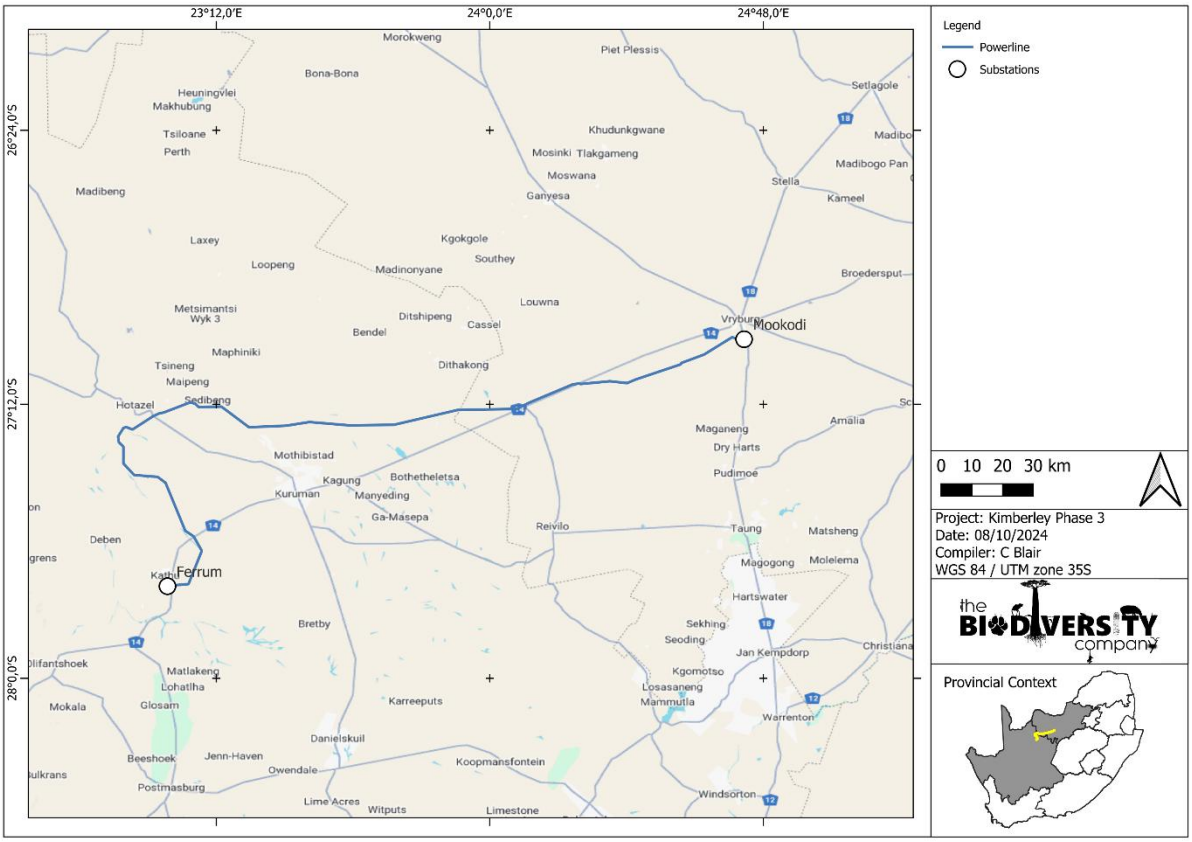


Figure 1-1 The project area

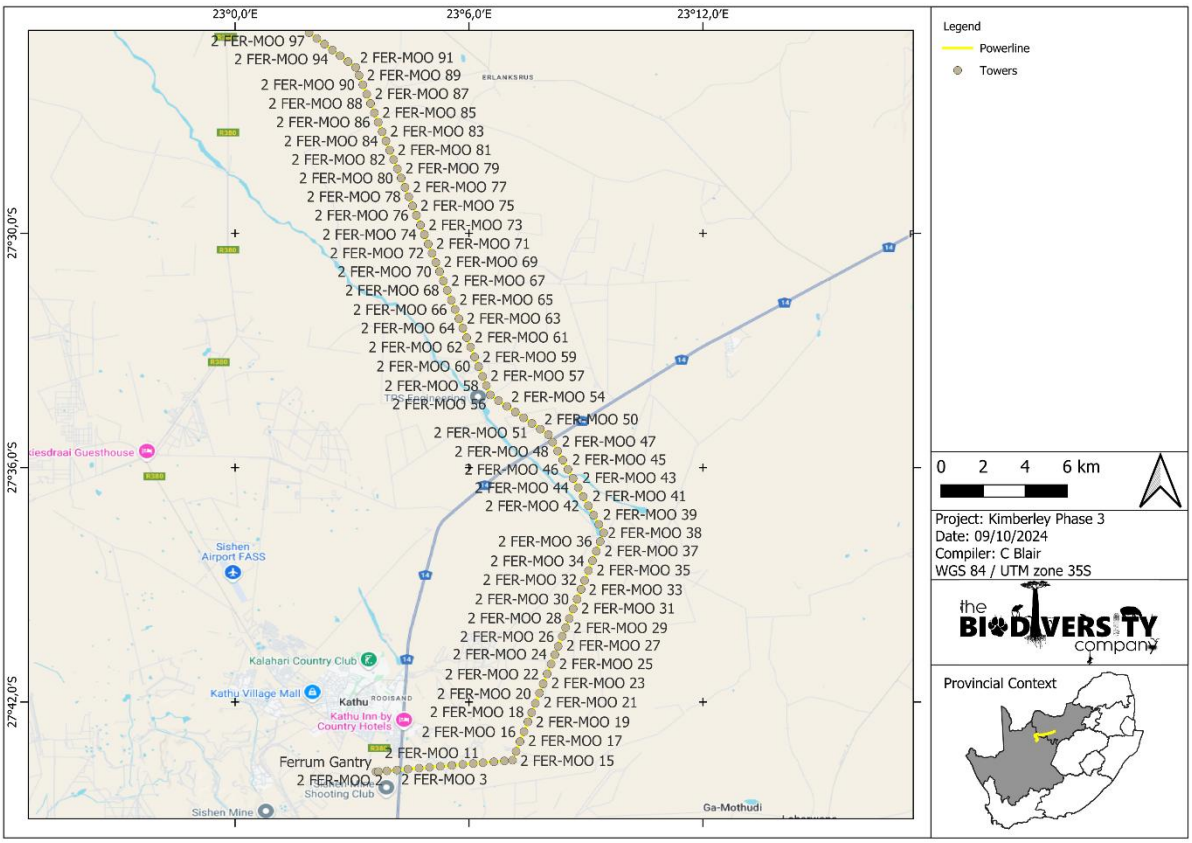


Figure 1-2 Towers 1 - 98

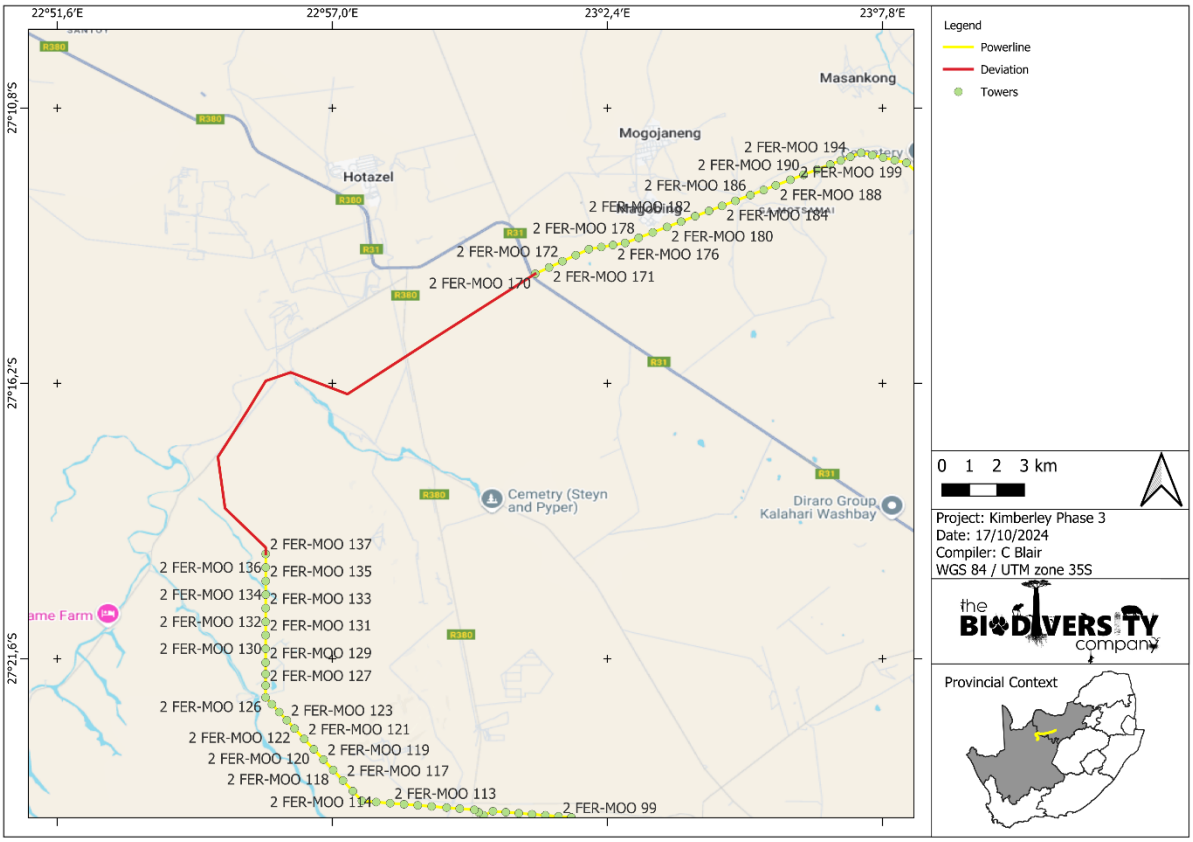


Figure 1-3 Towers 99-199

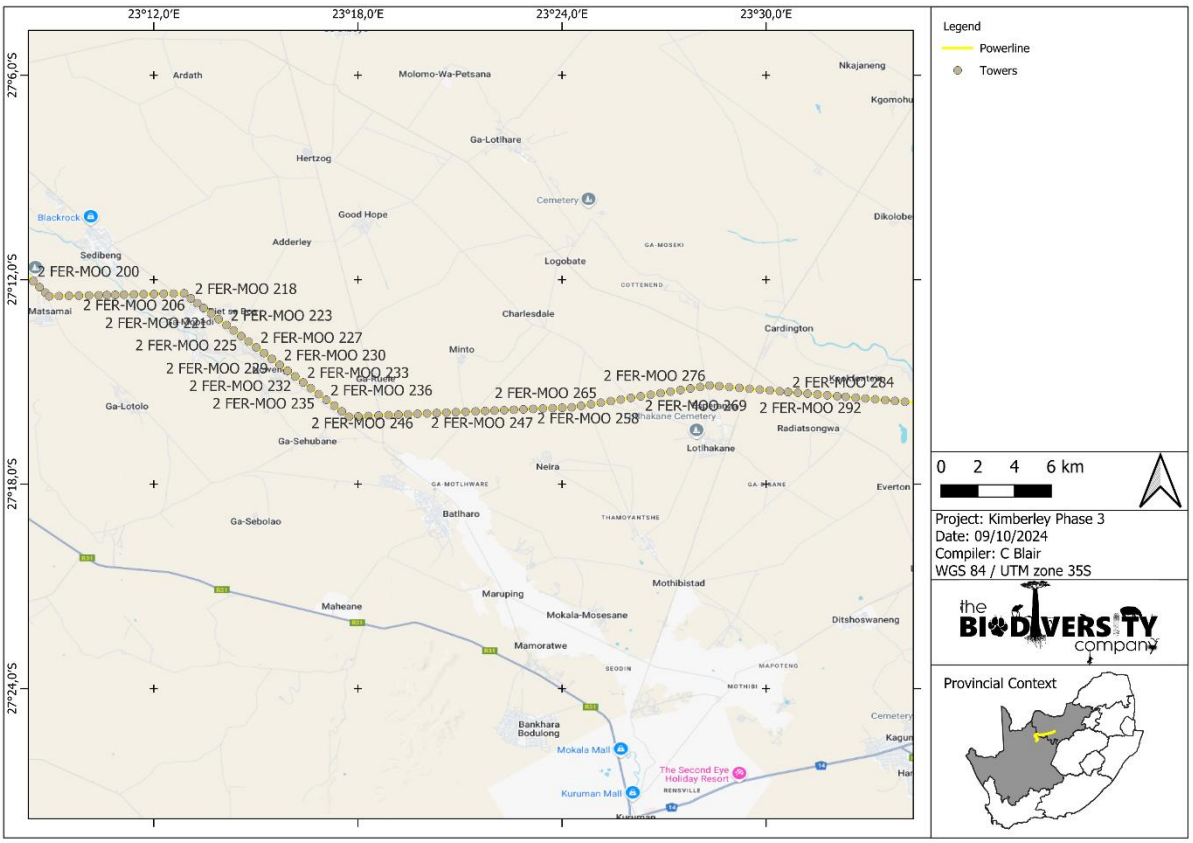


Figure 1-4 Towers 200-299

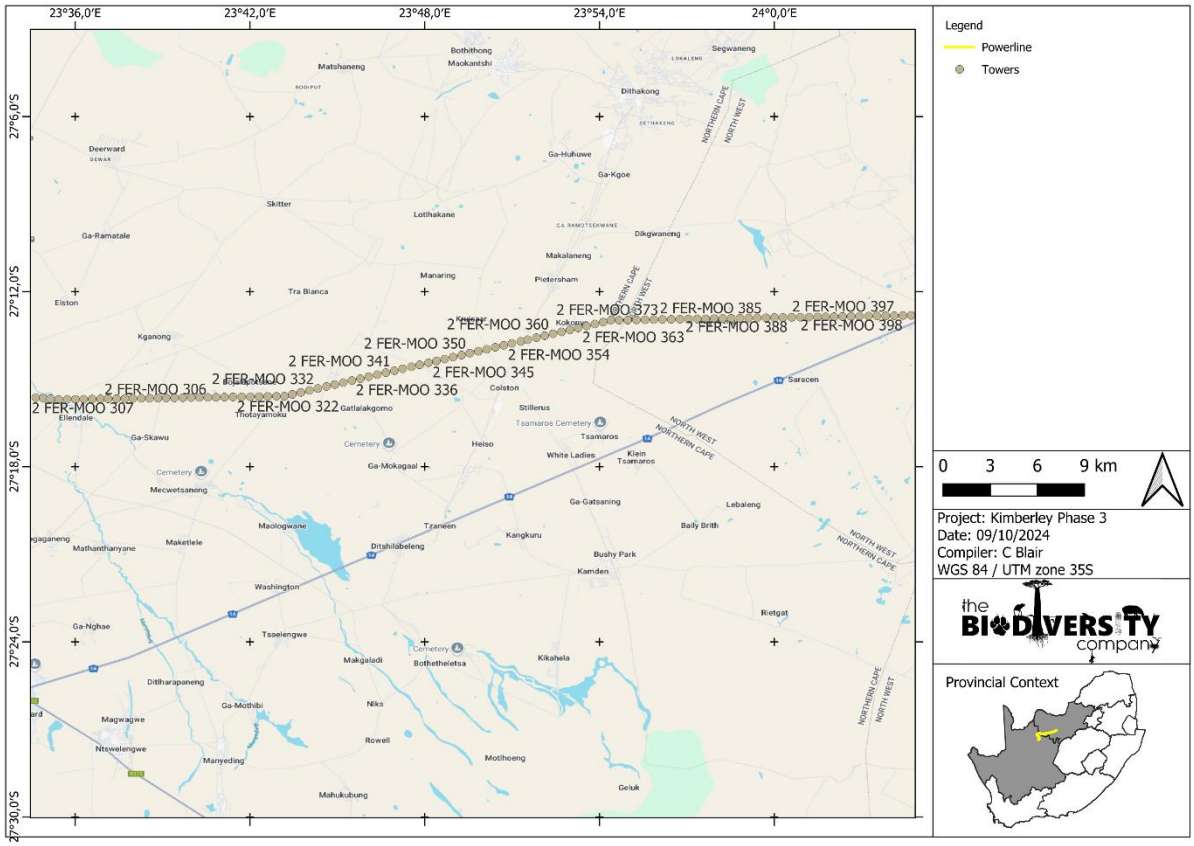


Figure 1-5 Towers 300-399

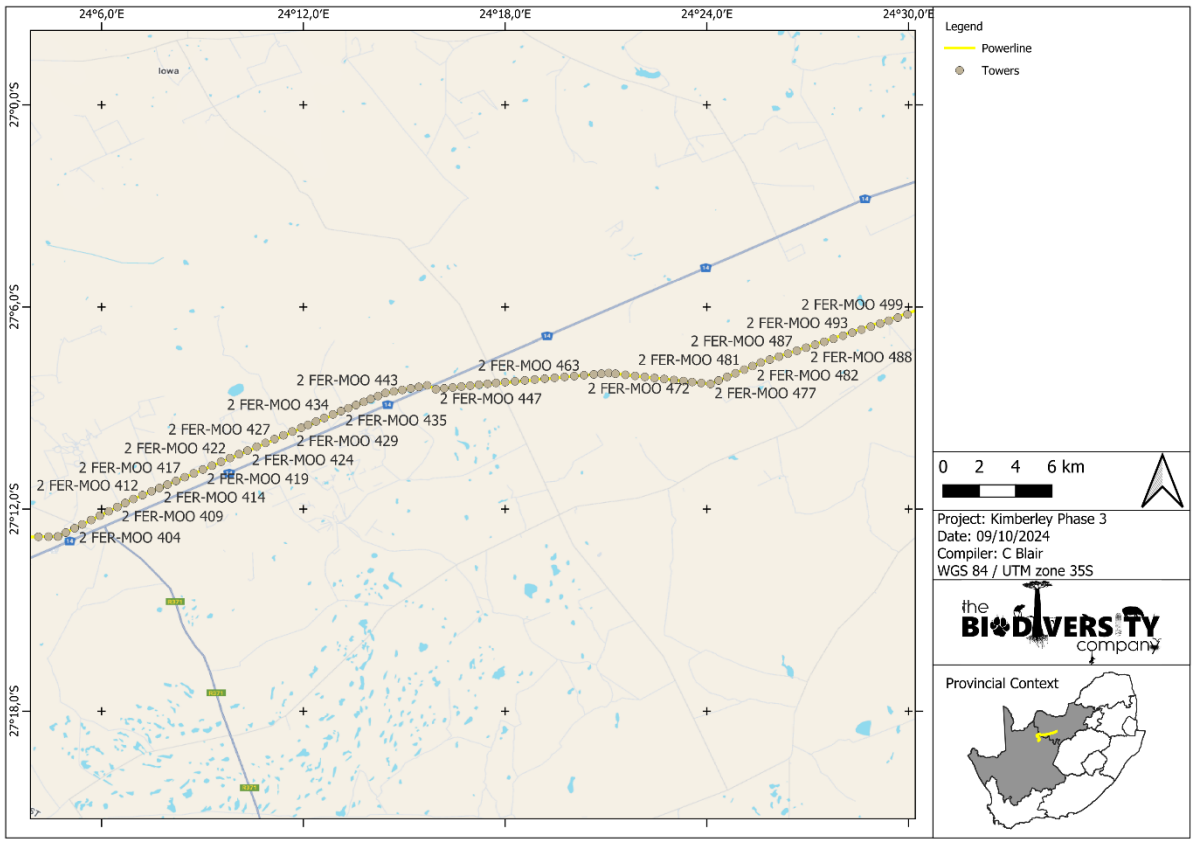


Figure 1-6 Towers 400-499

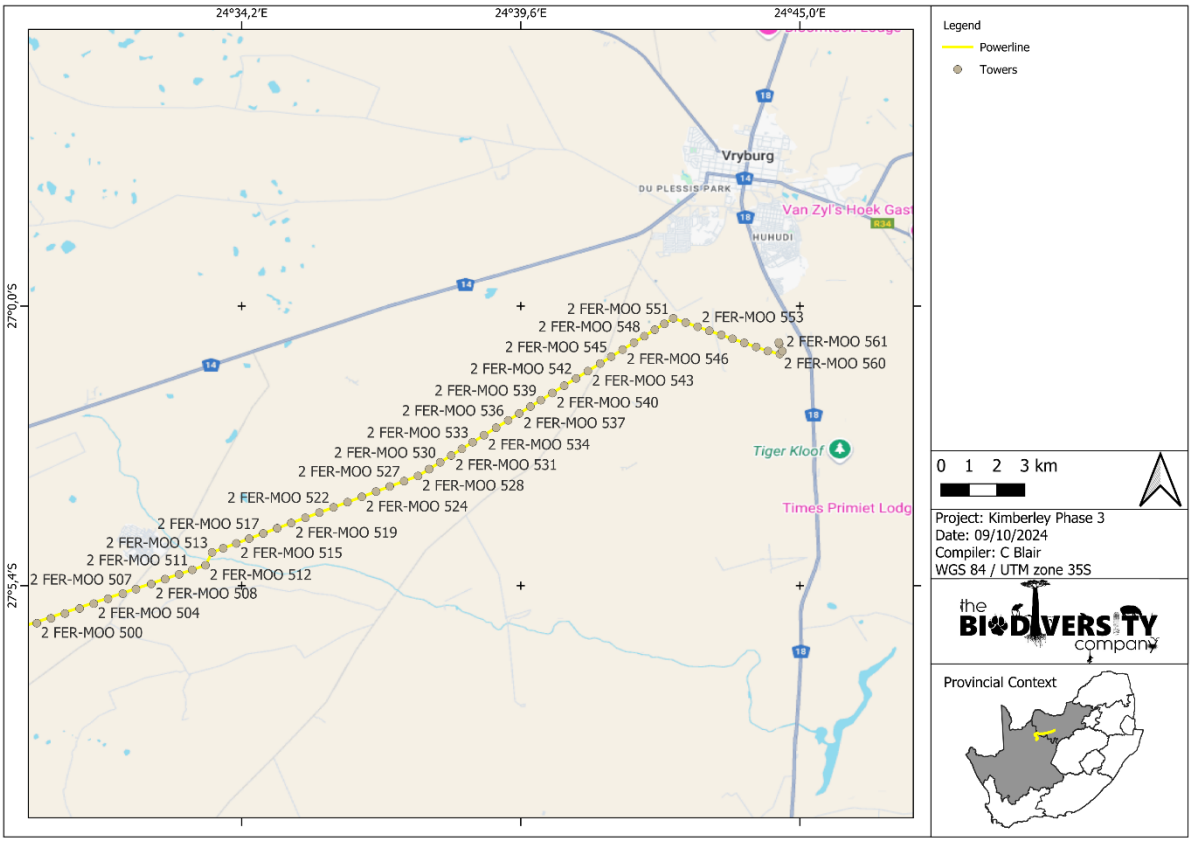


Figure 1-7 Towers 500-562

1.1 Terms of Reference

The Terms of Reference (ToR) for this assessment include the following:

- Desktop assessment to identify the relevant ecologically important geographical features within the Project Area of Influence (PAOI) and surrounding landscape;
- Desktop assessment to compile an expected species list and possible avifauna Species of Conservation Concern (SCC) that potentially occur within the PAOI;
- Fieldwork to determine the density and composition of species in the PAOI;
- Description of the baseline avifauna species and Functional Feeding Guild (FFG) composition assemblage within the PAOI;
- Delineate site sensitivity or sensitivities, i.e., the Site Ecological Importance (SEI) within the context of the avifauna species assemblage of the PAOI;
- Identify the manner that the proposed development impacts the avifauna community and evaluate the level of risk of these potential impacts;
- Review of existing information related to the development;
- Conduct an avifauna walkdown for the planned footprint areas;
- Compilation of a report detailing the results of the walkdown:
    1. Detail any ecological constraints identified for the planned infrastructure;
    2. Present information on the presence of any Species of Conservation Concern (SCC); and
    3. Provide information and recommendations for the micro-siting of relevant infrastructure.
- Provide information to adequately inform any contractors, environmental officers and personnel pertaining to the ecological significance of the area; and
- Provide recommendations for suitable mitigation measures, in particular the identification of:
    1. Towers that may require relocation, based on the identification of a significant avifaunal sensitivity and the assessment of the newly proposed site for relocation (if required);
    2. Spans of power line that require the installation of bird flight diverters to mitigate for the collision impact;
    3. Towers that require the installation of bird guards, particularly those areas of high avifaunal utilization (i.e. roosting and nesting activities on the towers) where faecal pollution and streamers could compromise the quality of the supply; and
    4. Nest and roost locations (and their associated sensitivity buffers) where construction activities associated with a new power line could have an impact

on breeding populations of Red List species, in particular large raptors and significantly sized Red List species' roosts.

1.2 Assumptions and Limitations

The following assumptions and limitations should be noted for the assessment:

- The assessment area was based on the geospatial file provided by the client and any alterations to the development area subsequent to the site visit may affect the results;
- The field survey was undertaken from the 9th to 20th of September 2024, and 14th to16th of October 2024, to determine the presence of Species of Conservation Concern (SCC). Effort was made to cover all the different habitat types;
- The BA field work and walk down were completed in the spring;
- Due to access issues associated with impenetrable vegetation or contact information not available, walking to the location of every proposed tower was not possible. Where possible, a drive assessment was conducted instead of alongside the corridor for these sites. As a result, our confidence in our findings was high except in areas where roadside surveys were done where our confidence was only medium or low;
- The tower locations for the deviation around the mine were not provided at the time of assessment and thus the corridor was assessed, rather than the locations of individual towers;
- The GPS used in the assessment has an accuracy of 5 m and consequently, any spatial features may be offset by 5 m.

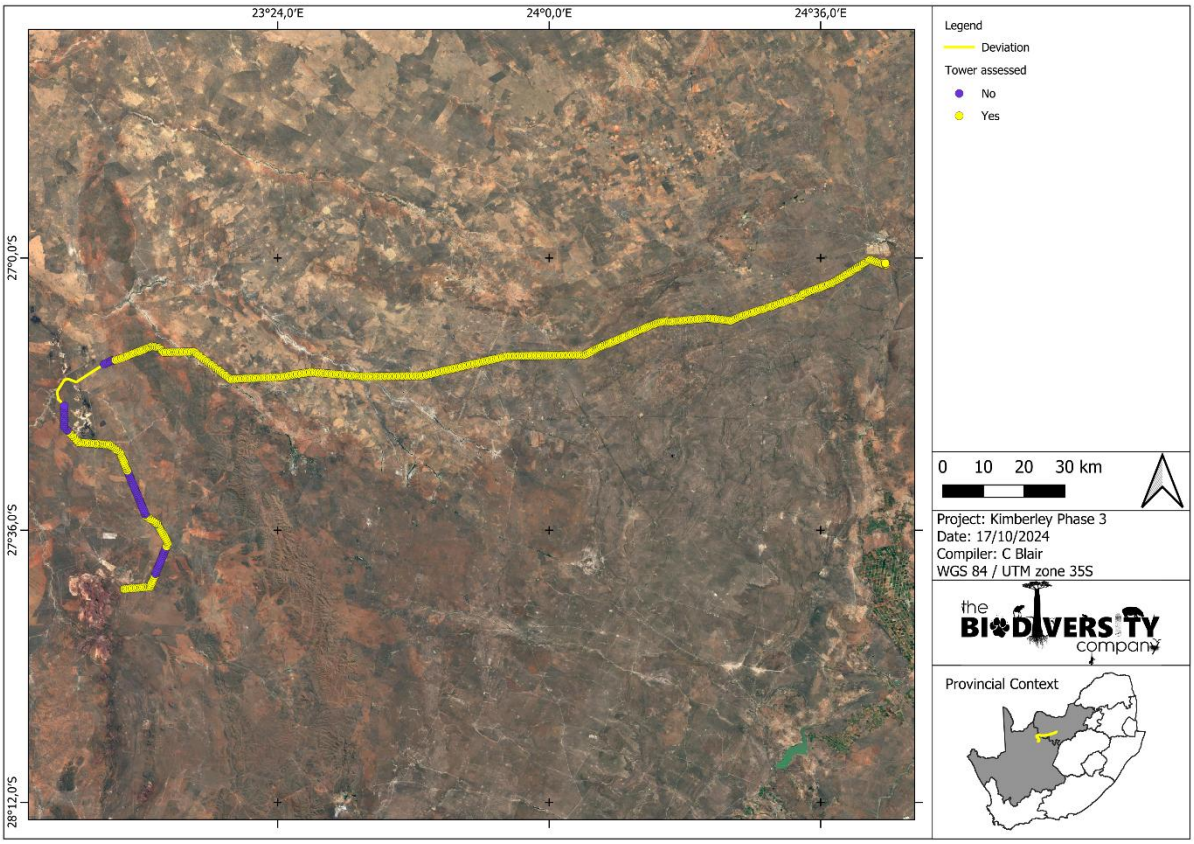


Figure 1-8 The towers assessed, and those that we could not access and therefore were not assessed.

1.3 Key Legislative Requirements

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

Table 1-1 A list of key legislative requirements

Region	Legislation / Guideline	Comment
National	NEMA	Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017), Appendix 6 requirements
	The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA), Threatened or Protected Species Regulations	The protection of species and ecosystems that warrant protection
	Assessment Protocol (March 2020)	The minimum criteria for reporting.
	Assessment Protocol (October 2020)	Protocol for the specialist assessment and minimum report content requirements.
	NEMWA;	The regulation of waste management to protect the environment.
	NWA	The regulation of water uses.
	GN 1003 of GG 43726 of 18 Sept 2020	The regulation and management of alien invasive species.
	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA)	To provide for control over the utilisation of the natural agricultural resources, including the vegetation and the combating of weeds and invader plants.
Provincial	North-West Biodiversity Sector Plan of 2015 (READ, 2015).	
	The North West Biodiversity Management Amendment Bill, 2017	

2 Fieldwork

2.1 Avifauna Field Assessment

The field survey was undertaken from the 9th to 20th of September 2024, and 14th to 16th of October 2024. Sampling consisted of standardised point counts as well as random diurnal incidental surveys. Standardised point counts (Buckland *et al,* 1993) were conducted to gather data on the species composition and relative abundance of species within the broad habitat types identified. The standardised point count technique was utilised as it was demonstrated to outperform line routes (Cumming & Henry, 2019). Each point count was run over a 10 minute period. The horizontal detection limit was set at 100 m. At each point, the observer would document the date, start time, and end time, habitat, numbers of each species, detection method (seen or heard), behaviour (perched or flying) and general notes on habitat and nesting suitability for conservation important species. Incidental searches were conducted to supplement the species inventory with cryptic and illusive species that may not have been detected during the rigid point count protocol. This involved the opportunistic sampling of species between point count periods, random meandering and road cruising. Effort was made to cover all the different habitat types within the limits of time and access. Figure 2-1 shows the locations of the point counts conducted as well as the GPS tracking data of areas assessed during the field survey.

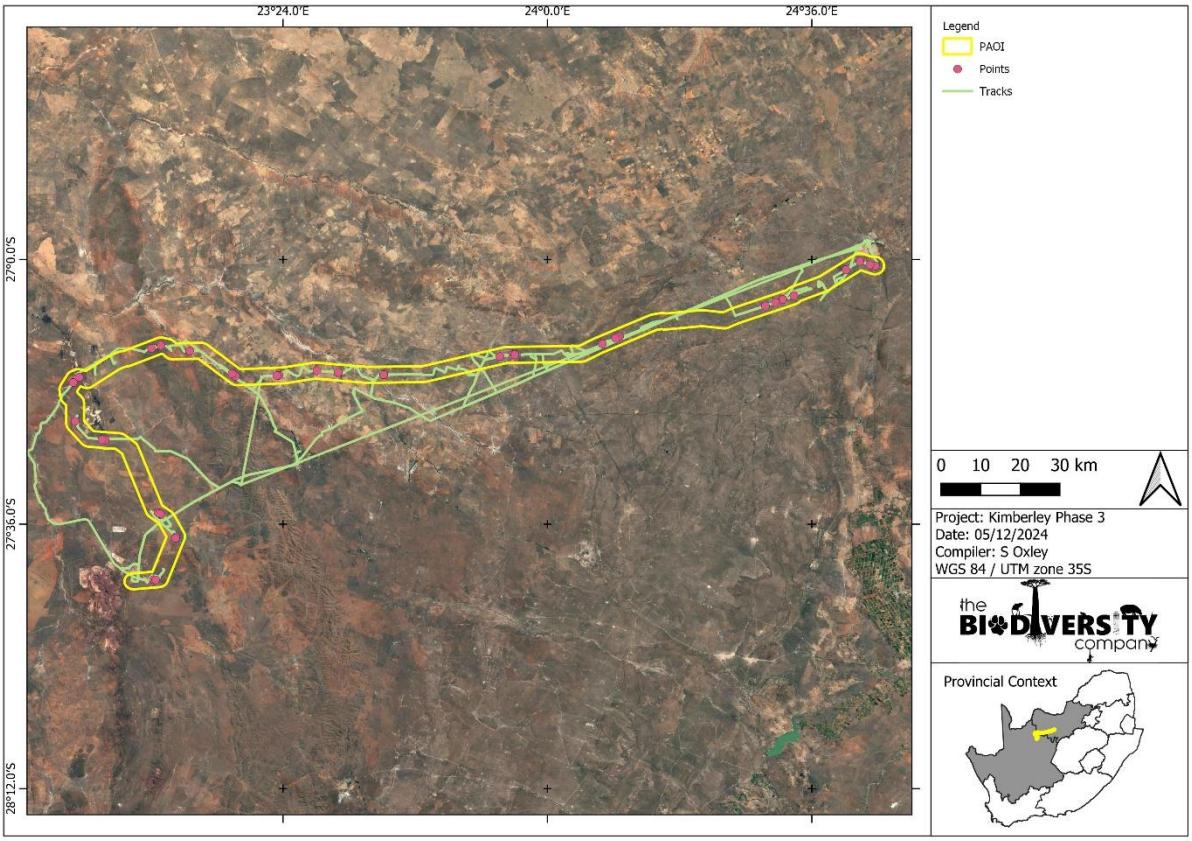


Figure 2-1 Map illustrating the point count locations and GPS tracking

3 Results & Discussion

3.1 Ecologically Important Landscape Features

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

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

Desktop Information Considered	Relevant/Irrelevant	Section
Ecosystem Threat Status	Relevant – Overlaps with a "LC" Ecosystem (RLE, 2021).	3.1.1
Ecosystem Protection Level	Relevant – Overlaps with a 'Not Protected', Poorly Protected and Moderately Protected Ecosystem.	3.1.2
Provincial Conservation Plan	Relevant – Overlaps with a CBA1, CBA2, ESA1, ESA2 and ONA classified areas	3.1.3
National Protected Areas Expansion Strategy	Irrelevant – The PAOI borders on priority focus, but does not overlap with any NPAES areas	3.1.4
SAPAD & SACAD	Irrelevant – The PAOI does not overlap with any protected areas, it is also not within 5 km of any SAPAD areas	3.1.5
Key Biodiversity Areas	Irrelevant – The PAOI is 26 km away from the Tswalu-Korannaberg KBA.	3.1.6
South African Inventory of Inland Aquatic Ecosystems (SAIIAE)	Relevant – The PAOI overlaps with CR, EN and LC rivers and CR, LC, and unlisted wetlands	3.1.7
National Freshwater Priority Area	Relevant – The PAOI overlaps with non-priority as well as priority wetlands and non-priority as well as Upstream management area rivers.	3.1.8
Strategic Transmission Corridors (EGI)	Relevant – The PAOI is within the Northern Strategic Transmission Corridor	3.1.9
Coordinated Water Bird Count	Irrelevant – The PAOI is over 32.7 km from the nearest CWAC site, being the Pudu Farm Dam CWAC.	3.1.10
Coordinated Road Count	Irrelevant – Not near any CAR routes	-

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

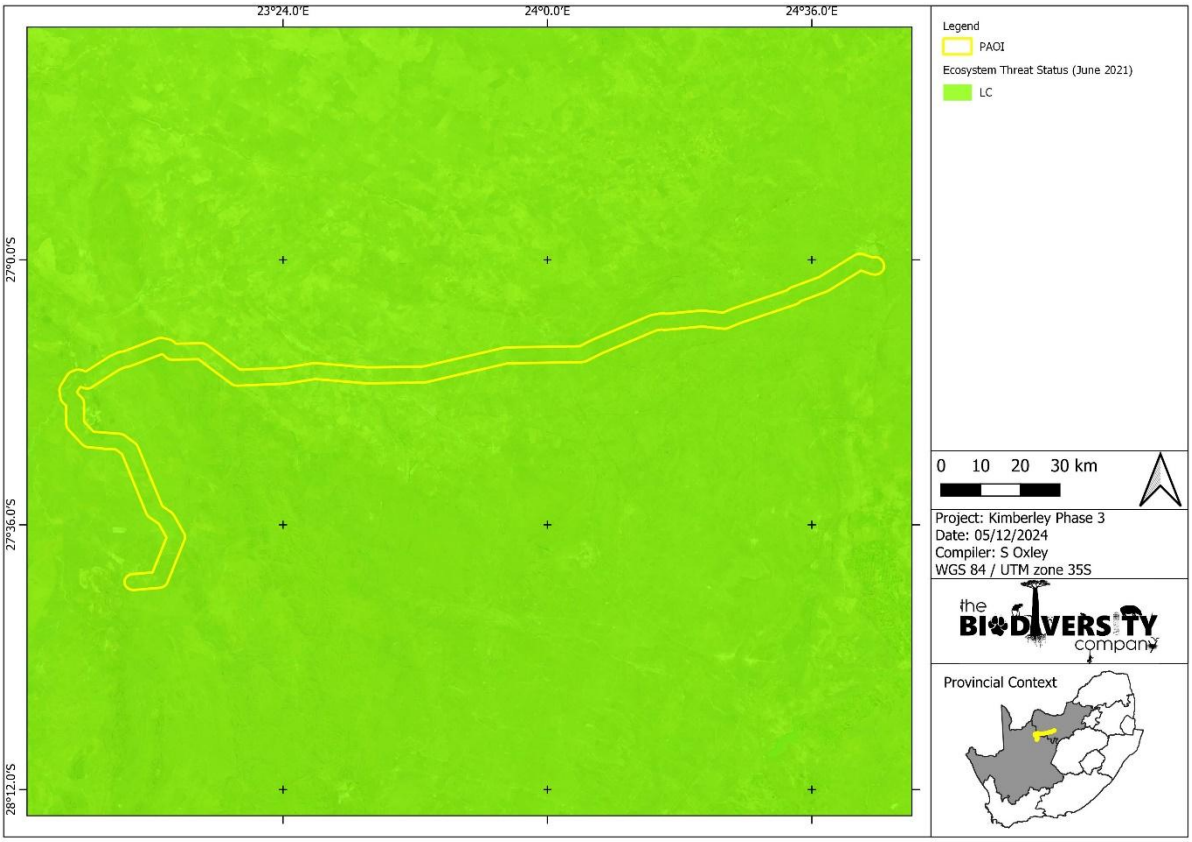


Figure 3-1 Map illustrating the ecosystem threat status associated with the proposed development.

3.1.2 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), 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. The proposed project overlaps with a NP, PP and MP ecosystem (Figure 3-2).

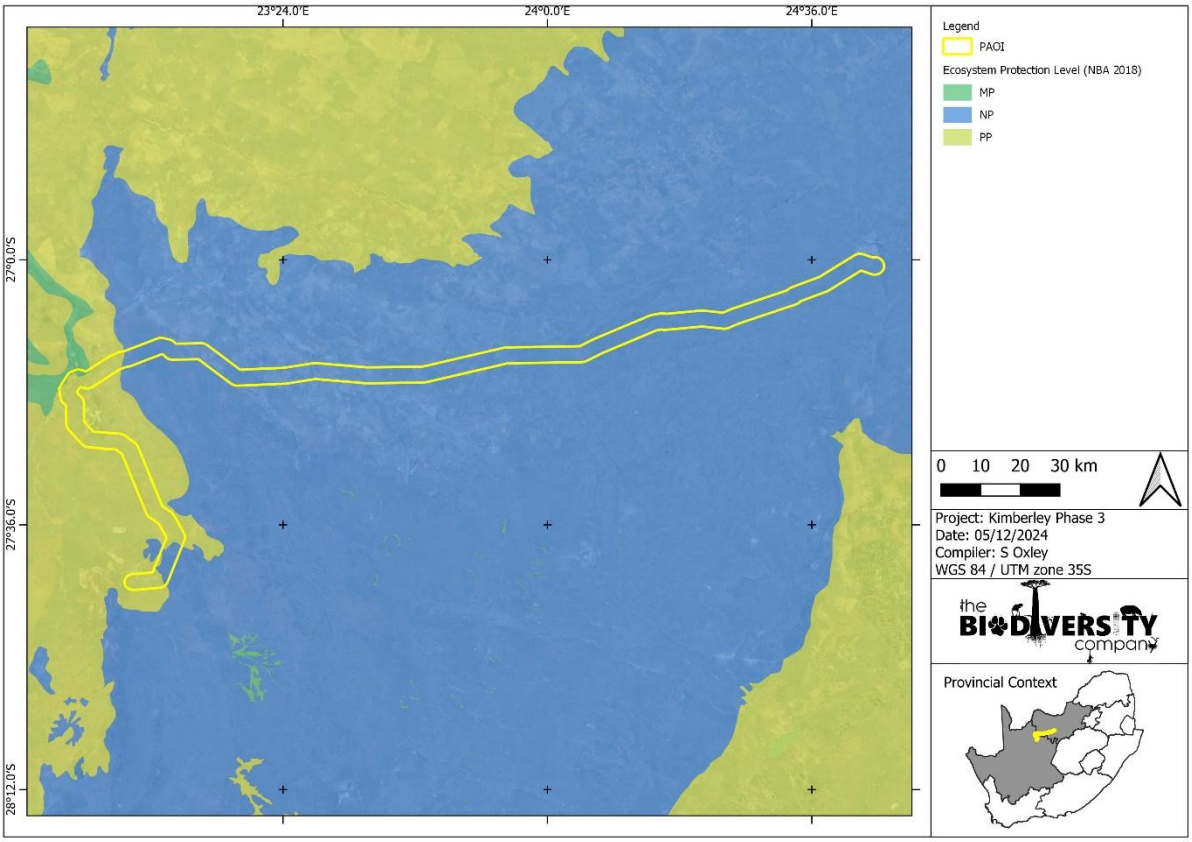


Figure 3-2 Map illustrating the ecosystem protection level associated with the PAOI

3.1.3 Critical Biodiversity Areas and Ecological Support Areas

The Northern Cape and North West Province Biodiversity Plan classifies areas within the province on the basis of their contributions to reaching the associated conservation targets within the province. These areas are primarily classified as either Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs). These biodiversity priority areas, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species, as well as the long-term ecological functioning of the landscape as a whole. CBAs are areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and healthy functioning of important species and ecosystems and the delivery of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then provincial biodiversity targets cannot be met (SANBI, 2017). ESAs are areas that are not essential for meeting biodiversity representation targets but play an important role in supporting the ecological functioning of ecosystems as well as adjacent Critical Biodiversity Areas, and/or in delivering ecosystem services that support socio-economic development (SANBI, 2017). Provincial CBAs and ESAs are often further classified into sub-categories, such as CBA1 and CBA2 or ESA1 and ESA2. These present fine scale habitat and biodiversity area baseline requirements and associated land management objectives or outcomes. The highest categorisation level is often referred to as an 'Irreplaceable Critical Biodiversity Area' which usually represents pristine natural habitat that is very important for conservation.

According to the Conservation Plan the PAOI overlaps with areas classified as CBA1, ESA1, ESA2 and ONA (Figure 3-3).

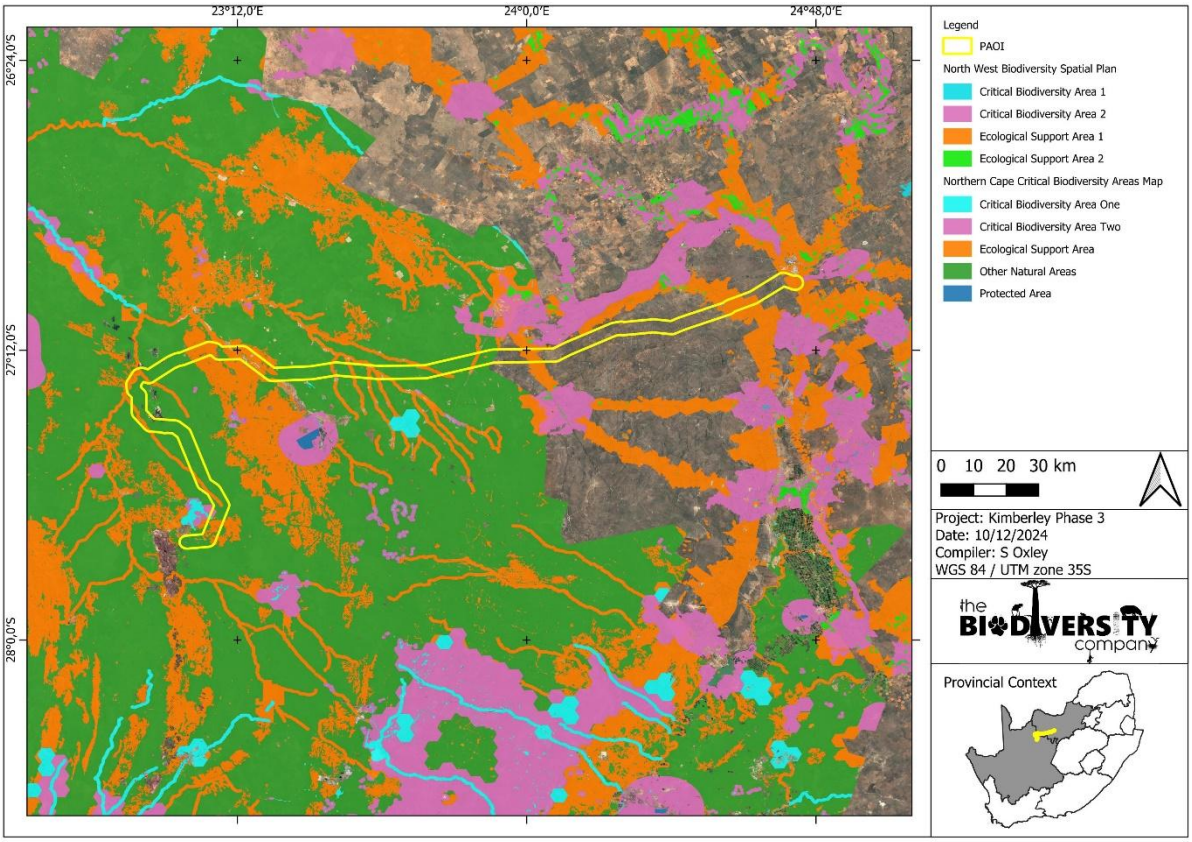


Figure 3-3 Map illustrating the biodiversity spatial plan in relation to the PAOI

3.1.4 National Protected Area Expansion Strategy

National Protected Area Expansion Strategy 2018 (NPAES) areas 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 a 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).

The PAOI borders on priority focus, but does not overlap with any NPAES areas (Figure 3-4).

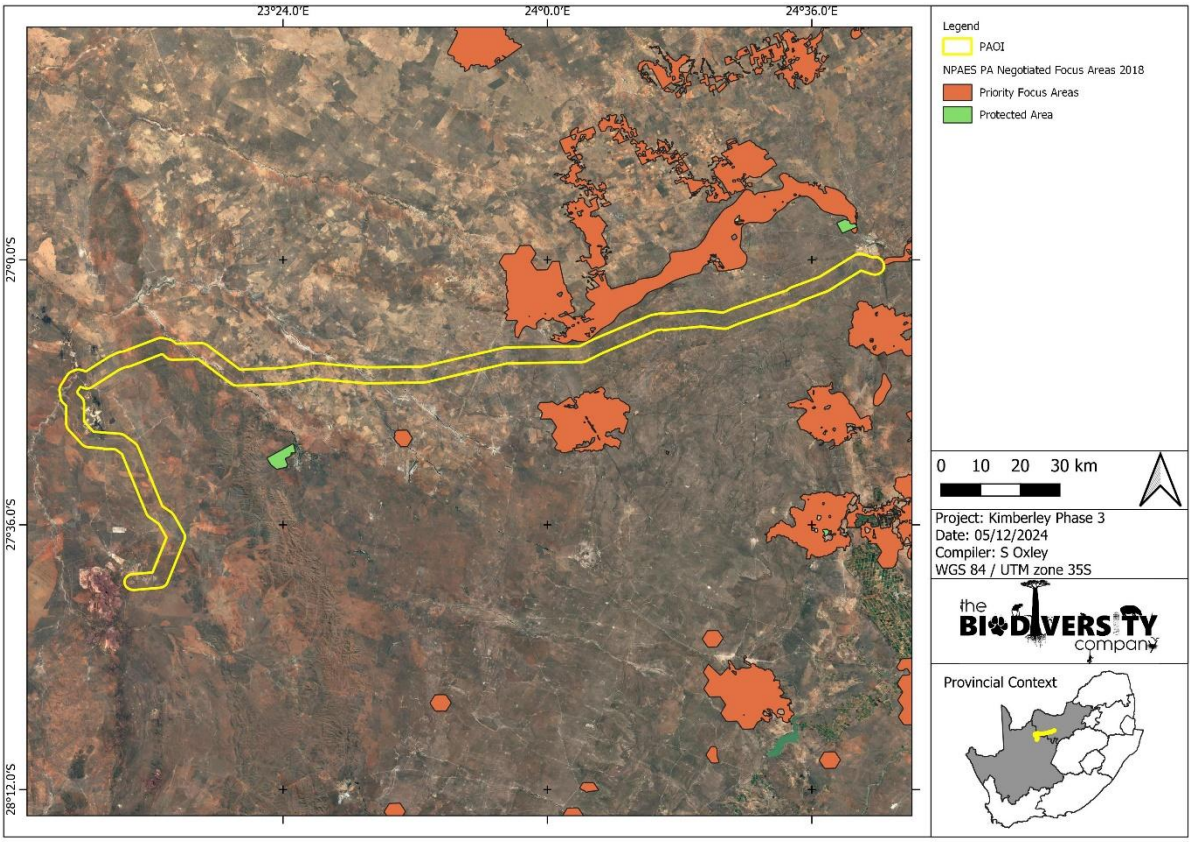


Figure 3-4 The PAOI in relation to the National Protected Area Expansion Strategy

3.1.5 Protected Areas

According to the protected and conservation area spatial datasets from SAPAD and SACAD (DFFE, 2024), the PAOI does not overlap with any protected areas, it is also not within 5 km of any SAPAD areas (Figure 3-5).

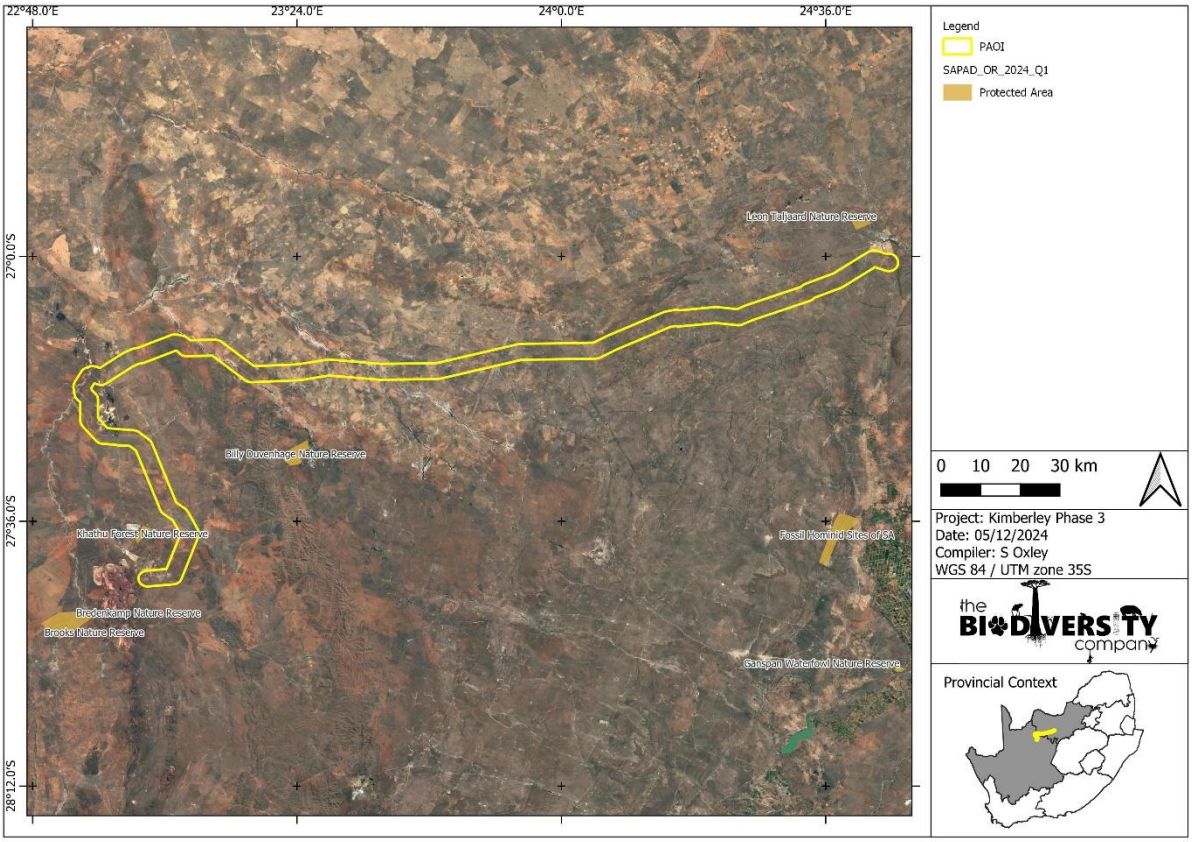


Figure 3-5 Map illustrating the location of protected areas proximal to the PAOI

3.1.6 Key Biodiversity Area

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).

Figure 3-6 shows that the PAOI is 26 km away from the Tswalu-Korannaberg KBA.

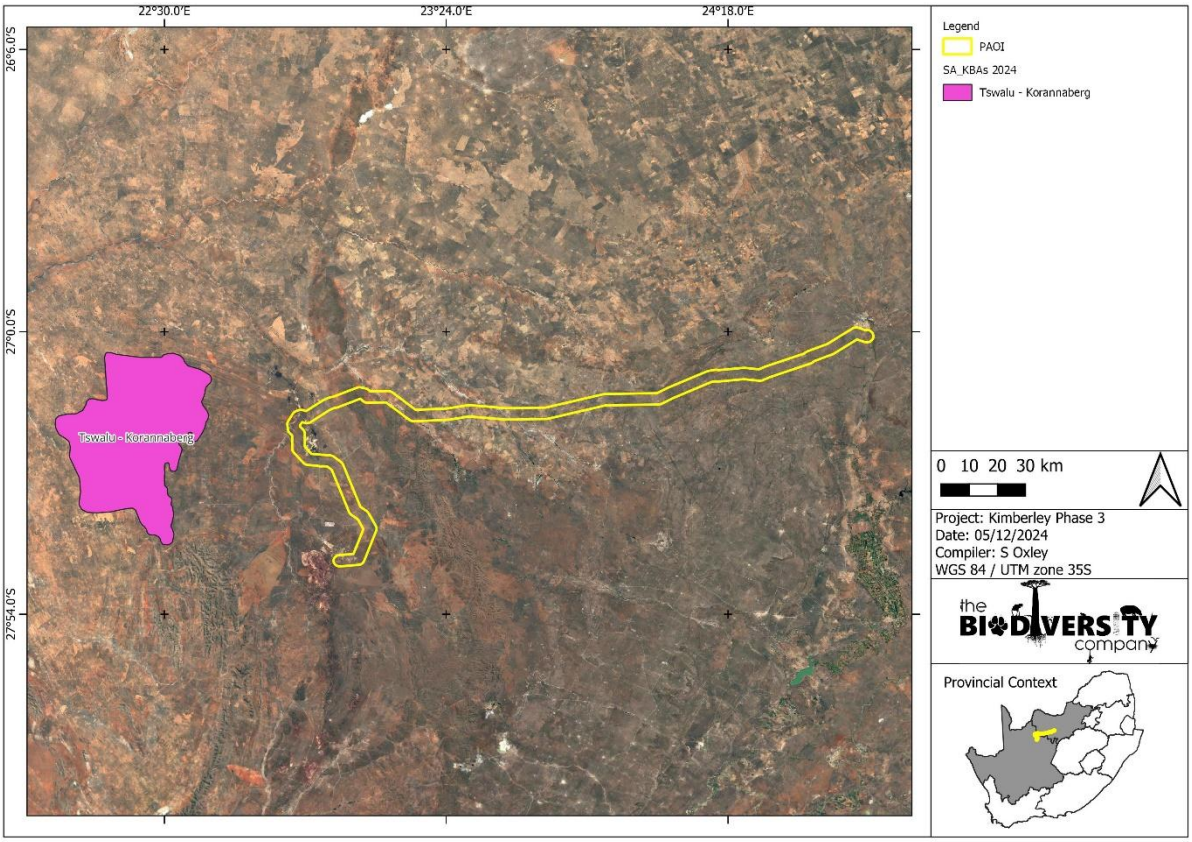


Figure 3-6 The PAOI in relation to the nearest IBAs

3.1.7 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 PAOI overlaps with CR, EN and LC rivers and CR, LC, and unlisted wetlands (Figure 3-7).

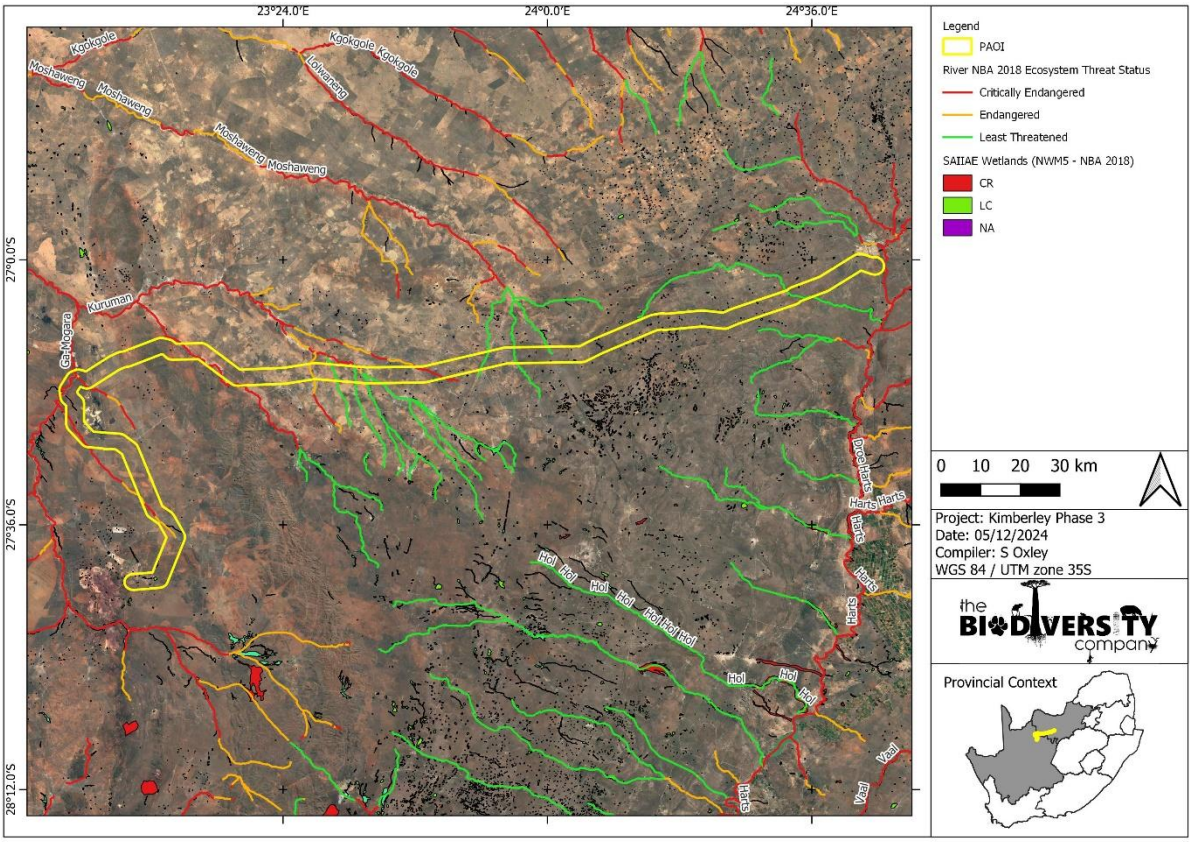


Figure 3-7 Map illustrating ecosystem threat status of rivers and wetland ecosystems in relation to the PAOI

3.1.8 National Freshwater Ecosystem Priority Area Status

In an attempt to better conserve aquatic ecosystems, South Africa has categorised its river systems according to set ecological criteria (i.e., ecosystem representation, water yield, connectivity, unique features, and threatened taxa) to identify Freshwater Ecosystem Priority Areas (FEPAs) (Driver *et al*., 2011). The FEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act's (NEM:BA) biodiversity goals (Nel *et al*., 2011).

Figure 3-8 shows that the PAOI overlaps with non-priority as well as priority wetlands and non-priority as well as Upstream management area rivers.

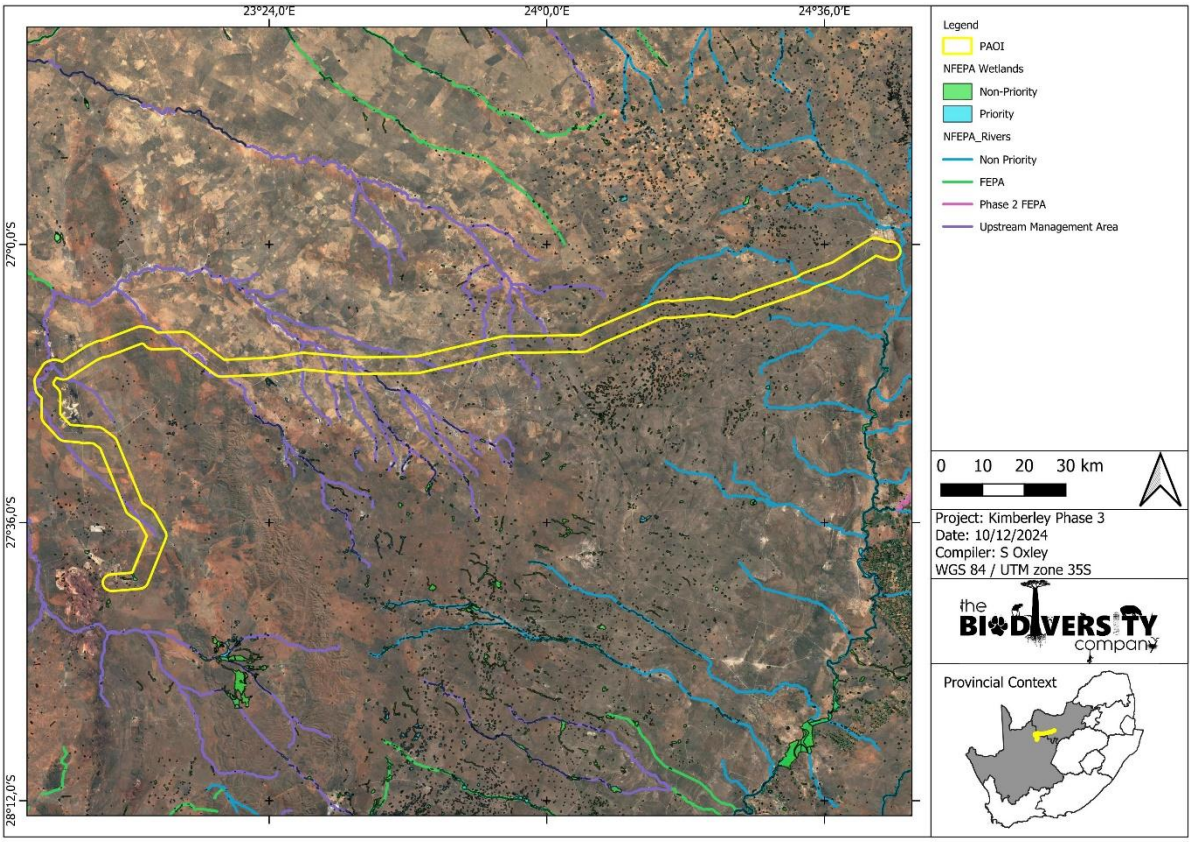


Figure 3-8 The PAOI in relation to the National Freshwater Ecosystem Priority Areas

3.1.9 Strategic Transmission Corridors

On 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 the 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.

Figure 3-9 shows the PAOI is within the Northern Strategic Transmission Corridor (EGI).

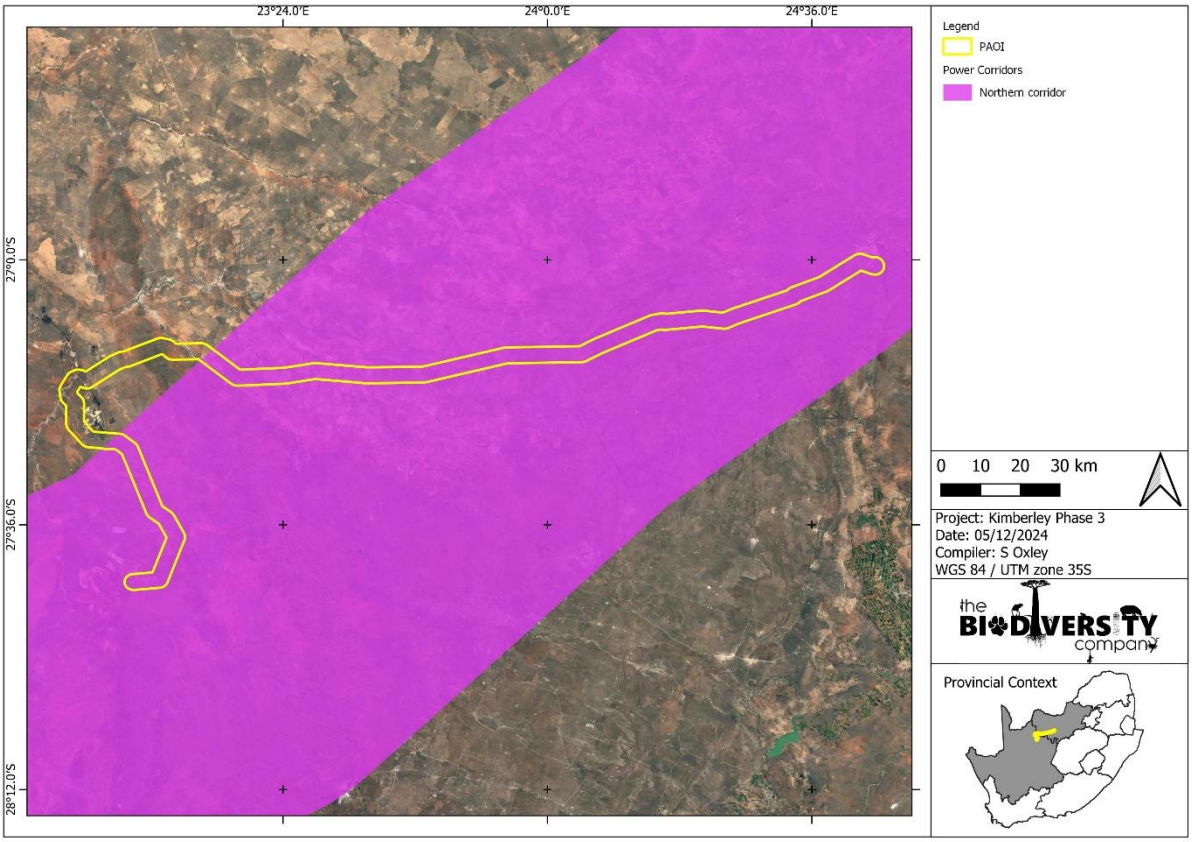


Figure 3-9 The PAOI in relation to the strategic transmission corridors

3.1.10 Coordinated Waterbird Counts (CWAC)

The Animal demographic unit launched the Coordinated Waterbird Counts (CWAC) project in 1992 as part of South Africa's commitment to International waterbird conservation. Regular mid-summer and mid-winter censuses are done to determine the various features of water birds including population size, how waterbirds utilise water sources and determining the health of wetlands. For a full description of CWAC please refer to http://cwac.birdmap.africa/about.php. Figure 3-10 shows the PAOI is over 32.7 km from the nearest CWAC site, being the Pudu Farm Dam CWAC.

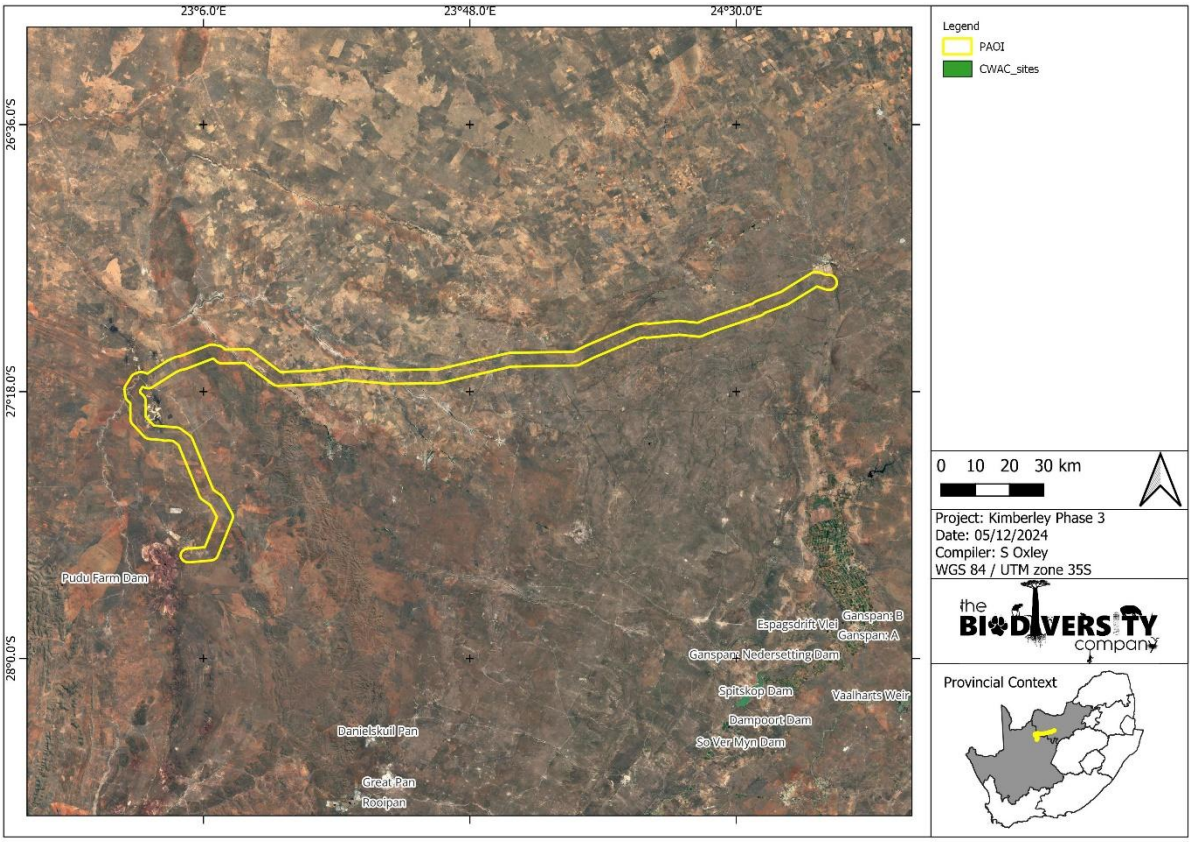


Figure 3-10 The PAOI in relation to nearby CWAC sites

3.2 Avifauna Expected Species

SABAP2 data indicates that 272 avifauna species are expected for the PAOI and surrounding areas. Of these, 17 are considered Species of Conservation Concern SCC. The likelihood of occurrence of the SCC within the POAI is indicated in Table 3-2. Three (3) SCC were recorded within the PAOI during the site visit, being the Kori Bustard (*Ardeotis kori*), Lappet-faced Vulture (*Torgos tracheliotos*), and the White-backed Vulture (*Gyps africanus*).

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

Common Name	Scientific Name	Regional*	Global+	Likelihood of occurrence
Abdim's Stork	*Ciconia abdimii*	NT	LC	Moderate
Black Stork	*Ciconia nigra*	VU	LC	High
Blue Crane	*Anthropoides paradiseus*	NT	VU	Low
Burchell's Courser	*Cursorius rufus*	VU	LC	Moderate
Cape Vulture	*Gyps coprotheres*	EN	VU	High
European Roller	*Coracias garrulus*	NT	LC	Moderate
Kori Bustard	*Ardeotis kori*	NT	NT	Confirmed
Lanner Falcon	*Falco biarmicus*	VU	LC	High
Lappet-faced Vulture	*Torgos tracheliotos*	EN	EN	Confirmed

Ludwig's Bustard	*Neotis ludwigii*	EN	EN	Moderate
Maccoa Duck	*Oxyura maccoa*	NT	EN	Low
Marabou Stork	*Leptoptilos crumenifer*	NT	LC	Moderate
Martial Eagle	*Polemaetus bellicosus*	EN	EN	High
Secretarybird	*Sagittarius serpentarius*	VU	EN	High
Tawny Eagle	*Aquila rapax*	EN	VU	Moderate
Verreaux's Eagle	*Aquila verreauxii*	NA	LC	Moderate
White-backed Vulture	*Gyps africanus*	CR	CR	Confirmed

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

Ciconia abdimii (Abdim's Stork) is listed as NT on a local scale and the species is known to be found in open grassland, savanna woodland and cultivated lands. Non-breeding visitor to southern Africa, departing from its northern breeding grounds in the period from May-August, eventually arriving in southern Africa at the onset of the rainy season in the period from October-December. It is nomadic in southern Africa, moving in response to food availability. It gathers in large flocks then departs in February, March and early April. It mainly eats large insects, doing most of its foraging on pastures, irrigated land and recently ploughed fields, usually in groups which split up to cover more ground. The habitat might create suitable feeding habitat.

Ciconia nigra (Black Stork) is native to South Africa, and inhabits dams, pans, flood plains, estuaries and flooded grassland. This monogamous species is mainly piscivorous, but will also eat small mammals, nestling birds, small reptiles, large insects and freshwater snails (Roberts 2024). Their nests are built on cliffs, ledge overhangs, in caves, generally 10-100m from the base of a cliff.

Cursorius rufus (Burchell's Courser) is categorised as vulnerable on a regional scale. It inhabits open short-sward grasslands, dry savannas, fallow fields, overgrazed or burnt grasslands and pastures, bare or sparsely vegetated sandy or gravelly deserts, stony areas dotted with small shrubs and saltpans (IUCN, 2017). The species is threatened in the south of its range by habitat degradation as a result of poor grazing practices and agricultural intensification.

Gyps coprotheres (Cape Vulture) is listed as EN on both a regional and global scale. Cape Vultures are long-lived carrion-feeders specialising on large carcasses, they fly long distances over open country, although they are usually found near steep terrain, where they breed and roost on cliffs (IUCN, 2017). They are resident and partially nomadic, adults may travel up to about 750 km from their colony in the non-breeding season. Barnes (2000) estimated that the population declined by 10% between 1994-1995, which when expanded over 3 generation lengths (41.7 years [Bird *et al.* 2020]), equates to a decline rate of 58.4%. McKean and Botha (2007) also suggested that between 1992-2007, the populations in eastern South Africa declined by 60-70%, equivalent to a rate of 92-96% over 3 generation lengths, if the trend continued for that period. However, there is no evidence to suggest that the colonies have been increasing post-2007.

Coracias garrulous (European Roller) is a summer migrant with the population from South-central Europe and Asia occurring throughout sub-Saharan Africa. The European Roller has a preference for bushy plains and dry savannah areas. It is globally listed as LC (BirdLife

International, 2019a) but NT on a regional scale (Taylor *et al,* 2015). Threats include persecution on migration in some Mediterranean countries and numerous individuals are killed for food in Oman and India. The loss of suitable breeding habitat due to changing agricultural practices, conversion to monoculture, loss of nest sites, and use of pesticides (reducing food availability) are the main threats to the species in Europe (BirdLife International, 2019a). It is sensitive to the loss of hedgerows and riparian forests in Europe which provide essential habitats for perching and nesting.

Ardeotis kori (Kori Bustard) is listed as NT on a regional and global scale (BirdLife International, 2016a). This species has a large but disjunct range in sub-Saharan Africa, occurring from Ethiopia and Somalia south to Tanzania, and from southern Angola and Zimbabwe south to South Africa. The species occupies flat, arid, mostly open country such as grassland, karoo, bushveld, thornveld, scrubland and savanna but also includes modified habitats such as wheat fields and firebreaks. The diet includes a wide range of plants and animals including insects, reptiles, small rodents, birds, carrion, seeds, berries and roots. It is largely sedentary but does undertake local movements. The global population size has not been quantified, but the population in South Africa has been estimated at 2 000-5 000 birds individuals (BirdLife International, 2016c). A major threat is collision with overhead powerlines but the causes of population declines and range losses in many parts of the distribution are unknown. These have been hypothesised to include persecution, rangeland degradation and bush encroachment.

Falco biarmicus (Lanner Falcon) is native to South Africa and inhabits a wide variety of habitats, from open grassland to open cleared woodlands and agricultural areas. Global population estimates is more than 30000 breeding pairs, in South Africa it is estimated to be 1400 pairs. They may occur in groups up to 20 individuals, but have also been observed solitary. They are partial and facultative migrants, that breeds from May to early September. Nests are mostly found on cliff ledges, and they may alternate between more than one nest. Their diet is mainly composed of small birds such as pigeons and francolins. Anecdotal evidence suggests these species are susceptible to agrochemicals, another threat to their population is the clearing of grassland habitats (Roberts *et al.,* 2023).

Torgos tracheliotus (Lappet-faced Vulture) is listed as EN, both on a regional and global level. Only a small, very rapidly declining population remains, owing primarily to poisoning and persecution, as well as ecosystem alterations (IUCN, 2017). The species inhabits dry savanna, arid plains, deserts and open mountain. It ranges widely when foraging and is mainly a scavenger, feeding predominantly on any large carcasses or their remains.

Neotis ludwigii (Ludwig's Bustard) is listed as EN on a global scale (BirdLife International, 2018a). The species has a large range centred on the dry biomes of the Karoo and Namib in southern Africa, being found in the extreme south-west of Angola, western Namibia and South Africa. This species inhabits open lowland and upland plains with grass and light thornbush, sandy open shrub-veld and semi-desert in the arid and semi-arid Namib and Karoo biomes. Ludwig's Bustard is nomadic and a partial migrant, moving to the western winter-rainfall part of its range in winter. The diet includes invertebrates, small vertebrates and vegetable matter. The global population is estimated to be 100 000 – 499 999 individuals. The primary threat to the species is collisions with overhead power lines, with potentially thousands of individuals involved in such collisions each. Collision rates on high voltage transmission lines in the Karoo

may exceed one Ludwig's Bustard per kilometre per year. Bustards have limited frontal vision so may not see power lines, even if they are marked.

Leptoptilos crumenifer (Marabou Stork) is a large bird of the Ciconiidae family. This species is found in both wet and arid habitat, often near human inhabitation, due to the waste dumps where they scavage. It's a colonial breeder and builds their nests in larger trees. Breeding takes place in the winter season mainly as a result of lower water levels which increases the chances of catching frogs and fish for the young (Campbell, 1972). The diet of the adult birds mainly consists of carrion but will also eat termites, small birds and mammals.

Polemaetus bellicosus (Martial Eagle) is listed as EN on a regional scale and EN on a global scale. This species has an extensive range across much of sub-Saharan Africa, but populations are declining due to deliberate and incidental poisoning, habitat loss, reduction in available prey, pollution and collisions with power lines (IUCN, 2017). It inhabits open woodland, wooded savanna, bushy grassland, thorn-bush and, in southern Africa, more open country and even sub-desert (IUCN, 2017).

Sagittarius serpentarius (Secretarybird) is listed as EN on a global scale (BirdLife International, 2020). The species has a wide distribution across sub-Saharan Africa but surveyed densities suggest that the total population size does not exceed a five-figure number. Ad-hoc records, localised surveys and anecdotal observations indicate apparent declines in many parts of the species' range, especially in South Africa where reporting rates decreased by at least 60% of quarter degree grid cells used in Southern African Bird Atlas Projects. Threats include excessive burning of grasslands that may suppress populations of prey species, whilst the intensive grazing of livestock is also probably degrading otherwise suitable habitat. Disturbance by humans is likely to negatively affect breeding. The species is captured and traded; however, it is unknown how many deaths occur in captivity and transit. Direct hunting and nest-raiding for other uses and indiscriminate poisoning at waterholes are also further threats. A proposed conservation action is that landowners of suitable properties should join biodiversity stewardship initiatives and manage their properties in a sustainable way for the species' populations.

Aquila rapax rapax (Tawny Eagle) is listed as VU on a global scale (BirdLife International, 2021a) and EN on a regional scale (Taylor *et al,* 2015). This is a widespread raptor occurring over large areas of Sub-Saharan Africa, with isolated populations in North Africa, the Middle East and South Asia, albeit the African population is now becoming increasingly dependent on protected areas (BirdLife International, 2021a). The species occupies dry open from sea level to 3000 m and will occupy both woodland and wooded savannah. *Aquila rapax rapax* predates on mammals, birds, reptiles, insects, and occasionally fish and amphibians. It will also regularly consume carrion and pirate other raptors' prey. The African population is estimated at 73 860 pairs with a severely declining population at a rate of decline as > 60% over the past 50 years within South Africa, Lesotho and eSwatini. The main threats are secondary poisoning, direct persecution and collisions with powerlines (BirdLife International, 2021a).

Aquila verreauxii (Verreaux's Eagle) is found in mountainous and rocky cliff habitat. They are usually found in pairs that remain close for up to 95 % of the day. This monogamous pair are solitary nesters with two nests in their territories, a main and an alternative nest. The nest is a stick structure, up to 1.8m in diameter. They mainly breed on steep inaccessible cliffs, but artificial structures and in some instances large trees are also used. Breeding occurs from

April to November (Del Hoyo, 1994). Their diet consists of Hyrax (60%), Vervet Moneys, Chacma Baboons and smaller mammal species. The species is locally persecuted in southern Africa where it coincides with livestock farms, but because the species does not take carrion, is little threatened by poisoned carcasses. Where hyraxes are hunted for food and skins, eagle populations have declined (Ferguson- Lees and Christie, 2001).

Gyps africanus (White-backed Vulture) is listed as CR on a global scale (BirdLife International, 2021b). This species is the most widespread vulture in Africa and occurs from Senegal, Gambia and Mali in the west, throughout the Sahel region to Ethiopia and Somalia in the east, through East Africa into Mozambique, Zimbabwe, Botswana, Namibia and South Africa in the south. *Gyps africanus* is primarily a lowland species of open wooded savanna, particularly areas of thornveld. It requires tall trees for nesting but has also been recorded nesting on electricity pylons in South Africa. It is a gregarious species congregating at carcasses, in thermals and at roost sites and nests in loose colonies. The species' global population was estimated at 270 000 individuals in 1992, but it is likely considerably lower than this due to rapid population declines in recent years. The median estimate of the rate of decline, 4.1% annually (2.5-5.4%), is equivalent to a three-generation reduction of 81% (63-89%) (BirdLife International, 2021b). The species faces similar threats to other African vultures, being susceptible to habitat conversion to agro-pastoral systems, loss of wild ungulates leading to a reduced availability of carrion, hunting for trade, persecution and poisoning. In southern Africa, vultures are caught and consumed for perceived medicinal and psychological benefits, and the decline and possible extirpation in Nigeria has been attributed to the trade in vulture parts for traditional juju practices.

3.3 Literature Review

The avifauna assessment completed for the proposed Ferrum Mookodi powerline was considered for background information (see Molepo, 2020). This report included an additional section from Mookodi substation to Epsilon substation, which was not considered for this report. The findings below indicate the birds seen across the section considered by Molepo (2020). It also includes the expected SCCs that were predicted to be present (Table 3-3). The SCC Greater Flamingo (*Phoenicopterus roseus*) and Martial Eagle (*Polemaetus bellicosus*) were recorded in the assessment by Molepo (2020).

Table 3-3 Non-threatened terrestrial and waterbird species recorded including Red Data bird species that are likely to occur within the impact area. Findings presented by Molepo, 2020.

Common Name	Scientific Name	IUCN Conservation Status	Preferred habitat
Greater Flamingo*	*Phoenicopterus roseus*	NT	Wetlands
Black Stork	*Ciconia nigra*	VU	Wetlands
Martial Eagle*	*Polemaetus bellicosus*	EN	Natural veld
Lanner Falcon	*Falco biarmicus*	VU	Natural veld and farmland
Greater Kestrel*	*Falco rupicoloides*	LC	Natural veld and farmland
Namaqua Dove*	*Oena capensis*	LC	Natural veld, semi-arid and farmland
Yellow Canary*	*Crithagra flaviventris*	LC	Open shrubland, grassland

Cape Crow*	*Corvus capensis*	LC	Grassland, open savannah and farmland
Chestnut-vented Warbler*	*Sylvia subcoerulea*	LC	Semi-arid, woodland and shrubland
White-backed Mousebird*	*Colius colius*	LC	Semi-arid and arid
Cape Starling*	*Lamprotornis nitens*	LC	Savannah, farmland, riverine bush
Cape Wagtail*	*Motacilla capensis*	LC	Generalist
Groundscraper Thrush*	*Turdus litsitsirupa*	LC	Open woodland
Karoo Scrub Robin*	*Cercotrichas coryphoeus*	LC	Drainage line woodland and bushveld clumps
South African Cliff Swallow*	*Petrochelidon spilodera*	LC	Grassland and savannah
Diederik Cuckoo*	*Chrysococcyx caprius*	LC	Savannah, semi-arid shrubland and drainage lines
Black-winged Stilt*	*Himantopus himantopus*	LC	Wetlands and sewage dams
Acacia Pied Barbet*	*Tricholama leucomelas*	LC	Semi-arid savannah
Goliath Heron*	*Ardea goliath*	LC	Shallow waterbodies
South African Shelduck*	*Tadorna cana*	LC	Wetlands
African Sacred Ibis*	*Threskiornis aethiopicus*	LC	Wetlands, farmland, landfills and grasslands
Western Cattle Egret*	*Bubuculus ibis*	LC	Grassland and farmland
Northern Black Korhaan*	*Afrotis afraoides*	LC	Grassland, bushveld and farmland
Egyptian Goose*	*Alopochen aegyptiaca*	LC	Wetlands and farmland
Spur-winged Goose*	*Plectropterus gambensis*	LC	Wetlands and farmland
Helmeted Guineafowl*	*Numida meleagris*	LC	Generalist
Secretarybird	*Sagittarius serpentarius*	VU	Open grassland with scattered trees
Common Ostrich*	*Struthio camelus*	LC	Open arid savannah, shrubland and desert

*=Recorded

3.4 Vulture

Vulture specific information was included in the desktop study for this project since two species of vulture were observed during the field survey. Figure 3-11 illustrates the PAOI in relation to recorded vulture electrocutions and collisions (Eskom/EWT Strategic Partnership database unpublished 2020). These maps indicate that there are fatalities recorded near the project area, both because of electrocution and collision. There are active vulture restaurants approximately 58 km east of the Mookodi substation and 61 km north of the line near Madibeng. As such, appropriate mitigation measures are required. For mitigations refer to Section 6.

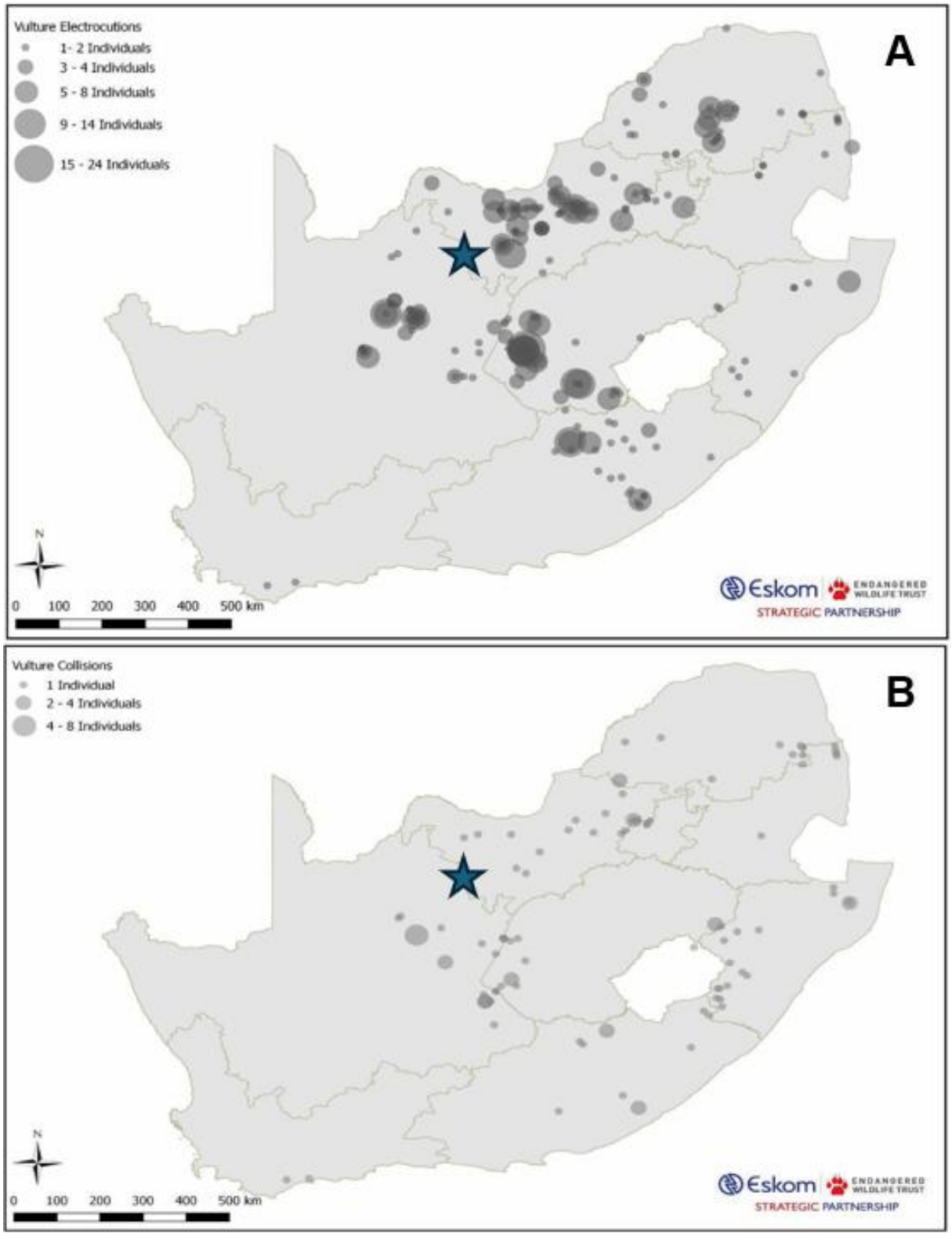


Figure 3-11 ***Maps indicating fatal vulture A) electrocutions and B) collisions on powerlines across South Africa reported to the EWT/Eskom Central Incident Register from 1996-2022 (Eskom/EWT Strategic Partnership database unpublished, 2022). This map and information are as per Government Gazette No 47632. The star indicates the approximate location of the project area***

3.5 Fieldwork Findings

3.5.1 Species List of the Field Survey

The field survey was undertaken from the 9th to 20th of September 2024, and 14th to 16th of October 2024, to determine the presence of Species of Conservation Concern (SCC). Effort was made to cover all the different habitat types, within the limits of time and access. During the assessment, three SCCs, were recorded during this field survey (Table 3-4).

Table 3-4 Summary of Species of Conservation Concern recorded within and around the proposed development

Common Name	Scientific Name	Regional*	Global+	Likelihood of occurrence
Kori Bustard	*Ardeotis kori*	NT	NT	Confirmed
Lappet-faced Vulture	*Torgos tracheliotos*	EN	EN	Confirmed
White-backed Vulture	*Gyps africanus*	CR	CR	Confirmed

3.5.1.1 Risk Species

Priority Species are considered threatened, rare or prone to impacts from energy development (Ralston Paton *et al*, 2017). TBC has defined Risk Species as those species that are listed in Ralston Paton *et al* (2017) as Priority Species, as well as those listed in the Eskom poster of Birds and Power Lines (Eskom and EWT, no date), which together include all species, common or red-listed that may be at risk of collision, electrocution, or habitat loss as a result of the proposed activity. Twenty (20) of the species observed within the PAOI are regarded as priority species (Table 3-5).

Table 3-5 Summary of Priority Species recorded within and around the proposed development.

Common Name	Scientific Name	Collision	Electrocution	Habitat Loss
Black-chested Snake Eagle	*Circaetus pectoralis*	x	x	
Cape Crow	*Corvus capensis*	x	x	
Egyptian Goose	*Alopochen aegyptiaca*	x	x	
Gabar Goshawk	*Micronisus gabar*	x	x	
Greater Kestrel	*Falco rupicoloides*		x	
Hadada Ibis	*Bostrychia hagedash*		x	
Hamerkop	*Scopus umbretta*	x		
Helmeted Guineafowl	*Numida meleagris*	x	x	
Kori Bustard	*Ardeotis kori*	x	x	x
Lappet-faced Vulture	*Torgos tracheliotos*	x	x	x
Little Egret	*Egretta garzetta*	x	x	
Northern Black Korhaan	*Afrotis afraoides*	x		
Pale Chanting Goshawk	*Melierax canorus*	x	x	
Pied Crow	*Corvus albus*	x	x	
Red-billed Teal	*Anas erythrorhyncha*	x		
Red-crested Korhaan	*Lophotis ruficrista*	x		

South African Shelduck	*Tadorna cana*	x		
Swainson's Spurfowl	*Pternistis swainsonii*	x		
Western Barn Owl	*Tyto alba*	x	x	
White-backed Vulture	*Gyps africanus*	x	x	x
Yellow-billed Duck	*Anas undulata*	x		

3.5.1.2 Dominant Species

Table 3-6 provides the relative abundance of the dominant species as well as the frequency with which each species appeared in the point count samples. The most abundant species was the Sociable Weaver (*Philetairus socius*), with a relative abundance of 0.137 and a frequency of occurrence of 5.263%.

Table 3-6 Relative abundance and frequency of occurrence of dominant avifauna species recorded during the standardised point counts within and around the proposed development during the field survey.

Common Name	Scientific Name	RD (Regional, Global)	Relative abundance	Frequency (%)
Sociable Weaver	*Philetairus socius*	Ploceidae	0,137	5,263
Chestnut-vented Warbler	*Curruca subcoerulea*	Sylviidae	0,049	44,737
Yellow Canary	*Crithagra flaviventris*	Fringillidae	0,047	21,053
Kalahari Scrub Robin	*Cercotrichas paena*	Muscicapidae	0,044	50,000
Little Swift	*Apus affinis*	Apodidae	0,042	2,632
Red-faced Mousebird	*Urocolius indicus*	Coliidae	0,036	13,158
Ring-necked Dove	*Streptopelia capicola*	Columbidae	0,034	34,211
Black-chested Prinia	*Prinia flavicans*	Cisticolidae	0,034	31,579
Black-throated Canary	*Crithagra atrogularis*	Fringillidae	0,032	7,895
Pied Crow	*Corvus albus*	Corvidae	0,030	18,421
Cape Penduline Tit	*Anthoscopus minutus*	Remizidae	0,027	23,684
Fawn-colored Lark	*Calendulauda africanoides*	Alaudidae	0,027	28,947
Scaly-feathered Weaver	*Sporopipes squamifrons*	Ploceidae	0,027	10,526
European Bee-eater	*Merops apiaster*	Meropidae	0,027	7,895
White-backed Mousebird	*Colius colius*	Coliidae	0,023	2,632
Yellow-bellied Eremomela	*Eremomela icteropygialis*	Cisticolidae	0,021	21,053
White-backed Vulture	*Gyps africanus*	Accipitridae	0,021	2,632
Red-crested Korhaan	*Lophotis ruficrista*	Otididae	0,017	21,053
Violet-eared Waxbill	*Granatina granatina*	Estrildidae	0,015	13,158
Tinkling Cisticola	*Cisticola rufilatus*	Cisticolidae	0,015	15,789
Marico Sunbird	*Cinnyris mariquensis*	Nectariniidae	0,015	10,526
Cape Starling	*Lamprotornis nitens*	Sturnidae	0,013	10,526
Pririt Batis	*Batis pririt*	Platysteiridae	0,013	13,158
Cape Sparrow	*Passer melanurus*	Passeridae	0,008	2,632
Southern Fiscal	*Lanius collaris*	Laniidae	0,008	10,526

Desert Cisticola	*Cisticola aridulus*	Cisticolidae	0,008	5,263
White-browed Sparrow-Weaver	*Plocepasser mahali*	Ploceidae	0,008	5,263
Southern Yellow-billed Hornbill	*Tockus leucomelas*	Bucerotidae	0,008	7,895

3.5.1.3 Trophic Guilds

Trophic guilds are defined as a group of species that exploit the same class of environmental resources in a similar way (González-Salazar *et al,* 2014). The guild classification used in this assessment is as per González-Salazar *et al* (2014); they divided avifauna into 13 major groups based on their diet, habitat, and main area of activity. Although species to tend to exhibit varied diets, with invertivores consuming fruit and frugivores consuming insects for example, the dominant composition of the diet was considered.

The analysis of the major avifaunal guilds reveals that the species composition during the survey was dominated by Insectivore Ground Diurnal (IGD), Omnivore Ground Diurnal (OGD), and Granivore Ground Diurnal (GGD) birds (Figure 3-12).

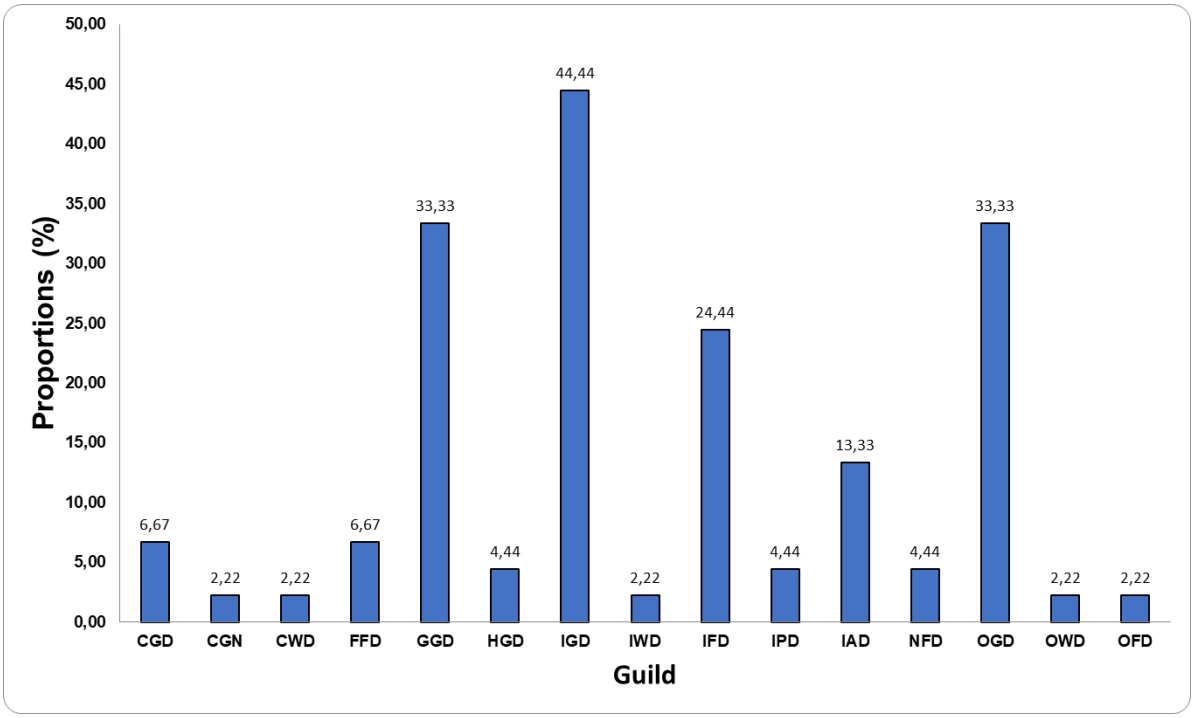


Figure 3-12 ***Column plot illustrating the proportion of each Functional Feeding Guild to the total abundance. Avifaunal trophic guilds – CGD, carnivore ground diurnal; CGN, carnivore ground nocturnal; CWD, carnivore water diurnal; FFD, frugivore foliage diurnal; GGD, granivore ground diurnal; HGD, herbivore ground diurnal; IGD, invertivore ground diurnal; IWD, invertivore, water diurnal; IFD, invertivore foliage diurnal; IPD, invertivore perch diurnal; IAD, invertivore air diurnal; NFD, nectivore foliage diurnal; OGD, omnivore ground diurnal; OWD, omnivore water diurnal; OFD, omnivore foliage diurnal***

3.5.2 Nest Analysis

Observing and monitoring flight paths and nesting sites of SCC and/or priority species are important in ascertaining habitat sensitivity and evaluating the impact risk significance of any proposed development. Two Greater Kestrel nests were recorded, a 500 m seasonal buffer must be applied between July and February. The location of the nest is shown in section 5.

3.6 Habitat Assessment

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

The main habitat types identified across the PAOI were initially delineated largely based on aerial imagery, and these main habitat types were then refined based on the field coverage and data collected during the survey. Eight (8) habitats were delineated (Figure 3-13), a full description of the habitats is provided below.

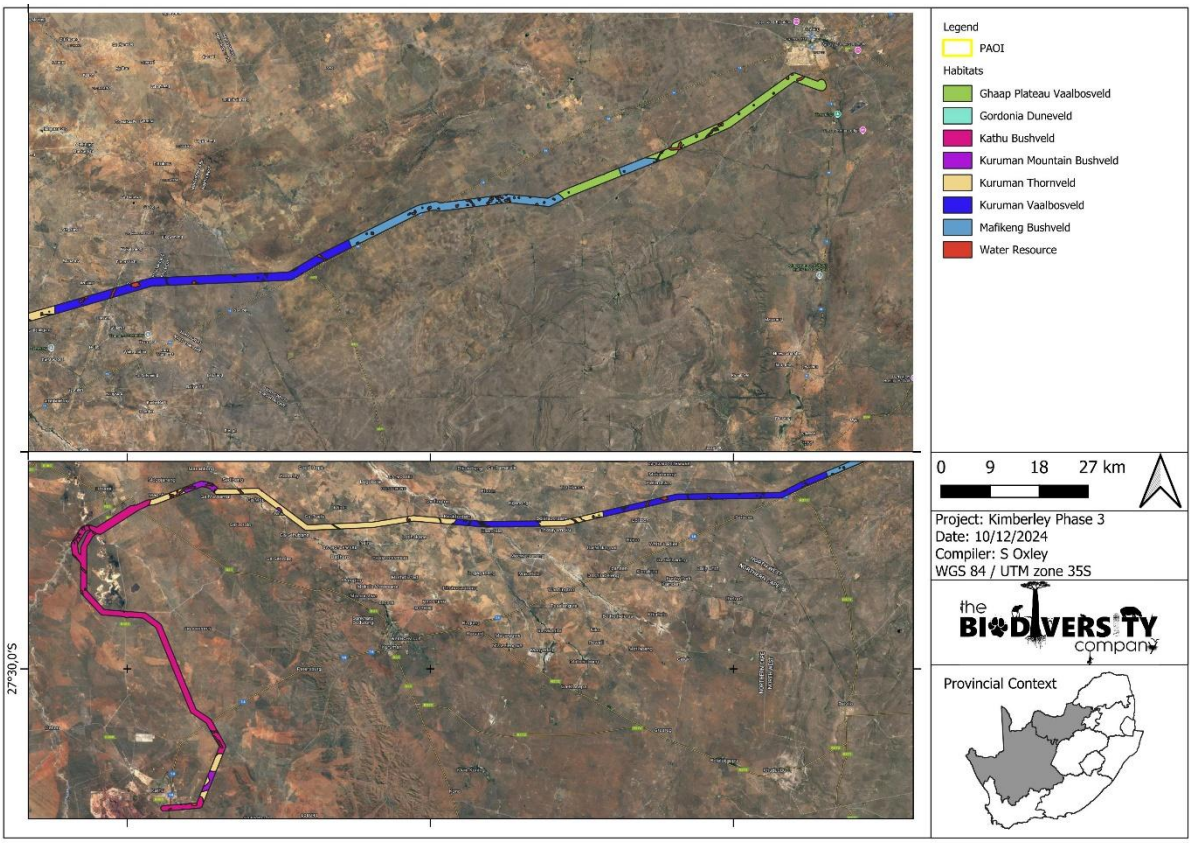


Figure 3-13 Habitats identified within the assessment areas

Table 3-7 Habitats delineated in the project area

Habitat	Description	Photo
Gordonia Duneveld	Areas with dunes comprising Karroid Shrubland plants. SCC expected to occur here: Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27°16'0.64"S and 22°56'14.67"E
Kathu Bushveld	This habitat consists of medium-tall thorny tree layer, with a variable grass layer cover. SCC likely to occur here: Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27°43'33.23"S and 23° 6'21.53"E  27°21'59.86"S and 22°55'41.38"E

Kuruman Mountain Bushveld		This vegetation type is found on rolling hills, consisting of open shrubveld with a prominent grass layer. SCC likely to occur: Secretarybird, Kori Bustard, Ludwig's Bustard, Burchell's Courser, Martial Eagle, Tawny Eagle, Verreaux's Eagle, Lanner Falcon, European Roller, Abdim's Stork, Black Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture (recorded)	 27°11'40.55"S and 23° 7'22.86"E
Kuruman Thornveld		This vegetation type consist of flat rocky plains and some sloping hills with a shrub layer and well-developed open tree stratum consisting of *Vachellia erioloba*.' SCC expected to occur here: Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27°15'51.82"S and 23°17'31.62"E  27°15'22.10"S and 23°31'30.71"E

Kuruman Vaalbosveld	Open tree layer with a poorly developed shrub layer and grass layer open, with bare soil in places. SCC expected to occur here: Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27°15'39.78"S and 23°37'42.55"E  27°12'57.82"S and 23°55'33.87"E
Mafikeng Bushveld	This habitat consist of a well-developed tree layer consisting of *Terminalia sericea*, *Vachellia luede-ritzii* and *V. erioloba* and a well-developed grass layer. SCC expected Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture (recorded), White-backed Vulture	 27°10'28.98"S and 24° 9'49.05"E

27° 5'50.44"S and 24°31'3.82"E

Water Resources	The water resources consist of wetlands, drainage features as well as rivers. As the avifauna community would utilise all of the habitats the various water resources were combined. For a full description of the water resources refer to the TBC Wetland (2024) report. SCC likely to occur: Abdim's Stork, Black Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27° 4'54.04"S and 24°33'33.61"E  27°12'26.60"S and 23°11'16.32"E

Ghaap Vaalbosveld	**Plateau**	This vegetation type is found on flat plateaus, where it is characterised by open tree layer and smaller non thorny shrub species. SCC expected to occur: Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture	 27° 1'23.79"S and 24°40'40.15"E  27° 0'52.10"S and 24°44'39.39"E

3.7 Site Ecological Importance

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

The SEI for avifauna and the corresponding mitigation guidelines is summarised in Table 3-8.

Table 3-8 Summary of habitat types delineated within field assessment area in relation to avifauna

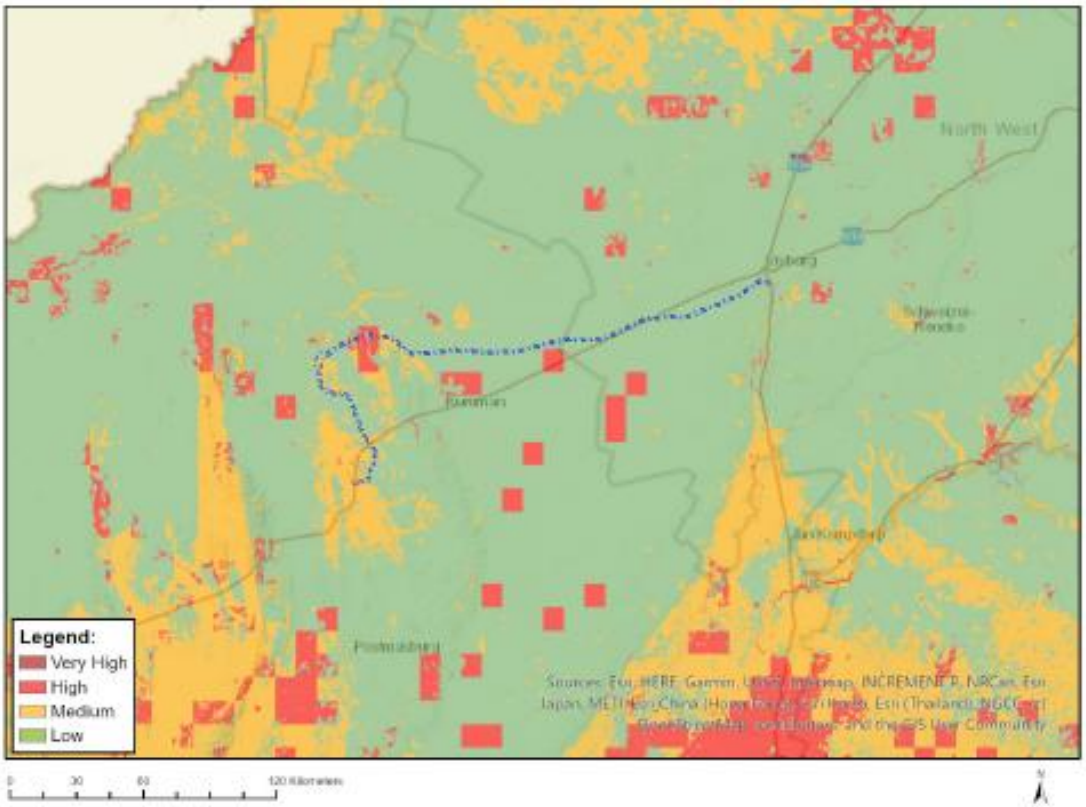
	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance Guidelines
Avifauna	**High** Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.	**High** Only minor current negative ecological impacts with no signs of major past disturbance and good rehabilitation potential.	**High**	**Medium** Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.	**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.

3.7.1 Desktop Ecological Sensitivity

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

- Animal Species Theme sensitivity is ‘High’ for the PAOI, with the possibility of Avifauna Species of Conservation Concern (SCC) being present (Figure 3-14).

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 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)
High	Aves-Falco biarmicus
High	Aves-Torgos tracheliotos
High	Aves-Gyps africanus
Low	Subject to confirmation
Medium	Aves-Sagittarius serpentarius
Medium	Aves-Gyps africanus
Medium	Aves-Aquila rapax

Figure 3-14 Animal Species Theme Sensitivity

3.7.2 Screening Tool Comparison

The allocated sensitivities for the relevant theme (Animal Species Theme) are either disputed or validated for the assessed areas in Table 3-9 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 avifauna SCC or protected species. The sensitivities delineated for the project area are illustrated in Figure 3-15.

Table 3-9 Summary of the screening tool vs specialist-assigned sensitivities

Screening Tool Theme	Screening Tool	Species	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Animal Theme	**High**	**Avifauna**	**High**	Validated – Habitat shows limited impacts and does support SCC, including White-backed Vulture, Lappet-faced Vulture and Kori Bustard. A number of additional SCC are also expected to occur in the area.

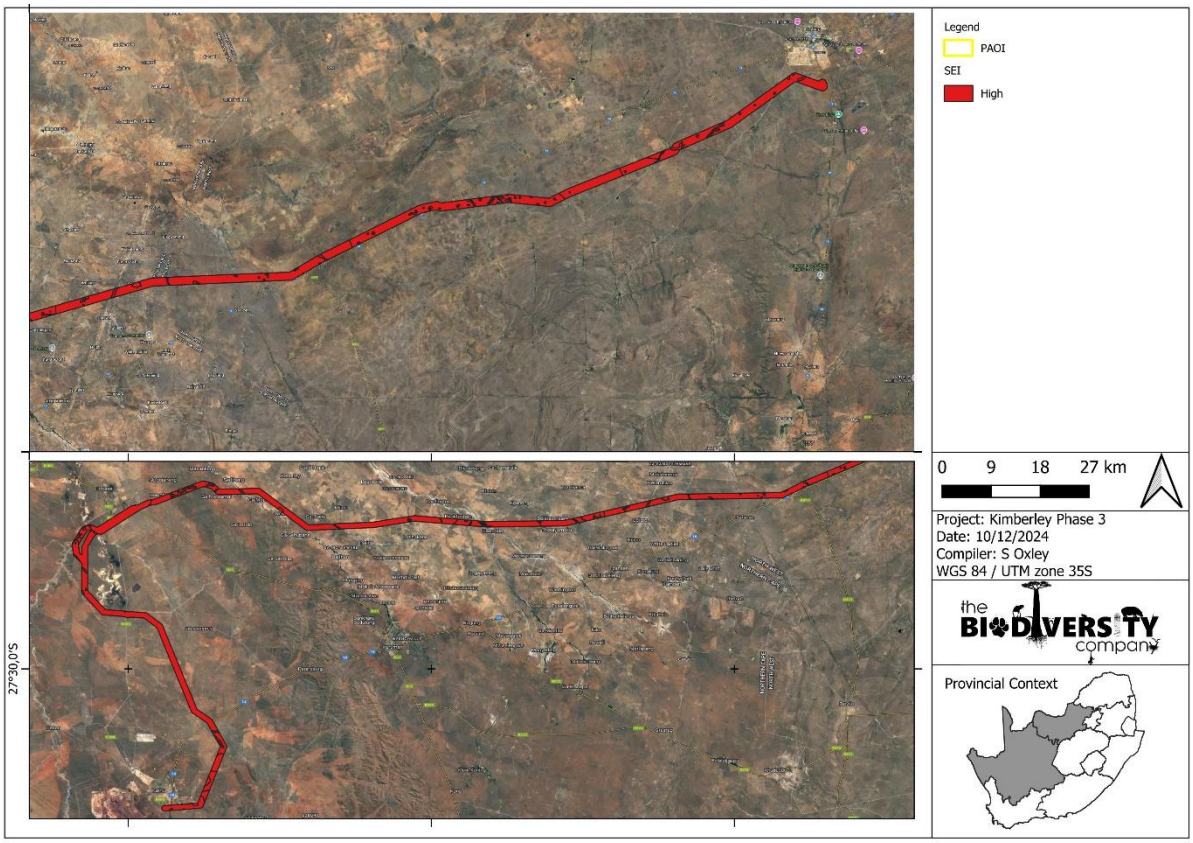


Figure 3-15 Site ecological importance of the PAOI from an avifauna perspective, with mitigation measures applied

4 Impact Assessment

4.1 Current Impacts to Avifauna

In consideration that there are anthropogenic activities and influences present within the landscape, there are currently several negative impacts to biodiversity, including avifauna. These include:

- Historic and current land modification to accommodate roads, and agricultural practices;
- Alien/invasive plant species; and
- Existing powerlines, buildings, fences and the associated infrastructure (Figure 4-1).

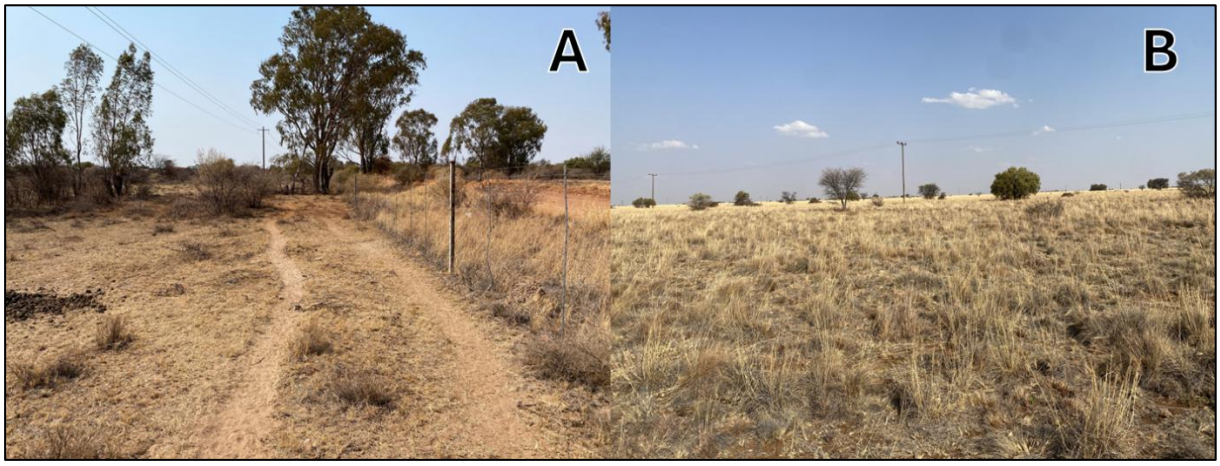


Figure 4-1 Photograph illustrating current negative impacts associated with the PAOI: A and B) Alien trees, roads, existing powerlines and fences

4.2 Alternatives Considered

No alternatives were provided.

4.3 Loss of Irreplaceable Resources

The proposed development will lead to the loss of the following irreplaceable resources:

- Habitat and possible nesting sites for numerous expected avifauna SCC; and
- Critical Biodiversity Areas.

4.4 Quantitative Impact Assessment

Potential impacts were evaluated against the data captured during the fieldwork, from a desktop perspective, to identify relevance to the project area of interest, specifically the proposed development footprint area. Bennun *et al* (2021) describes three broad types of impacts associated with energy development:

- Direct impacts – Impacts that result from project activities or operational decisions that can be predicted based on planned activities and knowledge of local biodiversity, such as habitat loss under the project footprint, habitat fragmentation as a result of project infrastructure and species disturbance or mortality as a result of project operations;

- Indirect impacts – Impacts induced by, or 'by-products' of, project activities within a project's area of influence; and

- Cumulative impacts – Impacts that result from the successive, incremental and/or combined effects of existing, planned and/or reasonably anticipated future human activities in combination with project development impacts.

The assessment of impact significance considers pre-mitigation, as well as, implemented post-mitigation scenarios. Although different species and groups will react differently to the development, the risk assessment was undertaken bearing in mind the potential impacts to the priority species listed in this report. Three phases were considered for the impact assessment:

- Construction Phase;

- Operational Phase; and

- Decommissioning Phase.

All the impacts for the two alternatives were assessed simultaneously, except if stipulated.

4.4.1 Construction Phase

The following potential main impacts on biodiversity were considered for the construction phase of the proposed development. This phase refers to the period during construction when the proposed features are constructed; and is considered to have the largest direct impact on avifauna. The following potential impacts to avifauna were considered:

- Habitat destruction within the project footprint;

- Destruction, degradation and fragmentation of surrounding habitats;

- Displacement/emigration of avifauna community (including SCC) due to noise pollution;

- Direct mortality from persecution or poaching of avifauna species and collection of eggs; and

- Direct mortality from increased vehicle and heavy machinery traffic.

The pre-mitigation and post-mitigation impact ratings for the construction phase are shown in Table 4-1.

Table 4-1 Construction Phase Impacts

Impact	Prior to mitigation							Post mitigation					
	Duration of the Impact	Extent of the Impact	Magnitude of the Impact	Reversibility	Probability of Occurrence	**Significance**	Significance	Duration of the Impact	Extent of the Impact	Magnitude of the Impact	Reversibility	Probability of Occurrence	Significance
Habitat destruction within the project footprint	2	2	8	3	4	48		2	2	6	2	3	30
	Short term (1-5 years)	Local (site boundary and immediate surrounds)	High (environmental functions temporarily cease)	Barely reversible	High probability (most likely to occur)		**Medium**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Moderate (environmental functions altered but continue)	Partly reversible	Low probability (unlikely to occur)	**Medium**
Destruction, fragmentation and degradation of surrounding habitats	4	3	6	3	4	52		3	2	2	3	3	21
	Long term (ceases after the operational life span of the project)	Regional (within the three local municipalities)	Moderate (environmental functions altered but continue)	Barely reversible	High probability (most likely to occur)		**Medium**	Medium term (5-15 years)	Local (site boundary and immediate surrounds)	Minor	Barely reversible	Medium probability (distinct probability that the impact will occur)	**Low**
Displacement/emigration of avifauna community (including SCC) due to noise pollution	2	2	8	3	4	48		2	2	4	2	2	16
	Short term (1-5 years)	Local (site boundary and immediate surrounds)	High (environmental functions temporarily cease)	Barely reversible	High probability (most likely to occur)		**Medium**	Short term (1-5 years)	Local (site boundary and immediate	Low	Partly reversible	Low probability (unlikely to occur)	**Low**

									surrounds)				
Direct mortality from persecution or poaching of avifauna species and collection of eggs	2	2	6	3	3	30		2	2	2	2	2	12
	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Moderate (environmental functions altered but continue)	Barely reversible	Medium probability (distinct probability that the impact will occur)		**Medium**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Minor	Partly reversible	Low probability (unlikely to occur)	**Low**
Direct mortality from increased vehicle and heavy machinery traffic	2	2	6	4	2	20		2	1	2	2	2	10
	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Moderate (environmental functions altered but continue)	Irreversible	Low probability (unlikely to occur)		**Low**	Short term (1-5 years)	Site (site only)	Minor	Partly reversible	Low probability (unlikely to occur)	**Low**

4.4.2 Operational Phase

The operational phase includes the following impacts:

- Collisions with powerlines;
- Electrocution due to powerlines;
- Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs; and
- Displacement or death of SCCs.

The pre-mitigation and post-mitigation impact ratings for the construction phase are shown in Table 4-2.

Table 4-2 Operational Phase Impacts

Impact	Prior to mitigation							Post mitigation						
	Duration of the Impact	Extent of the Impact	Magnitude of the Impact	Reversibility	Probability of Occurrence	**Significance**	Significance	Duration of the Impact	Extent of the Impact	Magnitude of the Impact	Reversibility	Probability of Occurrence	**Significance**	Significance
Collisions with powerlines	5	3	8	4	4	64		4	2	6	3	3	36	
	Permanent	Regional (within the three local municipalities)	High (environmental functions temporarily cease)	Irreversible	High probability (most likely to occur)		**High**	Long term (ceases after the operational life span of the project)	Local (site boundary and immediate surrounds)	Moderate (environmental functions altered but continue)	Barely reversible	Medium probability (distinct probability that the impact will occur)		**Medium**
Electrocution due to powerlines	5	3	8	4	4	64		4	2	6	3	2	24	
	Permanent	Regional (within the three local municipalities)	High (environmental functions temporarily cease)	Irreversible	High probability (most likely to occur)		**High**	Long term (ceases after the operational life span of the project)	Local (site boundary and immediate surrounds)	Moderate (environmental functions altered but continue)	Barely reversible	Low probability (unlikely to occur)		**Low**
Direct mortality from roadkills, persecution or poaching of avifauna species	3	3	6	2	3	36		4	1	2	2	2	14	
	Medium term (5-15 years)	Regional (within the three local municipalities)	Moderate (environmental functions altered but continue)	Partly reversible	Medium probability (distinct probability that the		**Medium**	Long term (ceases after the operational life	Site (site only)	Minor	Partly reversible	Low probability (unlikely to occur)		**Low**

and collection of eggs					impact will occur)			span of the project)						
Displacement or death of SCCs	5	3	8	3	3	48		4	1	4	2	2	18	
	Permanent	Regional (within the three local municipalities)	High (environmental functions temporarily cease)	Barely reversible	Medium probability (distinct probability that the impact will occur)		**Medium**	Long term (ceases after the operational life span of the project)	Site (site only)	Low	Partly reversible	Low probability (unlikely to occur)		**Low**

4.4.3 Decommissioning Phase

This phase is when the scaling down of activities ahead of temporary or permanent closure is initiated. During this phase, the Operational Phase impacts will persist until of the activity reduces and the rehabilitation measures are implemented.

The following potential impacts were considered:

- Habitat Loss (Destroy, fragment, and degrade habitat, ultimately displacing avifauna);
- Sensory disturbances (e.g. noise, dust, vibrations);
- Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs; and
- Collisions with powerlines.

The pre-mitigation and post-mitigation impact ratings for the construction phase are shown in Table 4-3.

Table 4-3 Decommissioning Phase Impacts

Impact	Prior to mitigation						Post mitigation					
	Duration of the Impact	Extent of the Impact	Magnitude of the Impact	Reversibility	Probability of Occurrence	Significance	Duration of the Impact	Extent of the Impact	Magnitude of the Impact	Reversibility	Probability of Occurrence	Significance
Habitat Loss (Destroy, fragment, and degrade habitat, ultimately displacing avifauna);	4	3	4	4	4		2	2	4	2	2	
	Long term (ceases after the operational life span of the project)	Regional (within the three local municipalities)	Low	Irreversible	High probability (most likely to occur)	**Medium**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Low	Partly reversible	Low probability (unlikely to occur)	**Low**
Sensory disturbances (e.g. noise, dust, vibrations);	4	3	4	4	4		2	2	2	2	2	
	Long term (ceases after the operational life span of the project)	Regional (within the three local municipalities)	Low	Irreversible	High probability (most likely to occur)	**Medium**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Minor	Partly reversible	Low probability (unlikely to occur)	**Low**
Direct mortality from roadkills, persecution or poaching of avifauna species and collection of eggs	3	2	4	3	3		2	2	2	2	2	
	Medium term (5-15 years)	Local (site boundary and immediate surrounds)	Low	Barely reversible	High probability (most likely to occur)	**Low**	Short term (1-5 years)	Local (site boundary and immediate surrounds)	Minor	Partly reversible	Low probability (unlikely to occur)	**Low**
Collisions with powerlines	5	3	8	4	4		1	1	0	1	0	
	Permanent	Regional (within the	High (environmental	Irreversible	High probability	**High**	Immediate (<1 year)	Site (site only)	None	Completely reversible		**Low**

		three local municipalities)	functions temporarily cease)		(most likely to occur)						None (the impact will not occur)	

4.4.4 Cumulative Impact Assessment

Cumulative impacts are assessed within the context of the extent of the proposed PAOI, other developments and activities in the area (existing and proposed) and general habitat loss and disturbance resulting from any other anthropogenic activities in the area. The impacts of projects are often assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation this provides a good method of assessing a project's impact. However, in areas where baselines have already been affected, or where future development will continue to add to the impacts in an area or region, it is appropriate to consider the cumulative effects of development or disturbance activities. This is similar to the concept of shifting baselines, which describes how the environmental baseline at a specific point in time may actually represent a significant change from the original state of the system. This section describes the potential cumulative impacts of the project on the local and regional avifauna community.

Localised cumulative impacts include those from operations that are close enough to potentially cause additive effects on the local environment or any sensitive receivers (such as nearby large road networks, solar PV facilities, and power infrastructure). Relevant activities and impacts include dust deposition, noise and vibration, loss of corridors or habitat, disruption of waterways, groundwater drawdown, groundwater and surface water depletion, and transport activities. Long-term cumulative impacts associated with the site development activities can lead to the loss of endemic and threatened species, including natural habitat and vegetation types, and these impacts can even lead to the degradation of conserved areas such as the adjacent game parks and reserves.

A total area of 30 km surrounding the PAOI were used to assess the total habitat loss in the area and subsequently the cumulative impact. To determine the intact remnant habitat the NBA (2021) remnant spatial data was utilised. The total area within the 30 km buffer around the Project Area amounts to 1741579,9 ha, but when considering the transformation (131472,28 ha) that has taken place within this radius, 1610107,60 ha of intact habitat remains according to the 2021 National Biodiversity Assessment. Therefore, the area within 30 km of the project has experienced approximately 7,55% loss in natural habitat. (Table 4-1).

Table 4-1 The cumulative impacts considered for avifauna

	Total Habitat (ha)	Total Loss (ha)	Tot. Remaining Habitat (ha) (Remnants)	Total Historical Loss
Approximate cumulative effects (Spatial)	1741579,88	131472,28	1610107,60	7,55

The proposed line in isolation has a Negative Moderate impact significance (**Error! Reference source not found.**). Limited remnant habitat has been impacted in the 30 km area, however, there are existing powerlines within the 30km area, resulting in the cumulative impact being Negative Moderate.

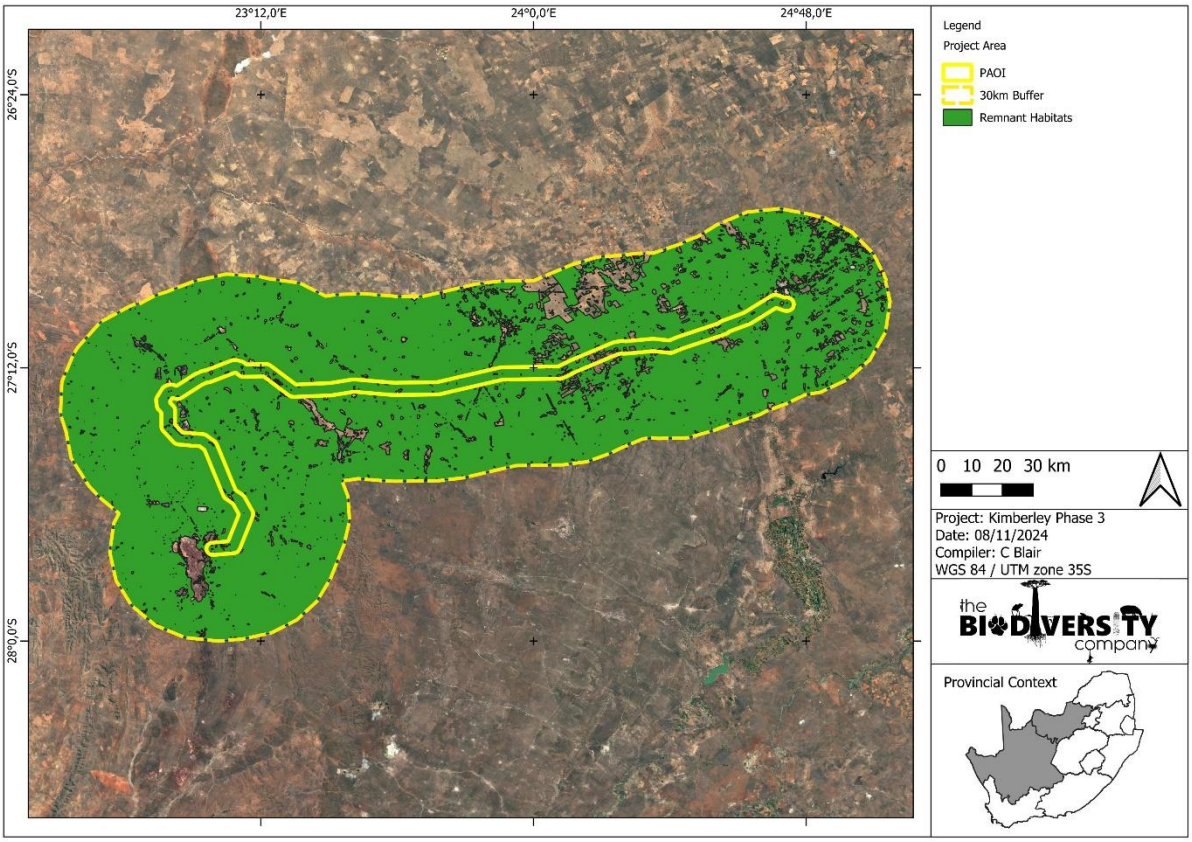


Figure 4-2 Cumulative habitat loss in 30 km surrounding the PAOI

Table 4-2 Cumulative impact assessment of the project

Impact	Project in Isolation					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
Loss of habitat, and disruption of SCC home ranges	4	2	2	4	3	
	Life of operation or less than 20 years: Long Term	Development specific/ within the site boundary / < 100 ha impacted / Linear features affected < 100m	Small / ecosystem structure and function largely unchanged	Ecology highly sensitive/important	Likely	**Moderate**
Impact	**Cumulative Effect**					
	Duration of Impact	Spatial Scope	Severity of Impact	Sensitivity of Receiving Environment	Probability of Impact	Significance
Loss of habitat, and disruption of SCC home ranges	4	4	2	4	3	
	Life of operation or less than 20	Regional within 5 km of the site boundary / <	Small / ecosystem structure and function	Ecology highly sensitive/important	Likely	**Moderate**

	years: Long Term	2000ha impacted / Linear features affected < 3000m	largely unchanged			

5 Walkdown

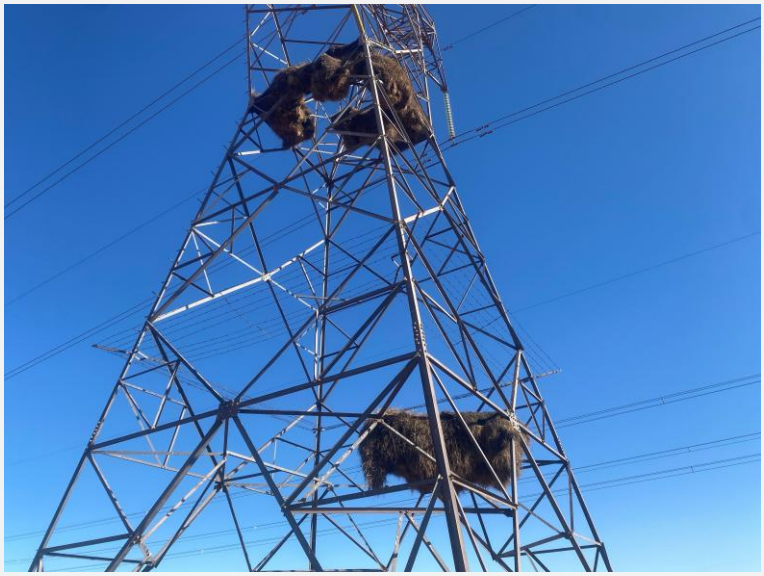
The walkdown assessment covered most of the powerline, but some sections had access restrictions (Figure 1-8). However, this might be expected, and we will discuss some ways these areas can be mitigated despite not being thoroughly assessed. The walkdown included searching for sensitive habitats, nests and any avifauna SCC believed to occur within the area being searched. The sections that were not assessed need to have an avifauna specialist present when erecting the towers in these sections to ensure there are no nests present. The proposed layout was evaluated according to the potential impact on the surrounding ecosystems.

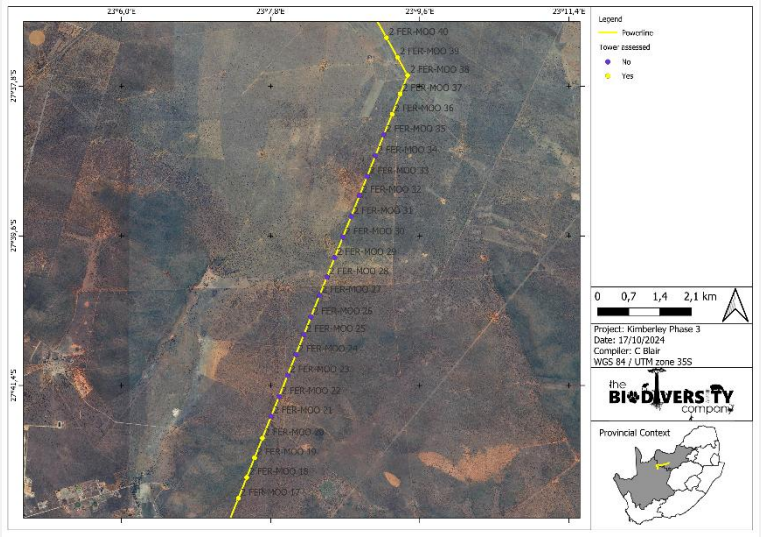
5.1 Route

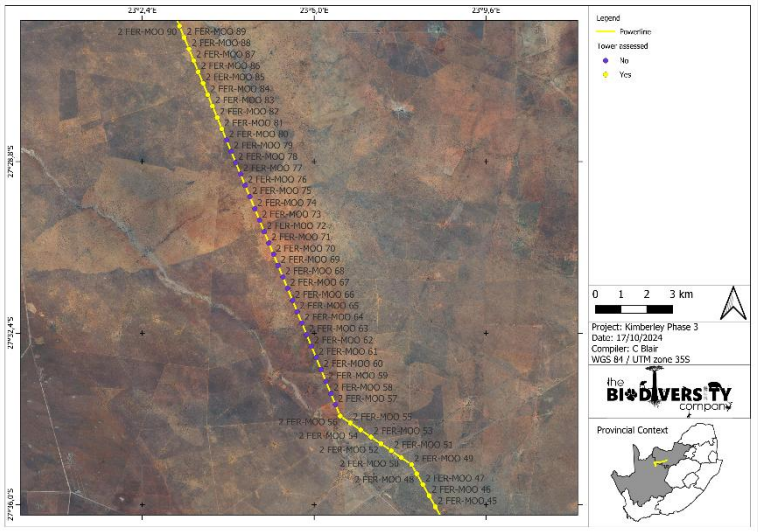
The findings of the walkdown are discussed in Table 5-1. The layout is depicted in Figure 1-1. Site sensitivities were allocated based on the Conservation plan status, infield observations of the habitat conditions and possible presence/absence of avifauna SCCs, in conjunction with the sensitivity analyses reported on by Molepo (2020) (Figure 3-15). The high numbers of SCC observed, especially vultures, which have collision and electrocution incidents recorded nearby the proposed powerline in the EWT/Eskom Central Incident Register (Figure 3-11). This results in the project area being classified as high avifaunal Site Ecological Importance (SEI) (Figure 3-15).

Table 5-1 Site specific summary, comments and recommendations on the route associated with the Ferrum Mookodi powerline project.

ID	Comments and recommendations	Corresponding photograph
1-17	Broad habitat type: Kathu Bushveld Findings: Four Sociable Weaver nests were found alongside the route of the powerline on existing powerline towers. Vegetation consists of open grassy bushveld. Priority species recorded: **Pied Crow** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou**	

	Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture Sensitivity: High Recommendations: The line must follow the existing line as close as possible. Bird diverters must be placed according to industry standards along at least one of the parallel powerlines. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	
18-20	Broad habitat type: Kuruman Thornveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open grassy bushveld. Priority species recorded: None SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture** Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch	

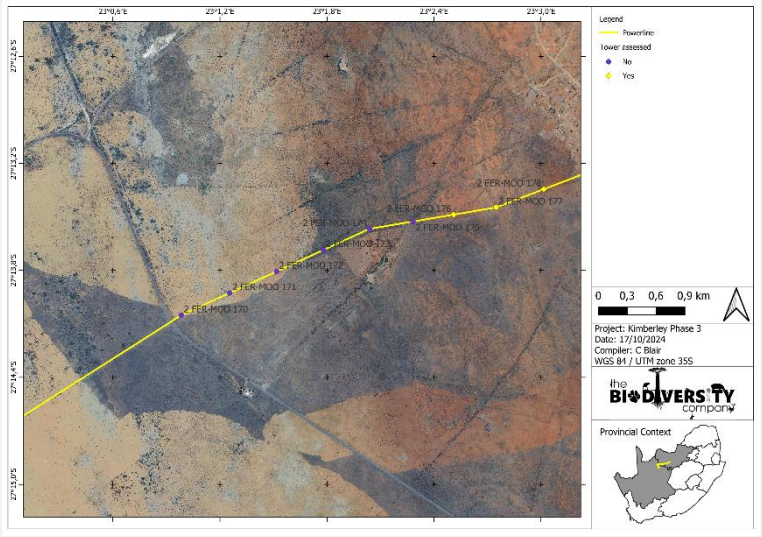
	devices placed on areas that can lead to electrocution.	
21-35	No access, unable to contact the landowners Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution. When the towers are being erected, an avifauna specialist must confirm there are no nests present.	
36-56	Broad habitat type: Kathu Bushveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open grassy bushveld. Priority species recorded: **Pied Crow** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture** Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest	

	proofed and anti-perch devices placed on areas that can lead to electrocution.	
57-80	No access, unable to contact the landowners Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution. When the towers are being erected, an avifauna specialist must confirm there are no nests present.	
81-98	Broad habitat type: Kathu Bushveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open thornveld. Priority species recorded: **Pale Chanting Goshawk, Pied Crow** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture** Sensitivity: High Recommendations: Bird diverters must be placed according to industry	

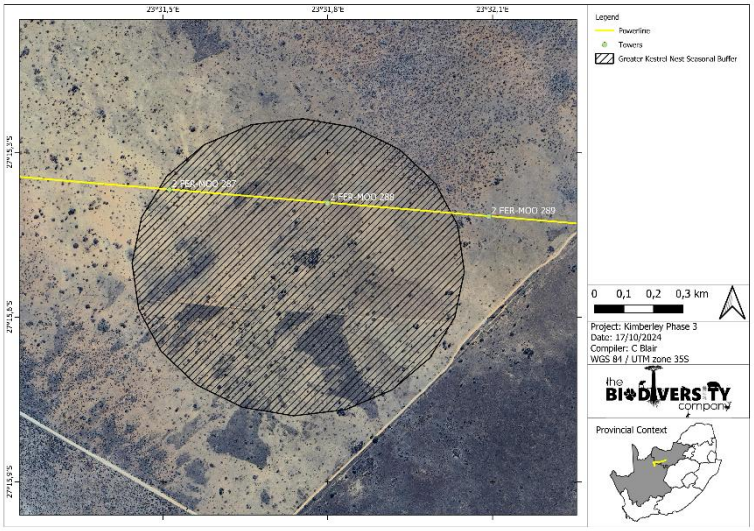
	standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	
99-115	Towers assessed at a distance Broad habitat type: Kathu Bushveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open thornveld. Priority species recorded: **Black-chested Snake Eagle** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture** Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	

116-123	Broad habitat type: Kathu Bushveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open thornveld. Priority species recorded: **Red-crested Korhaan, South African Shelduck** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture** Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	

123-137	No access, unable to contact anyone on property Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution. When the towers are being erected, an avifauna specialist must confirm there are no nests present.	
Deviation	Towers assessed at a distance Broad habitat type: Kathu Bushveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open thornveld. Priority species recorded: **Black-chested Snake Eagle** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture** Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch	

	devices placed on areas that can lead to electrocution.	
170-176	No access, unable to contact the landowner Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution. When the towers are being erected, an avifauna specialist must confirm there are no nests present.	
177-187	Broad habitat type: Kuruman Thornveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open dense thornveld. Priority species recorded: **Pied Crow, Red-crested Korhaan** SCC expected: **Secretarybird, Kori Bustard, Ludwig's Bustard, Burchell's Courser, Martial Eagle, Tawny Eagle, Verreaux's Eagle, Lanner Falcon, European Roller, Abdim's Stork, Black Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture** Sensitivity: High	

	Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	
188-201	Broad habitat type: Kuruman Mountain Bushveld Findings: The line crosses a rocky ridge over this section, although the vegetation is disturbed. Many vultures were observed in this section. This habitat is scarce in the region, only found in this section along the line. Priority species recorded: **Pied Crow** SCC expected: **Secretarybird, Kori Bustard, Ludwig's Bustard, Burchell's Courser, Martial Eagle, Tawny Eagle, Verreaux's Eagle, Lanner Falcon, European Roller, Abdim's Stork, Black Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture (recorded)** Sensitivity: High Recommendations: No changes to site selection are required. Due to the sensitivity of this habitat and the observed numbers of vultures, it needs to be ensured that the line is mitigated against collisions	

	and electrocutions through anti-perch devices and bird diverters placed 5 m apart.	
202-290	Broad habitat type: Kuruman Thornveld Findings: The line crosses a large river/wetland system between towers 211 and 212 with numbers of waterbirds, which will be vulnerable to collision. Vegetation consists of thornveld, which is dense in some areas. An active Greater Kestrel nest was found near tower 288. Priority species recorded: **Northern Black Korhaan, Red-crested Korhaan, Yellow-billed Duck, Red-billed Teal, South African Shelduck, Red-billed Spurfowl, Black-winged Stilt, Pied Crow** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Black Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture (recorded)** Sensitivity: High Recommendations: Collisions need to be heavily mitigated against where the line crosses the river by ensuring there are bird diverters placed every 5 m along the line. A 500 m seasonal buffer around	 

	the Greater Kestrel must be applied between July and February, where no construction is to take place during this period. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	
		

291-319	Broad habitat type: Kuruman Vaalbosveld Findings: The line crosses a large river/wetland system between towers 300 and 301 with waterbirds, which will be vulnerable to collision. Vegetation consists of open thornveld. Priority species recorded: **Egyptian Goose** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Black Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture** Sensitivity: High Recommendations: Collisions need to be heavily mitigated against where the line crosses the river by ensuring there are bird diverters placed every 5 m along the line. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	 

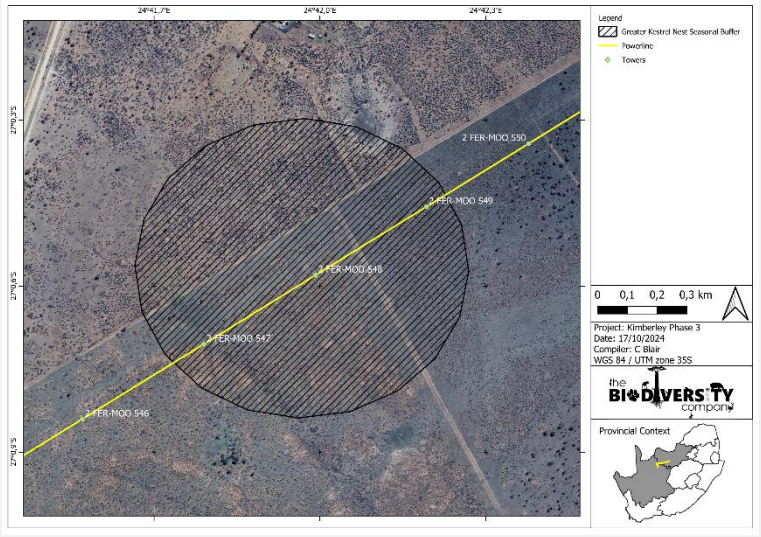
320-341	Broad habitat type: Kuruman Thornveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open thornveld and grassland. Priority species recorded: None SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Verreaux's Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture (recorded)** Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	

342-419	Broad habitat type: Kuruman Vaalbosveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open thornveld. Priority species recorded: **Red-crested Korhaan, Helmeted Guineafowl, Swainson's Spurfowl, Orange River Francolin, Pied Crow, Gabar Goshawk, Greater Kestrel, Black Sparrowhawk, Hamerkop** SCC expected: **Secretarybird, Kori Bustard (recorded), Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture (recorded)** Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	
420-480	Broad habitat type: Mafikeng Bushveld Findings: No specific avifauna constraints were recorded.	

	Vegetation consists of open thornveld. Priority species recorded: **Northern Black Korhaan, Red-crested Korhaan, Orange River Francolin, Black-chested Snake Eagle** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture (recorded), White-backed Vulture** Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	
481-497	Broad habitat type: Ghaap Plateau Vaalbosveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open thornveld. Priority species recorded: **Pied Crow** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou**	

	Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	
498-506	Broad habitat type: Mafikeng Bushveld Findings: No specific avifauna constraints were recorded. Vegetation consists of open thornveld. Priority species recorded: **Northern Black Korhaan, Lilac-breasted Roller** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture, White-backed Vulture** Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.	

507-562	Broad habitat type: Ghaap Plateau Vaalbosveld Findings: A likely Red-crested Korhaan nest was found between towers 551 and 552. An active Greater Kestrel nest was found on the existing tower alongside tower 548. Vegetation consists of open thornveld. There is a river crossing with waterbirds present along this section. Priority species recorded: **Pied Crow, Red-crested Korhaan, Northern Black Korhaan, Greater Kestrel, Little Egret, Western Cattle Egret, Hadada Ibis, Helmeted Guineafowl, Gabar Goshawk** SCC expected: **Secretarybird, Kori Bustard, Martial Eagle, Tawny Eagle, Lanner Falcon, European Roller, Abdim's Stork, Marabou Stork, Cape Vulture, Lappet-faced Vulture (recorded), White-backed Vulture** Sensitivity: High Recommendations: Bird diverters must be placed according to industry standards. All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution. A 500 m seasonal buffer around the Greater Kestrel must be	 

	applied between July and February, where no construction is to take place during this period.	 

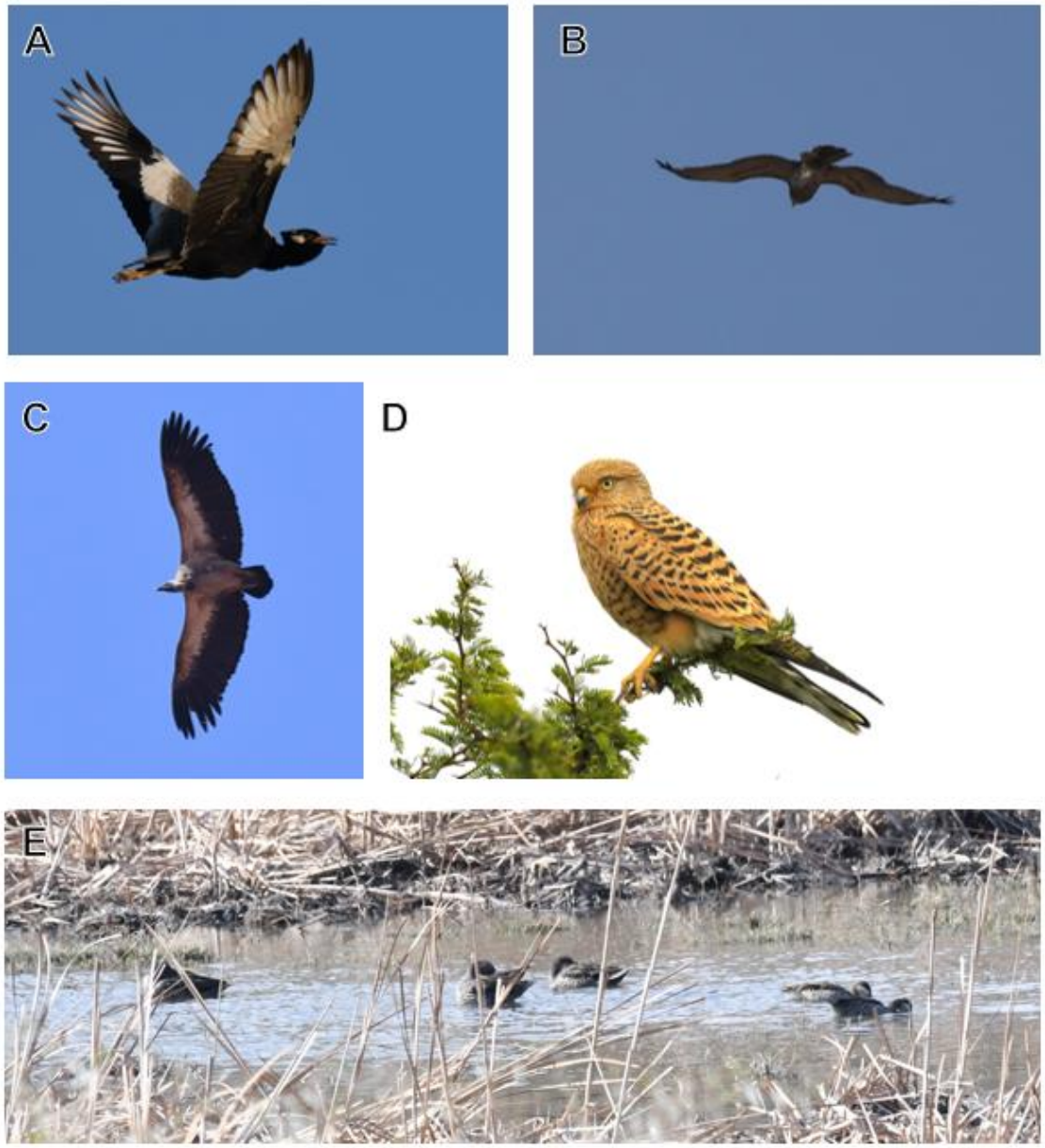


Figure 5-1 ***Some of the priority and SCC recorded, A) Northern Black Korhaan (Afrotis afraoides), B) Black-chested Snake Eagle (Circaetus pectoralis), C) White-backed Vulture (Gyps africanus), D) Greater Kestrel (Falco rupicoloides), E) Yellow-billed Duck (Anas undulata) and Red-billed Teal (Anas erythrorhyncha).***

5.2 Observations

The following are observations pertaining to project area recorded from the ecological walkdown. Avifauna Priority and SCCs are detailed below:

- The SCC, Kori Bustard (*Ardeotis kori*), Lappet-faced Vulture (*Torgos tracheliotos*) and White-backed Vulture (*Gyps africanus*) were recorded;
- Additional priority species Black Sparrowhawk (*Accipiter melanoleucus*), Black-chested Snake Eagle (*Circaetus pectoralis*), Black-winged Stilt (*Himantopus himantopus*), Cape Crow (*Corvus capensis*), Egyptian Goose (*Alopochen aegyptiaca*), Gabar Goshawk (*Micronisus gabar*), Greater Kestrel (*Falco rupicoloides*), Hadada Ibis (*Bostrychia hagedash*), Hamerkop (*Scopus umbretta*), Helmeted Guineafowl (*Numida meleagris*), Little Egret (*Egretta garzetta*), Northern Black Korhaan (*Afrotis afraoides*), Orange River Francolin (*Scleroptila gutturalis*), Pale Chanting Goshawk (*Melierax canorus*), Pied Crow (*Corvus albus*), Red-billed Spurfowl (*Pternistis adspersus*), Red-billed Teal (*Anas erythrorhyncha*), Red-crested Korhaan (*Lophotis ruficrista*), South African Shelduck (*Tadorna cana*), Swainson's Spurfowl (*Pternistis swainsonii*), Western Barn Owl (*Tyto alba*), Western Cattle Egret (*Bubulcus ibis*) and Yellow-billed Duck (*Anas undulata*) were also recorded; and
- All mitigation measures prescribed by the avifaunal specialist remain applicable for the development and must be adhered to.

6 Avifauna Impact Management Actions

The purpose of the Biodiversity Impact Management Actions is to present the mitigations in such a way that they can be incorporated into the Environmental Management Programme (EMPr), allowing for more successful implementation and auditing of the mitigations and monitoring guidelines. This mitigation table must be read in conjunction with the Generic Environmental Management Programme (EMPR) for the development and expansion of substation infrastructure for the transmission and distribution of electricity as per No. 42323 GOVERNMENT GAZETTE, 22 MARCH 2019 (Table 6-1).

Table 6-1 Management objectives for the Ferrum Mookodi section of the Kimberley Phase 3 project.

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
Management outcome: Vegetation and Habitats as described in the ecological walkdown report				
ECO walk ahead of clearance to ensure that no new nests are destroyed	Construction/Operational Phase	Environmental Officer & Design Engineer	Development footprint	Ongoing
Areas of indigenous vegetation, even secondary communities outside of the direct footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimised and avoided where possible. All activities must be restricted to flat areas as far as possible. 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 to be rehabilitated and landscaped after installation is complete. Rehabilitation of the disturbed areas existing in the project 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 indigenous to this vegetation type.	Life of operation	Project manager, Environmental Officer	Areas of indigenous vegetation	Ongoing
Existing access routes, especially roads must be made use of where feasible. The development areas and access roads should be specifically demarcated so that during the construction phase, only the demarcated areas may be impacted upon	Construction/Operational Phase	Environmental Officer & Design Engineer	Roads and paths used	Ongoing
Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species. Rehabilitated areas must be cordoned off and livestock access not permitted.	Operational phase	Environmental Officer & Contractor	Assess the state of rehabilitation and encroachment of alien vegetation	Quarterly for up to two years after the closure
Management outcome: Avifauna				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency
The duration of the construction should be minimised to as short term as possible, to reduce the period of disturbance on avifauna.	Construction	Project manager, Environmental Officer & Design Engineer	Construction/Closure Phase	Ongoing
Outside lighting should be designed and limited to minimise impacts on avifauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible.	Construction/Operational Phase	Project manager, Environmental Officer & Design Engineer	Light pollution and period of light.	Ongoing

Noise must be kept to an absolute minimum during the evenings and at night to minimise all possible disturbances. Construction should be restricted to daylight hours.	Construction/Operational Phase	Environmental Officer	Noise levels	Ongoing
No trapping, killing, egg poaching or poisoning of any wildlife is to be allowed • Signs must be put up in communal areas to enforce this. • This must be communicated during toolbox talks.	Life of operation	Environmental Officer	Evidence of trapping etc	Ongoing
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, dust and erosion is limited. The speed limits should be restricted to maximum 40 km/h.	Life of operation	Health and Safety Officer	Compliance to the training.	Ongoing
Any holes/deep excavations must be dug and planted in a progressive manner and should not be left open overnight; • Should the holes overnight they must be covered temporarily to ensure no avifauna species fall in.	Planning and Construction	Environmental Officer & Contractor, Engineer	Presence of trapped animals and open holes	Ongoing
Power line mitigations: • Powerline construction must follow the guidelines as outlined in the "Generic Environmental Management Programme Relevant to an Application for Substation and Overhead Electricity Transmission and Distribution Infrastructure", outlined in Government Gazette No. 42323 of 22 March 2019, must be adopted. However, diverters such as flapping devices (dynamic device) and thickened wire spirals (static device) that increase the visibility of the lines need to be placed every 5 - 10 m across the entire line due to the high presence of SCC in the area. Areas identified as possible collision hotspots must have diverters placed at an interval of 5 m. The Inotec BFD88 bird diverter is highly recommended due to its visibility under low light conditions when most species move from roosting to feeding sites; BFDs should be fitted on the OHL during construction, in consultation with the bird specialist. • Power lines must be fitted with bird diverters for the extent of the line • The design of the proposed transmission line must be of a type or similar structure as endorsed by the Eskom-EWT Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa (2017). Bird diverters or spirals must be added to the transmission line to reduce fatalities. • Any OHLs must be of a design that minimizes electrocution risk by using adequately insulated 'bird friendly' monopole structures, with clearances between live components of 2 m or greater.	Life of Operation	Project manager, Environmental Officer & Design Engineer	Presence of birds stuck /dead in power lines. Monitor power lines	During operations phase

• Ensure that the phase cables are spaced far enough apart to reduce the risk of large birds touching both simultaneously (2 m for large raptors and vultures) (Prinsen et al., 2012). If such separation (isolation) cannot be provided, exposed parts must be covered (insulated) to reduce electrocution risk. • Post construction collision monitoring following the best practice guidelines must be performed. During the first year, the line needs to be monitored quarterly by a SACNASP registered avifauna specialist; monitoring should include carcasses searches to identify further hotspot areas along the power line that need further mitigations. During the second year, the line needs to be monitored bi-annually. Thereafter, it needs to be monitored every 3-5 years. If hotspots or excessive deaths are observed, additional mitigations must be implemented. If any vulture incidents are observed, they should be reported to Vulpro, and any other avian incidents need to be reported to EWT and BirdLife South Africa. • All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution. • All mitigations must be reassessed on a 5 year basis to determine if they are still appropriate and should be updated accordingly				
No construction activity should occur within 500 m of the identified Greater Kestrel nests between the months of July to February.	Construction Phase	Project manager & Environmental Officer	Construction/Closure Phase	Ongoing
Management outcome: Alien species				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency
Compilation of and implementation of an alien vegetation management plan for the grid corridor.	Life of operation	Project manager, Environmental Officer & Contractor	Assess presence and encroachment of alien vegetation	As per existing EMPR
The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. Footprint of the roads must be kept to prescribed widths.	Construction/Operational Phase	Project manager, Environmental Officer & Contractor	Footprint Area	Life of operation
Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site	Life of operation	Environmental Officer & Health and Safety Officer	Presence of waste	Life of operation
Management outcome: Dust				
Impact Management Actions	**Implementation**		**Monitoring**	

	Phase	Responsible Party	Aspect	Frequency
Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes wetting of exposed soft soil surfaces. • No non environmentally friendly suppressants may be used as this could result in pollution of water sources	Life of operation	Contractor	Dustfall	Dust monitoring program.
Management outcome: Waste management				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency
Waste management must be a priority and all waste must be collected and stored effectively.	Life of operation	Environmental Officer & Contractor	Waste Removal	Weekly
Litter, spills, fuels, chemicals and human waste in and around the project area must be managed. Designated collection areas must be created, and waste separated accordingly.	Construction/Closure Phase	Environmental Officer & Health and Safety Officer	Presence of Waste	Daily
A minimum of one toilet must be provided per 10 persons. Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.	Life of operation	Environmental Officer & Health and Safety Officer	Number of toilets per staff member. Waste levels	Daily
The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility	Life of operation	Environmental Officer & Health and Safety Officer	Availability of bins and the collection of the waste.	Ongoing
Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site	Life of operation	Environmental Officer, Contractor & Health and Safety Officer	Collection/handling of the waste.	Ongoing
Management outcome: Environmental awareness training				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency
All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of SCC and priority species, their identification, conservation status and importance, biology, habitat requirements and management requirements the Environmental Authorisation and within the EMPr.	Life of operation	Health and Safety Officer	Compliance to the training.	Ongoing
Management outcome: Erosion				
Impact Management Actions	**Implementation**		**Monitoring**	
	Phase	Responsible Party	Aspect	Frequency

Speed limits of 40 km/h must be put in place to reduce erosion. • Reducing the dust generated by the listed activities above, especially the earth moving machinery, through wetting the soil surface and putting up signs to enforce speed limit; • Signs must be put up to enforce this.	Life of operation	Project manager, Environmental Officer	Water Runoff from road surfaces	Ongoing
Where possible, existing access routes and walking paths must be made use of special precautions to prevent erosion and to stabilise existing erosion.	Life of operation	Project manager, Environmental Officer	Routes used within the area	Ongoing
Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events and strong winds.	Life of operation	Project manager, Environmental Officer	Re-establishment of indigenous vegetation	Progressively

7 Conclusions and Recommendations

Recommendations have been provided for the footprint areas that will notably impact the local habitats and / or SCC. The following recommendations are in addition to what has been provided for the footprint areas:

- 500 m seasonal no-go buffers need to be applied to the Greater Kestrel nests observed near the proposed powerline. No construction activities are permitted within 500 m of these nests between the months of July and February;
- The entire line should be mitigated against collisions and electrocutions by nest-proofing and installing anti-perch devices in regions of electrocution risk, as well as placing bird diverters according to industry standards;
- Identified areas of high collision risk must have the diverters placed 5 m apart.
- Due to the high sensitivities of the proposed line, a SACNASP registered avifauna specialist will have to draft a detailed ornithological management plan. Herewith are some preliminary suggestions:
    1. During the first year, the line needs to be monitored quarterly by a SACNASP registered avifauna specialist; monitoring should include carcasses searches to identify further hotspot areas along the power line that need further mitigations;
    2. During the second year, the line needs to be monitored bi-annually;
    3. Thereafter, it needs to be monitored every 3 – 5 years;
    4. If hotspots or excessive deaths are observed, additional mitigations must be implemented.
- All mitigation measures prescribed by Molepo (2020) remain applicable for the development and must be adhered to; and
- All mitigation measures prescribed within the report must be adhered to.

8 Specialist Opinion

It is the opinion of the specialist that the development can be cautiously considered should the mitigation measures and management actions be implemented.

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10 Appendix Items

10.1 Appendix A: Methodology

10.1.1 Desktop Dataset Assessment

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

10.1.1.1 Expected Species

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

- Avifauna list, generated from the SABAP2 dataset by looking at pentads: 2655_2430; 2655_2435; 2655_2440; 2655_2445; 2700_2405; 2700_2410; 2700_2415; 2700_2420; 2700_2425; 2700_2430;2700_2435; 2700_2440; 2700_2445; 2705_2250; 2705_2255; 2705_2300; 2705_2305; 2705_2315; 2705_2320; 2705_2330; 2705_2335; 2705_2350; 2705_2355; 2705_2400; 2705_2405; 2705_2410; 2705_2415; 2705_2425; 2705_2435; 2705_2445; 2710_2250; 2710_2255; 2710_2300; 2710_2305; 2710_2310; 2710_2315; 2710_2320; 2710_2325; 2710_2330; 2710_2350; 2710_2400; 2710_2405; 2710_2410; 2710_2415; 2710_2420; 2710_2430; 2715_2250; 2715_2255; 2715_2300 ;2715_2305; 2715_2310; 2715_2315; 2715_2320; 2715_2325; 2715_2330; 2715_2335; 2715_2340; 2715_2350; 2715_2400; 2715_2405; 2715_2410; 2720_2250; 2720_2300; 2720_2305; 2720_2310; 2720_2315; 2720_2320; 2720_2325; 2720_2330; 2720_2335; 2720_2340; 2720_2345; 2720_2350; 2725_2250; 2725_2305; 2725_2310; 2730_2250; 2730_2255; 2730_2300; 2730_2305; 2730_2310; 2735_2255; 2735_2300; 2735_2305; 2740_2255; 2740_2300; 2740_2305; 2745_2255; 2745_2300; 2745_2305

10.1.1.2 Ecologically Important Landscape Features

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

- Ecosystem Threat Status (ETS) – indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. The revised red list of threatened ecosystems was developed between 2016 and 2021 incorporating the best available information on terrestrial ecosystem extent and condition, pressures, and drivers of change. The revised list (known as the Red List of Ecosystems (RLE) 2022) is based on assessments that followed the International Union for Conservation of Nature (IUCN) Red List of Ecosystems Framework (version 1.1) and covers all 456 terrestrial ecosystem types described in South Africa (Mucina and Rutherford 2006; with updates described in Dayaram *et al.,* 2019). The revised list identifies 120

threatened terrestrial ecosystem types (55 Critically Endangered, 51 Endangered and 14 Vulnerable types). The revised list was published in the Government Gazette (Gazette Number 47526, Notice Number 2747) and came into effect on 18 November 2022.

- Ecosystem Protection level (EPL) informs on whether ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Not Protected (NP), Poorly Protected (PP), Moderately Protected (MP) or Well Protected (WP), based on the proportion of each ecosystem type that occurs within a protected area recognised in the Protected Areas Act (Skowno *et al.,* 2019). NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems.

- Protected areas - South Africa Protected Areas Database (SAPAD) (DEA, 2023) – The SAPAD Database contains spatial data pertinent to the conservation of South African biodiversity. It includes spatial and attribute information for both formally protected areas and areas that have less formal protection. SAPAD is updated on a continuous basis and forms the basis for the Register of Protected Areas, which is a legislative requirement under the National Environmental Management: Protected Areas Act, Act 57 of 2003.

- National Protected Areas Expansion Strategy (NPAES) (SANBI, 2018) – The NPAES provides spatial information on areas that are suitable for terrestrial ecosystem protection. These focus areas are large, intact and unfragmented and therefore, of high importance for biodiversity, climate resilience and freshwater protection.

- The Northern Cape Department of Environment and Nature Conservation has developed the Northern Cape CBA Map which identifies biodiversity priority areas for the province, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). These biodiversity priority areas, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole.

  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.

  The Northern Cape Critical Biodiversity Area (CBA) Map updates, revises and replaces all older systematic biodiversity plans and associated products for the province.

  The North-West Department of Rural, Environment, and Agricultural Development (READ), as custodian of the environment in the North West, is the primary implementing agent of the Biodiversity Sector Plan. The spatial component of the Biodiversity Sector Plan is based on systematic biodiversity planning undertaken by READ. The purpose of a Biodiversity Sector Plan is to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity. This is done by providing a map of biodiversity priority areas,

referred to as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), with accompanying land use planning and decision-making guidelines (READ, 2015).

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then biodiversity targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses (READ, 2015).

Ecological Support Areas (ESAs) are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds), but which play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree or extent of restriction on land use and resource use in these areas may be lower than that recommended for CBAs (READ, 2015).

- 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).

- South African Inventory of Inland Aquatic Ecosystems (SAIIAE) (Van Deventer *et al.,* 2018) – A SAIIAE was established during the NBA of 2018. It is a collection of data layers that represent the extent of river and inland wetland ecosystem types and pressures on these systems.

10.1.2 Avifauna Survey

Sampling consisted of standardized point counts as well as random diurnal incidental surveys. Standardised point counts (Buckland *et al,* 1993) were conducted to gather data on the species composition and relative abundance of species within the broad habitat types identified. The standardized point count technique was utilised as it was demonstrated to outperform line routes (Cumming & Henry, 2019). Each point count was run over a 10 min

period. The horizontal detection limit was set at 150 m. At each point the observer would document the date, start time, and end time, habitat, numbers of each species, detection method (seen or heard), behaviour (perched or flying) and general notes on habitat and nesting suitability for conservation important species. To supplement the species inventory with cryptic and illusive species that may not be detected during the rigid point count protocol, incidental searches were conducted. This involved the opportunistic sampling of species between point count periods, random meandering and road cruising. Effort was made to cover all the different habitat types within the limits of time and access.

10.1.2.1 Data Analysis

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

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

10.2 Appendix B: Site Ecological Importance

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

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

BI is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor as follows. The criteria for the CI and FI ratings are provided Table 10-1 and, respectively Table 10-2.

Table 10-1 Summary of Conservation Importance (CI) criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of CR, EN, VU or Extremely Rare or CR species that have a global extent of occurrence (EOO) of < 10 km^2. Any area of natural habitat of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent) of natural habitat of an EN ecosystem type. Globally significant populations of congregatory species (> 10% of global population).
High	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km^2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A. If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining. Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type.

	Presence of Rare species. Globally significant populations of congregatory species (> 1% but < 10% of global population).
Medium	Confirmed or highly likely occurrence of populations of Near Threatened (NT) species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals. Any area of natural habitat of threatened ecosystem type with status of VU. Presence of range-restricted species. > 50% of receptor contains natural habitat with potential to support SCC.
Low	No confirmed or highly likely populations of SCC. No confirmed or highly likely populations of range-restricted species. < 50% of receptor contains natural habitat with limited potential to support SCC.
Very Low	No confirmed and highly unlikely populations of SCC. No confirmed and highly unlikely populations of range-restricted species. No natural habitat remaining.

Table 10-2 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 10-3.

Table 10-3 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	**Very high**	Very high	Very high	High	Medium	Low

Biodiversity Importance (BI)		Conservation Importance (CI)				
		Very high	High	Medium	Low	Very 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 10-4.

Table 10-4 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 remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed.
High	Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed.
Medium	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.
Low	Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed.
Very Low	Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are unlikely to return to a site once the disturbance or impact has been removed.

Subsequent to the determination of the BI and RR, the SEI can be ascertained using the matrix as provided in Table 10-5.

Table 10-5 Matrix used to derive Site Ecological Importance (SEI) from Receptor Resilience (RR) and Biodiversity Importance (BI)

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

Interpretation of the SEI in the context of the proposed development activities is provided in Table 10-6.

Table 10-6 Guidelines for interpreting Site Ecological Importance (SEI) in the context of the proposed development activities

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

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

10.3 Appendix C: Impact Assessment Significance Rating

Impact assessment must take account of the nature, scale, and duration of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the project phases:

- Construction;
- Operation; and
- Decommissioning.

Duration of the Impact	Rating
Immediate (<1 year)	1
Short term (1-5 years)	2
Medium term (5-15 years)	3
Long term (ceases after the operational life span of the project)	4
Permanent	5
Extent of the Impact	**Rating**
Site (site only)	1
Local (site boundary and immediate surrounds)	2
Regional (within the three local municipalities)	3
National	4
International	5
Magnitude of the Impact	**Rating**
None	0
Minor	2
Low	4
Moderate (environmental functions altered but continue)	6
High (environmental functions temporarily cease)	8

Very high / Unsure (environmental functions permanently cease)	10
Reversibility	**Rating**
Completely reversible	1
Partly reversible	2
Barely reversible	3
Irreversible	4
Probability of Occurrence	**Rating**
None (the impact will not occur)	0
Improbable (probability very low due to design or experience)	1
Low probability (unlikely to occur)	2
Medium probability (distinct probability that the impact will occur)	3
High probability (most likely to occur)	4
Definite.	5

	Significance	Description of Significance
(<30)	Low	The activity will have a low impact in the environment. This impact would not have a direct influence on the decision to develop in the area.
(30-60)	Medium	Medium Impact – the activity will have a medium impact on the environment. The impact could influence the decision to develop in the area unless it is effectively mitigated.
(>60)	High	The activity will have a high impact on the environment. The impact must have an influence on the decision process to develop in the area.

10.4 Appendix D: Expected Avifaunal Species From SABAP2 Data

Scientific Name	Common Name	Family Name	Regional	Global (IUCN)	Endemism in South Africa (E)
Accipiter badius	Shikra	*Accipitridae*	Unlisted	Unlisted	
Acridotheres tristis	Common Myna	*Sturnidae*	Unlisted	Unlisted	
Acrocephalus arundinaceus	Great Reed Warbler	*Acrocephalidae*	Unlisted	Unlisted	
Acrocephalus baeticatus	Common Reed Warbler	*Acrocephalidae*	Unlisted	Unlisted	
Acrocephalus gracilirostris	Lesser Swamp Warbler	*Acrocephalidae*	Unlisted	Unlisted	
Acrocephalus schoenobaenus	Sedge Warbler	*Acrocephalidae*	Unlisted	Unlisted	
Actitis hypoleucos	Common Sandpiper	*Scolopacidae*	Unlisted	Unlisted	
Afrotis afraoides	Northern Black Korhaan	*Otididae*	Unlisted	Unlisted	
Alopochen aegyptiaca	Egyptian Goose	*Anatidae*	Unlisted	Unlisted	
Amadina erythrocephala	Red-headed Finch	*Estriididae*	Unlisted	Unlisted	
Anas capensis	Cape Teal	*Anatidae*	Unlisted	Unlisted	
Anas erythrorhyncha	Red-billed Teal	*Anatidae*	Unlisted	Unlisted	
Anas platyrhynchos	Mallard	*Anatidae*	Unlisted	Unlisted	
Anas undulata	Yellow-billed Duck	*Anatidae*	Unlisted	Unlisted	
Anhinga rufa	African Darter	*Anhingidae*	Unlisted	Unlisted	
Anthoscopus minutus	Cape Penduline Tit	*Remizidae*	Unlisted	Unlisted	

Anthropoides paradiseus	Blue Crane	*Gruidae*	NT	VU	
Anthus cinnamomeus	African Pipit	*Motacillidae*	Unlisted	Unlisted	
Anthus leucophrys	Plain-backed Pipit	*Motacillidae*	Unlisted	Unlisted	
Anthus nicholsoni	Nicholson's Pipit	*Motacillidae*	Unlisted	Unlisted	
Anthus vaalensis	Buffy Pipit	*Motacillidae*	Unlisted	Unlisted	
Apus affinis	Little Swift	*Apodidae*	Unlisted	Unlisted	
Apus apus	Common Swift	*Apodidae*	Unlisted	Unlisted	
Apus barbatus	African Black Swift	*Apodidae*	Unlisted	Unlisted	
Apus bradfieldi	Bradfield's Swift	*Apodidae*	Unlisted	Unlisted	
Apus caffer	White-rumped Swift	*Apodidae*	Unlisted	Unlisted	
Aquila rapax	Tawny Eagle	*Accipitridae*	EN	VU	
Aquila verreauxii	Verreaux's Eagle	*Accipitridae*	NA	LC	
Ardea cinerea	Grey Heron	*Ardeidae*	Unlisted	Unlisted	
Ardea melanocephala	Black-headed Heron	*Ardeidae*	Unlisted	Unlisted	
Ardea purpurea	Purple Heron	*Ardeidae*	Unlisted	Unlisted	
Ardeola ralloides	Squacco Heron	*Ardeidae*	Unlisted	Unlisted	
Ardeotis kori	Kori Bustard	*Otididae*	NT	NT	
Batis pririt	Pririt Batis	*Platysteiridae*	Unlisted	Unlisted	
Bostrychia hagedash	Hadada Ibis	*Threskiornithidae*	Unlisted	Unlisted	
Brunhilda erythronotos	Black-faced Waxbill	*Estrildidae*	Unlisted	Unlisted	
Bubalornis niger	Red-billed Buffalo Weaver	*Ploceidae*	Unlisted	Unlisted	
Bubo africanus	Spotted Eagle-Owl	*Strigidae*	Unlisted	Unlisted	
Bubo lacteus	Verreaux's Eagle-Owl	*Strigidae*	Unlisted	Unlisted	
Bubulcus ibis	Western Cattle Egret	*Ardeidae*	Unlisted	Unlisted	
Buphagus erythrorynchus	Red-billed Oxpecker	*Buphagidae*	Unlisted	Unlisted	
Burhinus capensis	Spotted Thick-knee	*Burhinidae*	Unlisted	Unlisted	
Buteo buteo	Common Buzzard	*Accipitridae*	Unlisted	Unlisted	
Buteo rufofuscus	Jackal Buzzard	*Accipitridae*	Unlisted	Unlisted	NE
Butorides striata	Striated Heron	*Ardeidae*	Unlisted	Unlisted	
Calamonastes fasciolatus	Barred Wren-Warbler	*Cisticolidae*	Unlisted	Unlisted	
Calandrella cinerea	Red-capped Lark	*Alaudidae*	Unlisted	Unlisted	
Calendulauda africanoides	Fawn-colored Lark	*Alaudidae*	Unlisted	Unlisted	
Calendulauda sabota	Sabota Lark	*Alaudidae*	Unlisted	Unlisted	
Calidris minuta	Little Stint	*Scolopacidae*	Unlisted	Unlisted	
Calidris pugnax	Ruff	*Scolopacidae*	Unlisted	Unlisted	
Campethera abingoni	Golden-tailed Woodpecker	*Picidae*	Unlisted	Unlisted	
Campethera bennettii	Bennett's Woodpecker	*Picidae*	Unlisted	Unlisted	
Caprimulgus rufigena	Rufous-cheeked Nightjar	*Caprimulgidae*	Unlisted	Unlisted	
Cecropis cucullata	Greater Striped Swallow	*Hirundinidae*	Unlisted	Unlisted	

Cecropis semirufa	Red-breasted Swallow	*Hirundinidae*	Unlisted	Unlisted
Centropus burchellii	Burchell's Coucal	*Cuculidae*	Unlisted	Unlisted
Cercotrichas coryphoeus	Karoo Scrub Robin	*Muscicapidae*	Unlisted	Unlisted
Cercotrichas paena	Kalahari Scrub Robin	*Muscicapidae*	Unlisted	Unlisted
Ceryle rudis	Pied Kingfisher	*Alcedinidae*	Unlisted	Unlisted
Charadrius pecuarius	Kittlitz's Plover	*Charadriidae*	Unlisted	Unlisted
Charadrius tricollaris	Three-banded Plover	*Charadriidae*	Unlisted	Unlisted
Chersomanes albofasciata	Spike-heeled Lark	*Alaudidae*	Unlisted	Unlisted
Chloropicus namaquus	Bearded Woodpecker	*Picidae*	Unlisted	Unlisted
Chroicocephalus cirrocephalus	Grey-headed Gull	*Laridae*	Unlisted	Unlisted
Chrysococcyx caprius	Diederik Cuckoo	*Cuculidae*	Unlisted	Unlisted
Chrysococcyx klaas	Klaas's Cuckoo	*Cuculidae*	Unlisted	Unlisted
Ciconia abdimii	Abdim's Stork	*Ciconiidae*	NT	LC
Ciconia ciconia	White Stork	*Ciconiidae*	Unlisted	Unlisted
Ciconia nigra	Black Stork	*Ciconiidae*	VU	LC
Cinnyris fuscus	Dusky Sunbird	*Nectariniidae*	Unlisted	Unlisted
Cinnyris mariquensis	Marico Sunbird	*Nectariniidae*	Unlisted	Unlisted
Cinnyris talatala	White-bellied Sunbird	*Nectariniidae*	Unlisted	Unlisted
Circaetus cinereus	Brown Snake Eagle	*Accipitridae*	Unlisted	Unlisted
Circaetus pectoralis	Black-chested Snake Eagle	*Accipitridae*	Unlisted	Unlisted
Cisticola aridulus	Desert Cisticola	*Cisticolidae*	Unlisted	Unlisted
Cisticola chiniana	Rattling Cisticola	*Cisticolidae*	Unlisted	Unlisted
Cisticola fulvicapilla	Neddicky	*Cisticolidae*	Unlisted	Unlisted
Cisticola juncidis	Zitting Cisticola	*Cisticolidae*	Unlisted	Unlisted
Cisticola rufilatus	Tinkling Cisticola	*Cisticolidae*	Unlisted	Unlisted
Cisticola subruficapilla	Grey-backed Cisticola	*Cisticolidae*	Unlisted	Unlisted
Cisticola tinniens	Levaillant's Cisticola	*Cisticolidae*	Unlisted	Unlisted
Clamator glandarius	Great Spotted Cuckoo	*Cuculidae*	Unlisted	Unlisted
Clamator jacobinus	Jacobin Cuckoo	*Cuculidae*	Unlisted	Unlisted
Colius colius	White-backed Mousebird	*Coliidae*	Unlisted	Unlisted
Colius striatus	Speckled Mousebird	*Coliidae*	Unlisted	Unlisted
Columba guinea	Speckled Pigeon	*Columbidae*	Unlisted	Unlisted
Columba livia	Rock Dove	*Columbidae*	Unlisted	Unlisted
Coracias caudatus	Lilac-breasted Roller	*Coraciidae*	Unlisted	Unlisted
Coracias garrulus	European Roller	*Coraciidae*	NT	LC
Coracias naevius	Purple Roller	*Coraciidae*	Unlisted	Unlisted
Corvus albus	Pied Crow	*Corvidae*	Unlisted	Unlisted
Corvus capensis	Cape Crow	*Corvidae*	Unlisted	Unlisted
Corythaixoides concolor	Grey Go-away-bird	*Musophagidae*	Unlisted	Unlisted

Cossypha caffra	Cape Robin-Chat	*Muscicapidae*	Unlisted	Unlisted	
Coturnix coturnix	Common Quail	*Phasianidae*	Unlisted	Unlisted	
Creatophora cinerea	Wattled Starling	*Sturnidae*	Unlisted	Unlisted	
Crithagra albogularis	White-throated Canary	*Fringillidae*	Unlisted	Unlisted	
Crithagra atrogularis	Black-throated Canary	*Fringillidae*	Unlisted	Unlisted	
Crithagra flaviventris	Yellow Canary	*Fringillidae*	Unlisted	Unlisted	
Cuculus clamosus	Black Cuckoo	*Cuculidae*	Unlisted	Unlisted	
Cuculus gularis	African Cuckoo	*Cuculidae*	Unlisted	Unlisted	
Curruca layardi	Layard's Warbler	*Sylviidae*	Unlisted	Unlisted	NE
Curruca subcoerulea	Chestnut-vented Warbler	*Sylviidae*	Unlisted	Unlisted	
Cursorius rufus	Burchell's Courser	*Glareolidae*	VU	LC	
Cursorius temminckii	Temminck's Courser	*Glareolidae*	Unlisted	Unlisted	
Cypsiurus parvus	African Palm Swift	*Apodidae*	Unlisted	Unlisted	
Dendrocygna viduata	White-faced Whistling Duck	*Anatidae*	Unlisted	Unlisted	
Dendropicos fuscescens	Cardinal Woodpecker	*Picidae*	Unlisted	Unlisted	
Dicrurus adsimilis	Fork-tailed Drongo	*Dicruridae*	Unlisted	Unlisted	
Egretta garzetta	Little Egret	*Ardeidae*	Unlisted	Unlisted	
Elanus caeruleus	Black-winged Kite	*Accipitridae*	Unlisted	Unlisted	
Emberiza flaviventris	Golden-breasted Bunting	*Emberizidae*	Unlisted	Unlisted	
Emberiza impetuani	Lark-like Bunting	*Emberizidae*	Unlisted	Unlisted	
Emberiza tahapisi	Cinnamon-breasted Bunting	*Emberizidae*	Unlisted	Unlisted	
Eremomela icteropygialis	Yellow-bellied Eremomela	*Cisticolidae*	Unlisted	Unlisted	
Eremopterix verticalis	Grey-backed Sparrow-Lark	*Alaudidae*	Unlisted	Unlisted	
Estrilda astrild	Common Waxbill	*Estrildidae*	Unlisted	Unlisted	
Euplectes afer	Yellow-crowned Bishop	*Ploceidae*	Unlisted	Unlisted	
Euplectes orix	Southern Red Bishop	*Ploceidae*	Unlisted	Unlisted	
Euplectes progne	Long-tailed Widowbird	*Ploceidae*	Unlisted	Unlisted	
Eurocephalus anguitimens	Southern White-crowned Shrike	*Laniidae*	Unlisted	Unlisted	
Falco amurensis	Amur Falcon	*Falconidae*	Unlisted	Unlisted	
Falco biarmicus	Lanner Falcon	*Falconidae*	VU	LC	
Falco naumanni	Lesser Kestrel	*Falconidae*	Unlisted	Unlisted	
Falco rupicoloides	Greater Kestrel	*Falconidae*	Unlisted	Unlisted	
Falco rupicolus	Rock Kestrel	*Falconidae*	Unlisted	Unlisted	
Fulica cristata	Red-knobbed Coot	*Rallidae*	Unlisted	Unlisted	
Gallinago nigripennis	African Snipe	*Scolopacidae*	Unlisted	Unlisted	
Gallinula chloropus	Common Moorhen	*Rallidae*	Unlisted	Unlisted	
Glaucidium perlatum	Pearl-spotted Owlet	*Strigidae*	Unlisted	Unlisted	
Granatina granatina	Violet-eared Waxbill	*Estrildidae*	Unlisted	Unlisted	
Gymnoris superciliaris	Yellow-throated Bush Sparrow	*Passeridae*	Unlisted	Unlisted	

Gyps africanus	White-backed Vulture	*Accipitridae*	CR	CR	
Gyps coprotheres	Cape Vulture	*Accipitridae*	EN	VU	
Halcyon albiventris	Brown-hooded Kingfisher	*Alcedinidae*	Unlisted	Unlisted	
Halcyon senegalensis	Woodland Kingfisher	*Alcedinidae*	Unlisted	Unlisted	
Haliaeetus vocifer	African Fish Eagle	*Accipitridae*	Unlisted	Unlisted	
Himantopus himantopus	Black-winged Stilt	*Recurvirostridae*	Unlisted	Unlisted	
Hippolais icterina	Icterine Warbler	*Acrocephalidae*	Unlisted	Unlisted	
Hirundo albigularis	White-throated Swallow	*Hirundinidae*	Unlisted	Unlisted	
Hirundo dimidiata	Pearl-breasted Swallow	*Hirundinidae*	Unlisted	Unlisted	
Hirundo rustica	Barn Swallow	*Hirundinidae*	Unlisted	Unlisted	
Indicator indicator	Greater Honeyguide	*Indicatoridae*	Unlisted	Unlisted	
Indicator minor	Lesser Honeyguide	*Indicatoridae*	Unlisted	Unlisted	
Lagonosticta rhodopareia	Jameson's Firefinch	*Estriididae*	Unlisted	Unlisted	
Lagonosticta senegala	Red-billed Firefinch	*Estriididae*	Unlisted	Unlisted	
Lamprotornis bicolor	Pied Starling	*Sturnidae*	Unlisted	Unlisted	SLS
Lamprotornis nitens	Cape Starling	*Sturnidae*	Unlisted	Unlisted	
Laniarius atrococcineus	Crimson-breasted Shrike	*Malaconotidae*	Unlisted	Unlisted	
Lanius collaris	Southern Fiscal	*Laniidae*	Unlisted	Unlisted	
Lanius collurio	Red-backed Shrike	*Laniidae*	Unlisted	Unlisted	
Lanius minor	Lesser Grey Shrike	*Laniidae*	Unlisted	Unlisted	
Leptoptilos crumenifer	Marabou Stork	*Ciconiidae*	NT	LC	
Lophoceros nasutus	African Grey Hornbill	*Bucerotidae*	Unlisted	Unlisted	
Lophotis ruficrista	Red-crested Korhaan	*Otididae*	Unlisted	Unlisted	
Lybius torquatus	Black-collared Barbet	*Lybiidae*	Unlisted	Unlisted	
Macronyx capensis	Cape Longclaw	*Motacillidae*	Unlisted	Unlisted	
Malcorus pectoralis	Rufous-eared Warbler	*Cisticolidae*	Unlisted	Unlisted	
Melaenornis infuscatus	Chat Flycatcher	*Muscicapidae*	Unlisted	Unlisted	
Melaenornis mariquensis	Marico Flycatcher	*Muscicapidae*	Unlisted	Unlisted	
Melaenornis silens	Fiscal Flycatcher	*Muscicapidae*	Unlisted	Unlisted	NE
Melaniparus cinerascens	Ashy Tit	*Paridae*	Unlisted	Unlisted	
Melierax canorus	Pale Chanting Goshawk	*Accipitridae*	Unlisted	Unlisted	
Merops apiaster	European Bee-eater	*Meropidae*	Unlisted	Unlisted	
Merops hirundineus	Swallow-tailed Bee-eater	*Meropidae*	Unlisted	Unlisted	
Merops pusillus	Little Bee-eater	*Meropidae*	Unlisted	Unlisted	
Microcarbo africanus	Reed Cormorant	*Phalacrocoracidae*	Unlisted	Unlisted	
Micronisus gabar	Gabar Goshawk	*Accipitridae*	Unlisted	Unlisted	
Milvus aegyptius	Yellow-billed Kite	*Accipitridae*	Unlisted	Unlisted	
Mirafra africana	Rufous-naped Lark	*Alaudidae*	Unlisted	Unlisted	
Mirafra fasciolata	Eastern Clapper Lark	*Alaudidae*	Unlisted	Unlisted	

Mirafra passerina	Monotonous Lark	*Alaudidae*	Unlisted	Unlisted	
Monticola brevipes	Short-toed Rock Thrush	*Muscicapidae*	Unlisted	Unlisted	
Motacilla capensis	Cape Wagtail	*Motacillidae*	Unlisted	Unlisted	
Muscicapa striata	Spotted Flycatcher	*Muscicapidae*	Unlisted	Unlisted	
Myrmecocichla formicivora	Ant-eating Chat	*Muscicapidae*	Unlisted	Unlisted	
Neotis ludwigii	Ludwig's Bustard	*Otididae*	EN	EN	
Netta erythrophthalma	Southern Pochard	*Anatidae*	Unlisted	Unlisted	
Nilaus afer	Brubru	*Malaconotidae*	Unlisted	Unlisted	
Numida meleagris	Helmeted Guineafowl	*Numididae*	Unlisted	Unlisted	
Nycticorax nycticorax	Black-crowned Night Heron	*Ardeidae*	Unlisted	Unlisted	
Oena capensis	Namaqua Dove	*Columbidae*	Unlisted	Unlisted	
Oenanthe familiaris	Familiar Chat	*Muscicapidae*	Unlisted	Unlisted	
Oenanthe pileata	Capped Wheatear	*Muscicapidae*	Unlisted	Unlisted	
Onychognathus nabouroup	Pale-winged Starling	*Sturnidae*	Unlisted	Unlisted	
Oriolus oriolus	Eurasian Golden Oriole	*Oriolidae*	Unlisted	Unlisted	
Ortygospiza atricollis	Quailfinch	*Estrildidae*	Unlisted	Unlisted	
Otus senegalensis	African Scops Owl	*Strigidae*	Unlisted	Unlisted	
Oxyura maccoa	Maccoa Duck	*Anatidae*	NT	EN	
Passer diffusus	Southern Grey-headed Sparrow	*Passeridae*	Unlisted	Unlisted	
Passer domesticus	House Sparrow	*Passeridae*	Unlisted	Unlisted	
Passer melanurus	Cape Sparrow	*Passeridae*	Unlisted	Unlisted	
Passer motitensis	Great Sparrow	*Passeridae*	Unlisted	Unlisted	
Pavo cristatus	Indian Peafowl	*Phasianidae*	Unlisted	Unlisted	
Petrochelidon spilodera	South African Cliff Swallow	*Hirundinidae*	Unlisted	Unlisted	BNE
Philetairus socius	Sociable Weaver	*Ploceidae*	Unlisted	Unlisted	
Phoeniculus purpureus	Green Wood Hoopoe	*Phoeniculidae*	Unlisted	Unlisted	
Phylloscopus trochilus	Willow Warbler	*Phylloscopidae*	Unlisted	Unlisted	
Platalea alba	African Spoonbill	*Threskiornithidae*	Unlisted	Unlisted	
Plectropterus gambensis	Spur-winged Goose	*Anatidae*	Unlisted	Unlisted	
Plegadis falcinellus	Glossy Ibis	*Threskiornithidae*	Unlisted	Unlisted	
Plocepasser mahali	White-browed Sparrow-Weaver	*Ploceidae*	Unlisted	Unlisted	
Ploceus velatus	Southern Masked Weaver	*Ploceidae*	Unlisted	Unlisted	
Polemaetus bellicosus	Martial Eagle	*Accipitridae*	EN	EN	
Polihierax semitorquatus	Pygmy Falcon	*Falconidae*	Unlisted	Unlisted	
Polyboroides typus	African Harrier-Hawk	*Accipitridae*	Unlisted	Unlisted	
Porphyrio madagascariensis	African Swamphen	*Rallidae*	Unlisted	Unlisted	
Prinia flavicans	Black-chested Prinia	*Cisticolidae*	Unlisted	Unlisted	
Pternistis adspersus	Red-billed Spurfowl	*Phasianidae*	Unlisted	Unlisted	
Pternistis swainsonii	Swainson's Spurfowl	*Phasianidae*	Unlisted	Unlisted	

Pterocles burchelli	Burchell's Sandgrouse	*Pteroclidae*	Unlisted	Unlisted	
Pterocles namaqua	Namaqua Sandgrouse	*Pteroclidae*	Unlisted	Unlisted	
Ptilopsis granti	Southern White-faced Owl	*Strigidae*	Unlisted	Unlisted	
Pycnonotus nigricans	African Red-eyed Bulbul	*Pycnonotidae*	Unlisted	Unlisted	
Pytilia melba	Green-winged Pytilia	*Estrildidae*	Unlisted	Unlisted	
Quelea quelea	Red-billed Quelea	*Ploceidae*	Unlisted	Unlisted	
Recurvirostra avosetta	Pied Avocet	*Recurvirostridae*	Unlisted	Unlisted	
Rhinopomastus cyanomelas	Common Scimitarbill	*Phoeniculidae*	Unlisted	Unlisted	
Rhinoptilus africanus	Double-banded Courser	*Glareolidae*	Unlisted	Unlisted	
Riparia cincta	Banded Martin	*Hirundinidae*	Unlisted	Unlisted	
Riparia paludicola	Brown-throated Martin	*Hirundinidae*	Unlisted	Unlisted	
Sagittarius serpentarius	Secretarybird	*Sagittariidae*	VU	EN	
Saxicola torquatus	African Stonechat	*Muscicapidae*	Unlisted	Unlisted	
Scleroptila gutturalis	Orange River Francolin	*Phasianidae*	Unlisted	Unlisted	
Scopus umbretta	Hamerkop	*Scopidae*	Unlisted	Unlisted	
Spatula smithii	Cape Shoveler	*Anatidae*	Unlisted	Unlisted	
Spermestes cucullata	Bronze Mannikin	*Estrildidae*	Unlisted	Unlisted	
Spilopelia senegalensis	Laughing Dove	*Columbidae*	Unlisted	Unlisted	
Spizocorys conirostris	Pink-billed Lark	*Alaudidae*	Unlisted	Unlisted	
Sporopipes squamifrons	Scaly-feathered Weaver	*Ploceidae*	Unlisted	Unlisted	
Stenostira scita	Fairy Flycatcher	*Muscicapidae*	Unlisted	Unlisted	NE
Streptopelia capicola	Ring-necked Dove	*Columbidae*	Unlisted	Unlisted	
Streptopelia semitorquata	Red-eyed Dove	*Columbidae*	Unlisted	Unlisted	
Struthio camelus	Common Ostrich	*Struthionidae*	Unlisted	Unlisted	
Sylvia borin	Garden Warbler	*Sylviidae*	Unlisted	Unlisted	
Sylvietta rufescens	Long-billed Crombec	*Macrosphenidae*	Unlisted	Unlisted	
Tachybaptus ruficollis	Little Grebe	*Podicipedidae*	Unlisted	Unlisted	
Tachymarptis melba	Alpine Swift	*Apodidae*	Unlisted	Unlisted	
Tadorna cana	South African Shelduck	*Anatidae*	Unlisted	Unlisted	
Tchagra australis	Brown-crowned Tchagra	*Malaconotidae*	Unlisted	Unlisted	
Telophorus zeylonus	Bokmakierie	*Malaconotidae*	Unlisted	Unlisted	
Terpsiphone viridis	African Paradise Flycatcher	*Monarchidae*	Unlisted	Unlisted	
Threskiornis aethiopicus	African Sacred Ibis	*Threskiornithidae*	Unlisted	Unlisted	
Tockus leucomelas	Southern Yellow-billed Hornbill	*Bucerotidae*	Unlisted	Unlisted	
Torgos tracheliotos	Lappet-faced Vulture	*Accipitridae*	EN	EN	
Trachyphonus vaillantii	Crested Barbet	*Lybiidae*	Unlisted	Unlisted	
Tricholaema leucomelas	Acacia Pied Barbet	*Lybiidae*	Unlisted	Unlisted	
Tringa glareola	Wood Sandpiper	*Scolopacidae*	Unlisted	Unlisted	
Tringa nebularia	Common Greenshank	*Pycnonotidae*	Unlisted	Unlisted	

Tringa stagnatilis	Marsh Sandpiper	*Scolopacidae*	Unlisted	Unlisted	
Turdoides bicolor	Southern Pied Babbler	*Leiothrichidae*	Unlisted	Unlisted	
Turdus litsitsirupa	Groundscraper Thrush	*Turdidae*	Unlisted	Unlisted	
Turdus smithi	Karoo Thrush	*Turdidae*	Unlisted	Unlisted	NE
Turnix sylvaticus	Common Buttonquail	*Turnicidae*	Unlisted	Unlisted	
Tyto alba	Western Barn Owl	*Strigidae*	Unlisted	Unlisted	
Upupa africana	African Hoopoe	*Upupidae*	Unlisted	Unlisted	
Uraeginthus angolensis	Blue Waxbill	*Estrildidae*	Unlisted	Unlisted	
Urocolius indicus	Red-faced Mousebird	*Coliidae*	Unlisted	Unlisted	
Vanellus armatus	Blacksmith Lapwing	*Charadriidae*	Unlisted	Unlisted	
Vanellus coronatus	Crowned Lapwing	*Charadriidae*	Unlisted	Unlisted	
Vidua chalybeata	Village Indigobird	*Viduidae*	Unlisted	Unlisted	
Vidua macroura	Pin-tailed Whydah	*Viduidae*	Unlisted	Unlisted	
Vidua paradisaea	Long-tailed Paradise Whydah	*Viduidae*	Unlisted	Unlisted	
Vidua regia	Shaft-tailed Whydah	*Viduidae*	Unlisted	Unlisted	
Zapornia flavirostra	Black Crake	*Rallidae*	Unlisted	Unlisted	
Zosterops pallidus	Orange River White-eye	*Zosteropidae*	Unlisted	Unlisted	
Zosterops virens	Cape White-eye	*Zosteropidae*	Unlisted	Unlisted	NE

10.5 Appendix E: Point Count Data from Field Survey

Common Name	*Scientific Name*	Family	Relative abundance	Frequency (%)
Acacia Pied Barbet	Tricholaema leucomelas	Lybiidae	0,002	2,63
African Grey Hornbill	Lophoceros nasutus	Bucerotidae	0,004	5,26
African Palm Swift	Cypsiurus parvus	Apodidae	0,006	5,26
African Pipit	Anthus cinnamomeus	Motacillidae	0,006	5,26
African Red-eyed Bulbul	Pycnonotus nigricans	Pycnonotidae	0,006	7,89
Ant-eating Chat	Myrmecocichla formicivora	Muscicapidae	0,002	2,63
Ashy Tit	Melaniparus cinerascens	Paridae	0,006	7,89
Black-backed Puffback	Dryoscopus cubla	Malaconotidae	0,004	2,63
Black-chested Prinia	Prinia flavicans	Cisticolidae	0,034	31,58
Black-chested Snake Eagle	Circaetus pectoralis	Accipitridae	0,002	2,63
Black-faced Waxbill	Brunhilda erythronotos	Estrildidae	0,002	2,63
Blacksmith Lapwing	Vanellus armatus	Charadriidae	0,002	2,63
Black-throated Canary	Crithagra atrogularis	Fringillidae	0,032	7,89
Bokmakierie	Telophorus zeylonus	Malaconotidae	0,004	2,63
Brown-crowned Tchagra	Tchagra australis	Malaconotidae	0,004	5,26
Brubru	Nilaus afer	Malaconotidae	0,006	7,89
Cape Penduline Tit	Anthoscopus minutus	Remizidae	0,027	23,68

Cape Sparrow	Passer melanurus	Passeridae	0,008	2,63
Cape Starling	Lamprotornis nitens	Sturnidae	0,013	10,53
Cape Wagtail	Motacilla capensis	Motacillidae	0,002	2,63
Chat Flycatcher	Melaenornis infuscatus	Muscicapidae	0,004	2,63
Chestnut-vented Warbler	Curruca subcoerulea	Sylviidae	0,049	44,74
Common Moorhen	Gallinula chloropus	Rallidae	0,002	2,63
Common Scimitarbill	Rhinopomastus cyanomelas	Phoeniculidae	0,004	5,26
Crimson-breasted Shrike	Laniarius atrococcineus	Malaconotidae	0,006	7,89
Crowned Lapwing	Vanellus coronatus	Charadriidae	0,004	2,63
Desert Cisticola	Cisticola aridulus	Cisticolidae	0,008	5,26
Eastern Clapper Lark	Mirafra fasciolata	Alaudidae	0,002	2,63
Egyptian Goose	Alopochen aegyptiaca	Anatidae	0,002	2,63
European Bee-eater	Merops apiaster	Meropidae	0,027	7,89
Fairy Flycatcher	Stenostira scita	Muscicapidae	0,004	2,63
Familiar Chat	Oenanthe familiaris	Muscicapidae	0,004	2,63
Fawn-colored Lark	Calendulauda africanoides	Alaudidae	0,027	28,95
Fork-tailed Drongo	Dicrurus adsimilis	Dicruridae	0,006	7,89
Gabar Goshawk	Micronisus gabar	Accipitridae	0,004	5,26
Golden-breasted Bunting	Emberiza flaviventris	Emberizidae	0,006	5,26
Green-winged Pytilia	Pytilia melba	Estrildidae	0,002	2,63
Hadada Ibis	Bostrychia hagedash	Threskiornithidae	0,004	5,26
Helmeted Guineafowl	Numida meleagris	Numididae	0,006	5,26
Kalahari Scrub Robin	Cercotrichas paena	Muscicapidae	0,044	50,00
Large Rock Martin	Ptyonoprogne fuligula	Hirundinidae	0,004	5,26
Lark-like Bunting	Emberiza impetuani	Emberizidae	0,004	2,63
Laughing Dove	Spilopelia senegalensis	Columbidae	0,002	2,63
Levaillant's Cisticola	Cisticola tinniens	Cisticolidae	0,002	2,63
Little Egret	Egretta garzetta	Ardeidae	0,002	2,63
Little Swift	Apus affinis	Apodidae	0,042	2,63
Long-billed Crombec	Sylvietta rufescens	Macrosphenidae	0,002	2,63
Marico Sunbird	Cinnyris mariquensis	Nectariniidae	0,015	10,53
Namaqua Dove	Oena capensis	Columbidae	0,006	7,89
Namaqua Sandgrouse	Pterocles namaqua	Pteroclidae	0,002	2,63
Neddicky	Cisticola fulvicapilla	Cisticolidae	0,002	2,63
Northern Black Korhaan	Afrotis afraoides	Otididae	0,006	7,89
Orange River Francolin	Scleroptila gutturalis	Phasianidae	0,006	5,26
Pale-winged Starling	Onychognathus nabouroup	Sturnidae	0,004	2,63
Pied Crow	Corvus albus	Corvidae	0,030	18,42
Pririt Batis	Batis pririt	Platysteiridae	0,013	13,16

Quailfinch	Ortygospiza atricollis	Estrildidae	0,002	2,63
Rattling Cisticola	Cisticola chiniana	Cisticolidae	0,002	2,63
Red-capped Lark	Calandrella cinerea	Alaudidae	0,002	2,63
Red-crested Korhaan	Lophotis ruficrista	Otididae	0,017	21,05
Red-eyed Dove	Streptopelia semitorquata	Columbidae	0,002	2,63
Red-faced Mousebird	Urocolius indicus	Coliidae	0,036	13,16
Ring-necked Dove	Streptopelia capicola	Columbidae	0,034	34,21
Rufous-eared Warbler	Malcorus pectoralis	Cisticolidae	0,002	2,63
Rufous-naped Lark	Mirafra africana	Alaudidae	0,004	5,26
Sabota Lark	Calendulauda sabota	Alaudidae	0,004	5,26
Scaly-feathered Weaver	Sporopipes squamifrons	Ploceidae	0,027	10,53
Sociable Weaver	Philetairus socius	Ploceidae	0,137	5,26
South African Shelduck	Tadorna cana	Anatidae	0,004	2,63
Southern Fiscal	Lanius collaris	Laniidae	0,008	10,53
Southern Yellow-billed Hornbill	Tockus leucomelas	Bucerotidae	0,008	7,89
Speckled Pigeon	Columba guinea	Columbidae	0,002	2,63
Spike-heeled Lark	Chersomanes albofasciata	Alaudidae	0,004	2,63
Spotted Thick-knee	Burhinus capensis	Burhinidae	0,002	2,63
Swallow-tailed Bee-eater	Merops hirundineus	Meropidae	0,004	2,63
Tinkling Cisticola	Cisticola rufilatus	Cisticolidae	0,015	15,79
Violet-eared Waxbill	Granatina granatina	Estrildidae	0,015	13,16
Western Barn Owl	Tyto alba	Strigidae	0,002	2,63
White-backed Mousebird	Colius colius	Coliidae	0,023	2,63
White-backed Vulture	Gyps africanus	Accipitridae	0,021	2,63
White-bellied Sunbird	Cinnyris talatala	Nectariniidae	0,004	5,26
White-browed Sparrow-Weaver	Plocepasser mahali	Ploceidae	0,008	5,26
Yellow Canary	Crithagra flaviventris	Fringillidae	0,047	21,05
Yellow-bellied Eremomela	Eremomela icteropygialis	Cisticolidae	0,021	21,05

10.6 Appendix F: Incidental Records from Field Survey

Common Name	Scientific Name
African Grey Hornbill	*Lophoceros nasutus*
African Hoopoe	*Upupa africana*
African Pipit	*Anthus cinnamomeus*
African Red-eyed Bulbul	*Pycnonotus nigricans*
Ant-eating Chat	*Myrmecocichla formicivora*
Ashy Tit	*Melaniparus cinerascens*
Barred Wren-Warbler	*Calamonastes fasciolatus*

Black Sparrowhawk	*Accipiter melanoleucus*
Black-chested Prinia	*Prinia flavicans*
Black-chested Snake Eagle	*Circaetus pectoralis*
Black-faced Waxbill	*Brunhilda erythronotos*
Black-throated Canary	*Crithagra atrogularis*
Black-winged Stilt	*Himantopus himantopus*
Bradfield's Swift	*Apus bradfieldi*
Brown-crowned Tchagra	*Tchagra australis*
Brubru	*Nilaus afer*
Buffy Pipit	*Anthus vaalensis*
Cape Crow	*Corvus capensis*
Cape Sparrow	*Passer melanurus*
Cape Starling	*Lamprotornis nitens*
Chestnut-backed Sparrow-Lark	*Eremopterix leucotis*
Chestnut-vented Warbler	*Curruca subcoerulea*
Common Buttonquail	*Turnix sylvaticus*
Desert Cisticola	*Cisticola aridulus*
Dusky Sunbird	*Cinnyris fuscus*
Eastern Clapper Lark	*Mirafra fasciolata*
Egyptian Goose	*Alopochen aegyptiaca*
European Bee-eater	*Merops apiaster*
Familiar Chat	*Oenanthe familiaris*
Fawn-colored Lark	*Calendulauda africanoides*
Fiscal Flycatcher	*Melaenornis silens*
Fork-tailed Drongo	*Dicrurus adsimilis*
Golden-breasted Bunting	*Emberiza flaviventris*
Golden-tailed Woodpecker	*Campethera abingoni*
Greater Honeyguide	*Indicator indicator*
Greater Kestrel	*Falco rupicoloides*
Greater Striped Swallow	*Cecropis cucullata*
Groundscraper Thrush	*Turdus litsitsirupa*
Hamerkop	*Scopus umbretta*
Kalahari Scrub Robin	*Cercotrichas paena*
Kori Bustard	*Ardeotis kori*
Lappet-faced Vulture	*Torgos tracheliotos*
Large Rock Martin	*Ptyonoprogne fuligula*
Lark-like Bunting	*Emberiza impetuani*
Laughing Dove	*Spilopelia senegalensis*
Lilac-breasted Roller	*Coracias caudatus*

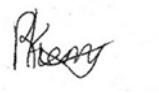
Little Bee-eater	*Merops pusillus*
Little Swift	*Apus affinis*
Long-billed Crombec	*Sylvietta rufescens*
Marico Flycatcher	*Melaenornis mariquensis*
Marico Sunbird	*Cinnyris mariquensis*
Namaqua Dove	*Oena capensis*
Namaqua Sandgrouse	*Pterocles namaqua*
Neddicky	*Cisticola fulvicapilla*
Northern Black Korhaan	*Afrotis afraoides*
Orange River Francolin	*Scleroptila gutturalis*
Pale Chanting Goshawk	*Melierax canorus*
Pearl-breasted Swallow	*Hirundo dimidiata*
Pearl-spotted Owlet	*Glaucidium perlatum*
Pied Crow	*Corvus albus*
Pied Starling	*Lamprotornis bicolor*
Pririt Batis	*Batis pririt*
Rattling Cisticola	*Cisticola chiniana*
Red-billed Spurfowl	*Pternistis adspersus*
Red-billed Teal	*Anas erythrorhyncha*
Red-breasted Swallow	*Cecropis semirufa*
Red-capped Lark	*Calandrella cinerea*
Red-crested Korhaan	*Lophotis ruficrista*
Red-headed Finch	*Amadina erythrocephala*
Ring-necked Dove	*Streptopelia capicola*
Rufous-eared Warbler	*Malcorus pectoralis*
Rufous-naped Lark	*Mirafra africana*
Sabota Lark	*Calendulauda sabota*
Scaly-feathered Weaver	*Sporopipes squamifrons*
Shaft-tailed Whydah	*Vidua regia*
South African Shelduck	*Tadorna cana*
Southern Grey-headed Sparrow	*Passer diffusus*
Southern Masked Weaver	*Ploceus velatus*
Southern Pied Babbler	*Turdoides bicolor*
Southern Yellow-billed Hornbill	*Tockus leucomelas*
Speckled Pigeon	*Columba guinea*
Spike-heeled Lark	*Chersomanes albofasciata*
Spotted Thick-knee	*Burhinus capensis*
Swainson's Spurfowl	*Pternistis swainsonii*
Swallow-tailed Bee-eater	*Merops hirundineus*

Tinkling Cisticola	*Cisticola rufilatus*
Western Cattle Egret	*Bubulcus ibis*
White-backed Mousebird	*Colius colius*
White-backed Vulture	*Gyps africanus*
White-bellied Sunbird	*Cinnyris talatala*
White-browed Sparrow-Weaver	*Plocepasser mahali*
White-fronted Bee-eater	*Merops bullockoides*
White-rumped Swift	*Apus caffer*
White-throated Swallow	*Hirundo albigularis*
Yellow-bellied Eremomela	*Eremomela icteropygialis*
Yellow-billed Duck	*Anas undulata*

10.7 Appendix G: Specialist Declaration of Independence

I, Ryno Kemp, declare that:

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



Dr Ryno Kemp

Ecologist

The Biodiversity Company

December 2024

10.8 Appendix H – Specialist CVs

Available on request