

TERRESTRIAL ANIMAL SPECIES SPECIALIST ASSESSMENT FOR THE PROPOSED UPGRADE OF THE BULK WATER INFRASTRUCTURE, KURLAND, BITOU LOCAL MUNICIPALITY

For

Sharples Environmental Services cc (SES)

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1 INTRODUCTION

Sharples Environmental Specialists cc (SES) contracted Arcus Consultancy Services South Africa (Pty) Ltd (Arcus) to conduct a terrestrial animal assessment for the Proposed Kurland Housing Development, Bulk Water Infrastructure. This included a site sensitivity verification presented in this report and a Terrestrial Animal Species Compliance Statement (Appendix A), conducted in accordance with the protocol described by the National Government Gazette, No. 1150 of 30 October, 2020.

1.1 Terms of Reference

Site sensitivity verification was assessed through the use of:

- A desktop analysis using satellite imagery;
- A preliminary on-site inspection; and
- Any other available and relevant information.

1.2 Aims and Purpose of this Report

The conclusions of this report will advise on the suitability and possible impacts of the proposed Kurland Housing Development on Terrestrial Animal Species of Conservation Concern (SCC). This will be achieved by:

- Confirming/disputing the current use of the land and environmental sensitivity as identified by the Screening Tool;
- Providing a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and
- Submitting this report together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations, 2017 as amended.

2 METHODOLOGY

2.1 Desktop Study

The species output of the Screening Tool¹ for the area of the Proposed Kurland Housing Development, Bulk Water Infrastructure was supplemented with outputs from several biodiversity atlas projects within the Virtual Museum² and Global Biodiversity Information Facility (GBIF)³ database networks to identify additional SCC which may occur in the area. The conservation status of each species was confirmed globally by the International Union for Conservation of Nature Red List⁴ and regionally by the South African National Biodiversity Institute's red list of South African species⁵. Species data was further supplemented with that provided by the latest available (2017) Critical Biodiversity Area maps of the Bitou Municipality from the South African Biodiversity GIS database⁶. Land-use was determined through a combination of satellite imagery, South African National Land-Cover (SANLC 2020) data⁷, and confirmed by observations made during the site inspection.

⁴ <u>https://www.iucnredlist.org/</u>

¹ <u>https://screening.environment.gov.za/</u>

² <u>https://vmus.adu.org.za/vm_projects.php</u> (QDS 3323CD, 3423AB)

³ <u>https://www.gbif.org/</u>

⁵ <u>http://speciesstatus.sanbi.org/</u>

⁶ <u>https://bgis.sanbi.org/Search?searchterm=bitou</u>

⁷ <u>https://egis.environment.gov.za/sa_national_land_cover_datasets</u>



2.2 Site Inspection

The site inspection was conducted on 24 March 2022. Using the map output of the Screening Tool and publically available satellite imagery⁸, 13 representative sections of the Proposed Kurland Housing Development, Bulk Water Infrastructure were identified for site verification and, where possible, photographs were taken to verify current land-use and compare it with the South African National Land-Cover (SANLC 2020) data and Screening Tool output (Figure 1).

⁸ Google Earth Pro (Image dated December 2020)





- Proposed Ø315mm from WTW to Split
- Existing 160mm Supply Line to Kurland WTW
- Proposed Ø200mm Pipeline from split to Proposed Kurland Village
- Proposed Alternative 2 Ø200mm Pipeline from new proposed Upper Matjiesfontein Reservoir/Pump Station to the existing 160mm Ø tie-in point located on the N side of the N2 Proposed Alternative 1 – Ø200mm Pipeline from new proposed Upper Matjiesfontein Reservoir/Pump Station to the existing 160mm Ø tie-in point located on the S side of the N2 Proposed Alternative 1 – Ø200mm Pipeline from new proposed Upper Matjiesfontein Reservoir/Pump Station to the existing 160mm Ø tie-in point located on the S side of the N2 Proposed Alternative 1 – Ø200mm Pipeline from new pump station at Matjiesfontein Reservoir to new Proposed Upper Matjiesfontein Reservoir/Pump Station
- Proposed Alternative 2 Ø200mm Pipeline from new pump station at Matjiesfontein Reservoir to new Proposed Upper Matjiesfontein Reservoir/Pump Station
- Proposed 0.6ML Upper Matjiesfontein Reservoir and Pump Station Potentially north (Alt2)/south(Alt1) side of N2
- Existing Water Treatment Works
- Existing Matjiesfontein Reservoir
- Existing Kurland Water Treatment Works (1)
- Hogs Hollow Horse and Carriage Trails (2)
- Dirt Road in Stand of Exotic Trees (3)
- Pipeline Split (4)
- Entry to Rural Community (5)
- Rural Community Pipeline End (6) Agricultural Lands (7)
- Transition to Indigenous Forest (8)
- Indigenous Forest Start (9)
- Plantation Forest Start (10)
- Proposed 0.6ML Reservoir (11)
- Plantation Forest End (12) Existing Matjiesfontein Reservoir (13)

Figure 1: Thirteen sections (1-13) marked for verification along the Proposed Kurland Housing Development, Bulk Water Infrastructure route



3 RESULTS

3.1 Assumptions and Limitations

At the time of compiling this report it was assumed that all third-party information used (GIS data, satellite imagery and species distribution datasets) was correct. The presence of species of conservation concern that were flagged by the Screening Tool and species distribution datasets, if not confirmed during the site inspection were assumed to be present following the precautionary principal and probability of occurrence in each habitat type based on the species' habitat preference. The identity of two species flagged by the Screening Tool were withheld, they were 'Forest Invertebrate' and 'Sensitive Species 7'. Enquiry with the South African National Biodiversity Institute revealed that the identity of *Forest Invertebrate* was unknown and thus omitted as a separate species from this report under the assumption that it is likely one of the known species flagged by alternative species distribution datasets. The identity of 'Sensitive Species 7' was revealed for site sensitivity verification purposes during site inspection, but will remain withheld in this report. The 2017 Critical Biodiversity Area map of the Bitou Municipality identified Cape Mountain Zebra (*Equus zebra zebra*) as a biodiversity trigger in the area. This species is considered to be of Least Concern according to local and global IUCN Red List standards. The Cape Mountain Zebra therefore is not considered an SCC for the purposed of this report.

3.2 Desktop Study

3.2.1 Screening Tool

The proposed upgrade site, given a 500m buffer zone, intersects with areas of **High** and **Medium** sensitivity in the Animal Species Theme according to the Screening Tool (Figure 2). The associated list of Species of Conservation Concern (SCC) lists 16 potential species (Table 1).

 Image: Service Service

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY

Figure 2: Screening Tool map output and the Proposed Kurland Housing Development, Bulk Water Infrastructure route (blue line)



Very High se	nsitivity	High sensitivity	Med	lium sensitiv	ity	Low sensitivity
		X				
Sensitivity F	eatures:					
Sensitivity	Feature	(s)				
High	Aves-Circu	is maurus				
High	Aves-Brac	ypterus sylvaticus				
High	Aves-Circi	ıs ranivorus				
Medium	Invertebra	ate-Sarophorus punctatu	s			
Medium	Invertebra	ate-Aneuryphymus mont	anus			
Medium	Invertebra	ate-Forest invertebrate				
Medium	Amphibia	-Afrixalus knysnae				
Medium	Aves-Circi	us ranivorus				
Medium	Aves-Circo	is maurus				
Medium	Aves-Neotis denhami					
Medium	Aves-Turnix hottentottus					
Medium	Aves-Brac	ypterus sylvaticus				
Medium	Insecta-A	oeides thyra orientis				
Medium	Insecta-Ts	itana dicksoni				
Medium	Mammali	a-Chlorotalpa duthieae				

Table 1: List of Species of Conservation Concern associated with the Screening Tool output

3.2.2 Local Context

Medium

Sensitive species 7

The ± 15 km linear Bulk Water Infrastructure starts ± 7 km and end ± 19 km north east of Plettenberg Bay and falls within the Bitou Municipality in the Western Cape Province. According to the South African National Land-Cover 2020 dataset, the Proposed Ø315mm from Water Treatment Works (WTW) to Kurland (Figure 1, red line) covers several landcover types. These include Low Shrubland (Fynbos), Contiguous Low Forest and Thicket, Commercial Annual Crops (Rain-Fed/Dryland), Dense Forest and Woodland, Commercial Annual Crops (Non-Pivot Irrigated) and, Fallow Land and Old Field (Trees and Low Shrub). At the split the Proposed Ø200mm Pipeline from split to Proposed Kurland Village (blue line) covers Contiguous Low Forest and Thicket, Roads and Rails (Major Linear), Low Shrubland (Fynbos), Dense Forest and Woodland, Commercial Annual Crops (Non-Pivot Irrigated), Residential Formal (Low Veg/Grass), and Residential Formal (Tree). Also at the split the Existing 160mm Supply Line To Kurland WTW (orange line) covers Contiguous Low Forest and Thicket, Dense Forest and Woodland, Low Shrubland (Fynbos), Village Scattered (Bare and Low Veg/Grass Combo), Commercial Annual Crops (Rain-Fed/Dryland), and Village Dense (Bare and Low Veg/Grass Combo) before reaching the tiein with the Proposed Alternative 1 - Ø200mm Pipeline from new Proposed upper Matjiesfontein Reservoir/Pump Station to the existing 160mm Ø tie-in point on the S side of the N2 (purple line)/ Proposed Alternative 2 - Ø200mm Pipeline from new Proposed upper Matjiesfontein Reservoir/Pump Station to the existing 160mm Ø tie-in point on the N side of the N2 (yellow line). The latter pipelines cover Contiguous Low Forest and Thicket, Dense Forest and Woodland, Low Shrubland (Fynbos), Commercial Annual Crops (Rain-Fed/Dryland), Village Scattered (Bare and Low Veg/Grass Combo), Contiguous (Indigenous) Forest, Natural Grassland, Contiguous and Dense Plantation Forest. The Proposed Alternative 1 - Ø200mm Pipeline from new pump station at Matjiesfontein Reservoir to new Proposed Matjiesfontein Reservoir/Pump Station (green line) and the Proposed Alternative 2 - Ø200mm Pipeline from new pump station at Matjiesfontein Reservoir to new Proposed Matjiesfontein Reservoir/Pump Station (black line) cover Contiguous and Dense Plantation Forest, Contiguous Low Forest and Thicket, Dense Forest



and Woodland, Low Shrubland (Fynbos), Contiguous (Indigenous) Forest, Natural Grassland, Fallow Land and Old Fields (Trees).

This roughly equates to a developmental footprint within a majority (60%) Natural Wooded Land, followed by Temporary Crops (16%), Karoo and Fynbos Shrubland (7%), and Planted Forest (6%) while other land uses (Natural Grassland, Artificial Waterbodies, Herbaceous Wetlands, Unconsolidated, Permanent Crops, Fallow Lands and Old Fields, Residential, Village, Commercial, Industrial Transport, Extraction Sites) constitute <5% of the area.

3.2.3 Regional Context

Superimposing the shape file provided by the Civil Designer of the Proposed Kurland Housing Development, Bulk Water Infrastructure pipeline over that of the 2017 Western Cape Biodiversity Spatial Plan (WCBSP) Bitou⁹, the Proposed Ø315mm from Water Treatment Works (WTW) to Kurland (Figure 1, red line) covers Ecological Support Area 1 (ESA1) [Reasons for designation: Critically Endangered Vegetation Variant (0.71), SA Vegetation Type (2.67), Threatened Vertebrate (2.67), Water resource protection (2.55; 8.85)]; Ecological Support Area 2 (ESA2) [Reasons for designation: Critically Endangered Vegetation Variant (0.04; 1.64), SA Vegetation Type (0.69; 2.2), Threatened Vertebrate (0.69; 2.2), Water resource protection (1.35; 8.81)]; and **Critical Biodiversity** Area 1 (CBA1) [Reasons for designation: Critically Endangered Vegetation Variant (1.64), SA Vegetation Type (2.2), Threatened Vertebrate (2.2), Water resource protection (8.81). At the split the Proposed Ø200mm Pipeline from split to Proposed Kurland Village (blue line) covers only a section of ESA2 identified as an area marked for restoration of a forest watercourse. Also at the split the Existing 160mm Supply Line To Kurland WTW (orange line) covers several section of **ESA1** [Reasons for designation: Water resource protection (0.33; 0.36; 3.87; 4.23; 4.4), Ecological processes (2.05), Indigenous Forest Type (1.74), SA Vegetation Type (2.05), Threatened Vertebrate (2.05)]; and a section of **ESA2** [Reason for designation: Water resource protection (3.87)].

The Proposed Alternative 1 - Ø200mm Pipeline from new Proposed upper Matjiesfontein Reservoir/Pump Station to the existing 160mm Ø tie-in point on the S side of the N2 (purple line) covers a section of **Protected Area (PA)** in Kiaruna Private Nature Reserve [Reason for designation: Indigenous Forest Type (55.81), River Type (5.64), Threatened SA Vegetation Type (23.66), Threatened Vertebrate (56.09), Water resource protection (17.61)], **CBA1** [Reasons for designation: Water resource protection (2.52; 3.01; 3.28; 3.96; 4.19), Indigenous Forest Type (2.87; 3.45; 10.37), Threatened SA Vegetation Type (0.93; 1), Threatened Vertebrate (2.76; 3.48; 10.37)], **ESA1** [Reasons for designation: Ecological processes (0.13; 0.74), Indigenous Forest Type (0.06; 0.13; 1.82; 3.45; 10.37), Threatened SA Vegetation Type (0.13; 0.74; 0.93; 1; 2.01), Threatened Vertebrate (0.13; 0.74; 2.01; 3.48; 10.37), Water resource protection (0.44; 2.04; 2.95; 3.01; 3.28; 3.96; 4.19; 4.69)], and **ESA2** [Reasons for designation: Indigenous Forest Type (2.01), Threatened SA Vegetation Type (1.82), Threatened SA Vegetation Type (2.01), Threatened Vertebrate (2.01), Water resource protection (4.69)].

The Proposed Alternative 2 - Ø200mm Pipeline from new Proposed upper Matjiesfontein Reservoir/Pump Station to the existing 160mm Ø tie-in point on the N side of the N2 (yellow line) covers **CBA1** [Reasons for designation: Water resource protection (3.28; 4.19; 6.63), Indigenous Forest Type (15.41), Threatened SA Vegetation Type (9.05), Threatened Vertebrate (17.32)], and **ESA1** [Reasons for designation: Ecological processes (0.13; 0.74; 2.05), Indigenous Forest Type (0.13; 0.23; 1.74; 1.82; 3.45; 13.5; 15.41), Threatened SA Vegetation Type (0.13; 0.25; 0.62; 0.74; 1; 2.01; 9.05), SA Vegetation Type (2.05),

⁹ <u>https://bgis.sanbi.org/Search?SearchTerm=bitou</u>



Threatened Vertebrate (0.13; 0.74; 2.01; 2.05; 3.48; 13.76; 17.32), Water resource protection (0.34; 2.04; 2.92; 2.95; 3.01; 3.28; 3.82; 4.19; 4.23; 4.69; 6.63)].

The Proposed Alternative 1 - Ø200mm Pipeline from new pump station at Matjiesfontein Reservoir to new Proposed Matjiesfontein Reservoir/Pump Station (green line) covers **CBA1** [Reasons for designation: Critically Endangered Vegetation Variant (0.39; 0.71; 1.22), Ecological processes (6.02; 6.66; 8.8), Indigenous Forest Type (4.14; 6.98), Threatened SA Vegetation Type (2.96; 4.41; 5.27), Water resource protection (0.01; 0.57)], **ESA1** [Reasons for designation: Critically Endangered Vegetation Variant (0.39; 0.71; 1.22), Ecological processes (0.13; 1.18; 6.02; 6.66; 8.8), Indigenous Forest Type (4.14; 5.84; 6.98; 10.79; 13.24); Threatened SA Vegetation Type (1.16; 1.43; 2.96; 4.41; 5.27; 10.47), Water resource protection (0.01; 0.31; 0.57; 3.07; 4.68; 4.87)], and **ESA2** [Reasons for designation: Indigenous Forest Type (10.79), Threatened SA Vegetation Type (10.47), Water resource protection (4.87)].

The Proposed Alternative 2 - Ø200mm Pipeline from new pump station at Matjiesfontein Reservoir to new Proposed Matjiesfontein Reservoir/Pump Station (black line) covers **CBA1** [Reasons for designation: Critically Endangered Vegetation Variant (0.39; 0.71), Ecological processes (0.13; 1.18; 6.02; 6.66), Indigenous Forest Type (5.27; 5.84; 13.24; 13.6; 17.44; 19.37), Threatened SA Vegetation Type (0.08; 1.16; 1.19; 1.43; 2.96; 7.97), Water resource Protection (0.01; 0.57; 3.07; 4.68; 6.52; 6.86; 7.41)], and **ESA1** [Reasons for designation: Critically Endangered Vegetation Variant (0.39; 0.71), Ecological processes (0.13; 1.18; 6.02; 6.66), Indigenous Forest Type (2.96; 5.84; 6.98; 13.24; 17.44; 19.37), Threatened SA Vegetation Type (0.08; 1.19; 1.43; 5.27), Water resource protection (0.01; 0.57; 3.07; 4.68; 6.52; 0.86)].

3.2.4 Biodiversity Database

The potential list of Species of Conservation Concern (SCC) generated by the Screening Tool was supplemented to include several additional species listed in the Virtual Museum and Global Biodiversity Information Facility (GBIF) databases. The potential SCC list is presented in Table 2.

Common	Scientific	Olahal	Deviewal	Virtual	CDIE	Screening
Name	Name	Global	Regional	Museum	GBIF	1001
Knycna		Endangered	Endangorod		1	
leaf-folding frog	Afrixalus knysnae	B1ab(i,ii,iii,v)+2ab(i, ii,iii,v)	B1ab(i,ii,iii,v)+2ab(i, ii,iii,v)	х		х
			Birds			
African marsh harrier	Circus ranivorus	Least Concern	Endangered A2c+3c+4c; C1			х
Black harrier	Circus maurus	Endangered C2a(ii)	Endangered C1+2a(ii)		х	х
Blue crane	Anthropoides paradiseus	Vulnerable A3cde+4cde	Near Threatened A2acde	х	х	
Crowned eagle	Stephanoaetus coronatus	Near Threatened A2cde+3cde+4cde	Vulnerable C1; D1		х	
Denham's bustard	Neotis denhami	Near Threatened A2bcd+3bcd+4bcd	Vulnerable A2bcd+3bcd+4bcd; C1			х
Fynbos buttonquail	Turnix hottentottus	Endangered C2a(i)	Endangered C1+2a(i)		х	Х
Knysna warbler	Bradypterus sylvaticus	Vulnerable B1ab(i,ii,iii,iv,v);C2a (i)	Vulnerable A3c; B2b(ii,iii,v); C1+2a(i)	Х	x	
Knysna woodpecker	Campethera notata	Near Threatened C2a(ii); D1	Near Threatened C1	х	х	

Table 2: List of Species of Conservation Concern with distributions that overlapwith the proposed developmental footprint and 500m buffer zone



Common Name	Scientific Name	Global	Regional	Virtual Museum	GBIF	Screening Tool
Maccoa duck	Oxyura maccoa	Endangered A2acde	Near Threatened C1		х	
		In	vertebrates			
Cape thorntail	Ceratogomphu s triceraticus	Near Threatened B2a	Near Threatened	Х		
Dickson's sylph	Tsitana dicksoni	Least Concern	Rare			х
Giant copper/Kny sna pale copper	Aloeides pallida littoralis	Not Evaluated	Near Threatened	Х		
Mahogany presba	Syncordulia venator	Vulnerable B2ab(i,ii,iii)	Vulnerable		х	
Queen malachite	Ecchloroleste s nylephtha	Near Threatened	Near Threatened	Х		
Rooi- kopervlerki e	Aloeides thyra orientis	Not Evaluated	Endangered			х
Yellow- winged agile	Aneuryphym us montanus	Vulnerable B2ab(iii,v)	Vulnerable			х
	Sarophorus punctatus	Endangered B1ab(iii)+2a(iii)	Not Evaluated	х		Х
	Forest invertebrate					Х
			Mammals			
African clawless otter	Aonyx capensis	Near Threatened A2cde+3cde	Near Threatened	Х		
Bontebok	Damaliscus pygargus pygargus	Vulnerable B1ab(ii,iii)+2ab(ii,iii); D1	Vulnerable	х		
Duthie's golden mole	Chlorotalpa duthieae	Vulnerable B1ab(iii)+2ab(ii)	Vulnerable	X		х
Leopard	Panthera pardus	Vulnerable A2cd	Vulnerable	Х	х	
Witheld	Sensitive	Least Concern	Vulnerable	Х		Х

3.2.5 Site Visit and Current Impacts

The visit and accompanying photographs confirm that the project footprint will bisect a stretch of natural habitat, however, various existing impacts are identified below to assess the potential impact of the Proposed Kurland Housing Development, Bulk Water Infrastructure. Thirteen representative sections identified for site verification are described below.

The existing Kurland Water Treatment Works (Plate 1) occurs at the edge of `*contiguous low forest and thicket*' and `*dense forest and woodland*' (SANLC 2020). Most of the surrounding habitat to the south has been cleared for an equestrian facility, the Hogs Hollow Horse and Carriage Trails (Plate 2). The proposed pipeline upgrade will cross the Hogs Hollow Horse and Carriage Trails equestrian facility south from the Water Treatment Works for \pm 0.4 km before turning south-west toward the N2 national highway.





Plate 1: The existing Kurland Water Treatment Works



Plate 2: The Hogs Hollow Horse and Carriage Trail equestrian facility

The next section of the proposed pipeline (Dirt Road in Stand of Exotic Trees) follows parallel with a dirt road from the entrance to Hogs Hollow Horse and Carriage Trails which connects to the N2 national highway (Plate 3). The proposed pipeline will run parallel (\pm 3 m) with the N2 national highway.



Plate 3: Dirt road in a stand of exotic trees leading from the N2 national highway to the Hogs Hollow Horse and Carriage Trail equestrian facility



The Pipeline Split (Plate 4) will be approximately 2 km along the proposed route adjacent the N2 national highway surrounded by agricultural land, continuing west (\pm 3m) parallel with N2 national highway on the one split, and south on the other toward the Kurland Rural Community. Two sections were identified for inspection in the Kurlan d Rural Community (Entry to Rural Community and Rural Community Pipeline End), however, road construction on the proposed route did not allow for safe parking to take representative photographs in either of these sections. Observations of these sections confirm what is visible on Google Earth satellite imagery, viz. that the proposed pipeline lay adjacent to a rural development on one side for both sections. On the other side of the Entry to Rural Community lies agricultural fields, and the other side of the Rural Community Pipeline End harbours disturbed patches of `*contiguous low forest and thicket*' and `*dense forest and woodland*' (SANLC 2020).



Plate 4: Area where the proposed pipeline will split to continue along the N2 national highway and enter the Kurland rural community

Moving from Section 7 (Agricultural Lands), as shown in Plate 5, to Section 8 (Transition to Indigenous Forest), as shown in Plate 6, marks a gradual decrease in agricultural activity with patches of '*low shrubland*', '*contiguous low forest and thicket*' and small patches of '*dense forest and woodland*' (SANLC 2020) which show signs of disturbance as expected for vegetation adjacent a major highway.





Plate 5: Agricultural fields surrounding the N2 national highway in Section 7



Plate 6: Transition from agricultural surrounding to natural habitat in Section 8

Section 9 (Indigenous Forest Start) marks the entry of the proposed route into predominantly natural habitat of `*contiguous (indigenous) forest*' and `*contiguous low forest and thicket*' (Plate 7). Sections 10 (Plantation Forest Start) and 11 (Proposed 0.6ML Reservoir) represent the entry (Plate 8) and middle (Plate 9), respectively, into a landscape where indigenous forest and dense forest woodlands have been displaced by `*contiguous and dense plantation forests*'. Section 12 (Plantation Forest End) marks the transition from a landscape dominated by plantation forests to more natural expanses of predominantly `*contiguous (indigenous) forest*' with some fallow lands to the south (Plate 10) before the proposed pipeline ends in Section 13 (Existing Matjiesfontein Reservoir) just east of Keurboomstrand (Plate 11). Several recreational facilities are loosely interspersed along the N2 national highway in all Sections from 9 – 13.





Plate 7: Start of transition into a predominantly indigenous forest habitat adjacent the N2 national highway



Plate 8: Start of predominantly plantation forest habitat adjacent the N2 national highway





Plate 9: Location of the Proposed 0.6ML Reservoir within plantation forest habitat



Plate 10: End of predominantly plantation forest habitat transitioning to more natural habitat adjacent the N2 national highway





Plate 11: The location of the existing Matjiesfontein Reservoir in indigenous thicket habitat

3.3 Sensitivity Mapping

Site Ecological Importance (SEI) is classification system represented as a function of the Biodiversity Importance (BI) and Receptor Resilience (RR) of the receiving environment. The latter RR is a measure of the intrinsic capacity of the receiving environment to resist and recover from major damage and/or impact and recover to its original state with minimal human intervention. The former BI is in turn a function Conservation Importance (CI) and Functional Integrity (FI) of the receiving environment.

Conservation Importance (CI) is defined by the Species Environmental Assessment Guidelines (2021)¹⁰ as 'the importance of a site supporting biodiversity features of conservation concern present, e.g. populations of IUCN threatened and Near Threatened species (CR, EN, VU and NT), Rare species, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes'.

Functional Integrity (FI) is defined by the Species Environmental Assessment Guidelines (2021) as 'a measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts'.

The respective CI, FI, BI, RR and SEI for each SCC has been presented in Table 3.

The resultant SEI was assessed to be Very Low for each potential SCC for the entire length of the proposed development.

¹⁰ <u>http://opus.sanbi.org/jspui/handle/20.500.12143/6922</u>



Table 3: Site Ecological Importance evaluated for each potential Species of Conservation Concern that may occur in the proposed development footprint and 500m buffer zone.

SCC	Habitat	EOO (km²)	Status Used	CI	FI	BI	RR	SEI
					Amphibia		•	
Knysna-Leaf Folding Frog (<i>Afrixalus knysnae</i>)	Forest, Shrubland, Wetlands	>10	EN (B1, 2)	High	Low - Migrations still possible across modified/degraded natural habitats along a busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
					Birds			
African Marsh Harrier (<i>Circus ranivorus</i>)	Grassland, Wetlands	>10	EN (A2, 3, 4, C1)	High	Low - Migrations still possible across modified/degraded natural habitats along a busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Black Harrier (<i>Circus maurus</i>)	Shrubland, Grassland, Wetland	>10	EN (C1, 2)	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Blue Crane (<i>Anthropoides</i> <i>paradiseus</i>)	Grasslands, Wetlands, Dams	>10	VU (A3,4)	Medium	Low - Busy road network. Several minor and major negative ecological impacts.	Low	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low



SCC	Habitat	EOO (km ²)	Status Used	СІ	FI	BI	RR	SEI
Crowned Eagle (<i>Stephanoaetus coronatus</i>)	Fores, Wetlands	>10	VU (C1,D1)	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Denham's Bustard (<i>Neotis denhami</i>)	Shrubland, Grassland, Wetland	>10	VU (A2, 3, 4; C1)	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Fynbos Buttonquail (<i>Turnix hottentottus</i>)	Shrubland	>10	EN (C1, 2)	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Knysna Warbler (<i>Bradypterus sylvaticus</i>)	Forest, Shrubland	>10	VU (A3, B2, C1)	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Knysna Woodpecker (<i>Campethera notata</i>)	Forest, Shrubland, Grassland	>10	NT (C2, D1)	Medium	Low - Busy road network. Several minor and major negative ecological impacts.	Low	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low



SCC	Habitat	EOO (km²)	Status Used	CI	FI	BI	RR	SEI
Maccoa Duck (<i>Oxyura maccoa</i>)	Wetlands	>10	EN (A2)	Medium	Very Low - The proposed developmental footprint will not intersect with this species' preferred habitat type.	Very Low	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
	-		-	-	Invertebrates	-	_	
Cape Thorntail (<i>Ceratogomphus</i> <i>triceraticus</i>)	Wetlands	>10	NT (B2)	Medium	Very Low - The proposed developmental footprint will not intersect with this species' preferred habitat type.	Very Low	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Dickson's Sylph (<i>Tsitana dicksoni</i>)	Shrubland	>10	Rare	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Giant Copper (<i>Aloeides pallida littoralis</i>)	Coastal	>10	NT	Medium	Low - Busy road network. Several minor and major negative ecological impacts.	Low	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Mahogany Presba (<i>Syncordulia venator</i>)	Wetlands		VU (B2)	Very High (EOO unknown)	Very Low - The proposed developmental footprint will not intersect with this species' preferred habitat type.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low



SCC	Habitat	EOO (km ²)	Status Used	CI	FI	BI	RR	SEI
Queen Malachite (<i>Ecchlorolestes</i> <i>nylephtha</i>)	Forests, Wetlands	>10	NT	Medium	Low - Busy road network. Several minor and major negative ecological impacts.	Low	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Rooi- Kopervlerkie (<i>Aloeides thyra orientis</i>)	Coastal Fynbos	>10	EN	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Yellow-Winged Agile (<i>Aneuryphymus montanus</i>)	Shrubland	>10	VU (B2)	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Sarophorus punctatus	Forest	>10	EN (B1, 2)	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
					Mammalia			
African Clawless Otter (<i>Aonyx</i> <i>capensis</i>)	Forest, Grassland, Wetland, Aquatic, Marine		NT (A2, 3)	Medium	Very Low - The proposed developmental footprint will not intersect with areas close to rivers or dams.	Very Low	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low



SCC	Habitat	EOO (km ²)	Status Used	CI	FI	BI	RR	SEI
Bontebok (<i>Damaliscus pygargus pygargus</i>)	Shrubland, Grassland	>10	VU (B1, 2, D1)	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Duthie's Golden Mole (<i>Chlorotalpa duthieae</i>)	Forest, Grassland	>10	VU (B1, 2)	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Leopard (<i>Panthera pardus</i>)	Forest, Shrubland, Grassland, Rocky Areas	>10	VU (A2)	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low
Sensitive Species 7	Forest	>10	VU	High	Low - Busy road network. Several minor and major negative ecological impacts.	Medium	Very High - Proposed development footprint, adjacent a major highway with several disturbance factors Animals that might occur there will be able to move into the surrounding natural vegetation in forest patches.	Very Low



3.4 Site-Visit Findings

The site visit revealed that the majority of the proposed route passes in close proximity to a busy national highway and through areas of high existing impact and disturbance (Section 3.2.5 – Site Visit and Current Impacts). The terrestrial animal species sensitivity is therefore likely to differ from the output of the screening tool (Section 3.2.1 – Screening Tool). The site ecological importance (Table 3) was therefore assessed for each SCC in the context of the site location and nature of the proposed development.

4 DISCUSSION

The desktop study identified 23 Terrestrial Animal SCC's that could potentially occur in the area of the Proposed Kurland Housing Development, Bulk Water Infrastructure. Despite sections of the proposed developmental footprint being natural Indigenous Forest the SEI is Very Low for all SCC's. Given the vicinity of the proposed developmental footprint close to a major highway and agricultural, rural, and other anthropogenic developments, the site visit revealed that it was highly unlikely that SCC's would frequent these areas. SCC's are more likely occur deeper into the Indigenous Forest habitats as opposed to areas with high human traffic and development. In the unexpected event that a SCC does occur within the developmental footprint, the nature of the impacts associated with the development will allow any SCCs to flee and in time return to the site.

The site sensitivity verification indicated that the developmental footprint of the Proposed Kurland Housing Development, Bulk Water Infrastructure does not fall within an area with a Very High, High or Medium Sensitivity, but instead an area of Very Low sensitivity given the existing presence of anthropogenic development and a major highway along a relatively narrow developmental footprint.

Therefore, a Terrestrial Animal Species Compliance Statement was considered appropriate for the proposed development (Appendix A).

5 CONCLUSION

There is no evidence that Terrestrial Animal SCC will suffer any irreversible impacts a result of the Proposed Kurland Housing Development of Bulk Water Infrastructure. The developmental footprint is relatively narrow and, while unlikely, if any individuals of a SCC are displaced the disturbance will only be temporary until construction is complete and the individuals can return.

Following these findings, the proposed development can be approved from a Terrestrial Animal perspective.



APPENDIX A – TERRESTRIAL ANIMAL SPECIES COMPLIANCE STATEMENT

Specialist details:

- Dr Owen Rhys Davies
- Phone: +27 (0) 21 412 1529 / +27 (0) 72 558 0080
- E-mail: <u>owen.davies@arcusconsulting.co.za</u>
- SACNASP registration for Ecology (117555)
- Specialisms: Avifaunal Surveys, Ecological Surveys, Field Research, Data Analysis and Assessment of Ecological Data
- Curriculum vitae attached

Statement of independence

I, Owen Rhys Davies, as the appointed terrestrial animal specialist, hereby declare/affirm the correctness of the information provided in this compliance statement, and that I:

Meet the general requirements to be independent and have no business, financial, personal or other interest in the proposed development and that no circumstances have occurred that may have compromised my objectivity; and

Am aware that a false declaration is an offence in terms of regulation 48 of the EIA Regulations (2014).

<u>2022-05-04</u> Date

Signature

Site Inspection Details

- Date: 24 March 2022;
- Duration: Approx. 4 hours;
- Season: Autumn;
- Season Relevance: The site inspection was conducted following the precautionary principal and probability of occurrence of Species of Conservation Concern (SCCs) in each habitat, and thus it is not considered necessary to perform a season specific inspection.

METHODOLOGY

Desktop Study

- Satellite imagery was obtained from Google Earth Pro (2020) to compare with land-use recorded by the South African National Land Cover (SANLC 2020) to identify habitats for investigation; and
- Species data was obtained from the Screening Tool, Virtual Museum and GBIF.



Site Inspection

- The length of proposed development was observed by vehicle and on foot during a single day;
- A total of 13 representative sections (habitats) were investigated across the area (16 km²);
- Each section was characterised, photographs were taken and the likelihood of any SCC occurring there was assessed; and
- Habitats were photographed using a Sony DSC-HX300.

RESULTS

Assumptions and Limitations

- It is assumed that all third-party information used (e.g. GIS data, satellite imagery and species datasets) is correct at the time of generating this report;
- The survey was restricted to a single day in a single season (autumn), but it is not considered necessary to perform any additional season surveys;
- Some identified habitats could not be photographed due to road construction/maintenance, but it is not considered necessary as satellite imagery and SANLC data conforms with what was observed on site; and
- The Site Sensitivity Verification report applies the precautionary principle and probability of occurrence, assuming that all terrestrial animal SCCs recorded in the area (or those with overlapping ranges) may occur in the proposed developmental footprint.

Sampling

- A total of 13 sections were investigated across the study area including the 500 m buffer zone (±16 km²) resulting in a sampling density of one section sample per 1.3 km² (Figure 1 in the document above); and
- The likelihood of SCC occurring in the proposed developmental footprint and its Site Ecological Importance (SEI) is provided in Table 3 in the document above.

PROPOSED IMPACT MANAGEMENT ACTIONS

- Most of the impact relevant to terrestrial animal SCCs will happen during the construction phase when resulting habitat destruction could cause disturbance and displacement of potential SCC;
- The construction phase will be a temporary impact; and
- Given this short lived impact, narrow proposed developmental footprint and proximity to existing impacts (N2 national highway, agricultural- and recreational land use) potential SCC will be able to easily move into the surrounding natural habitat and return once construction is completed.

CONCLUSION

- This compliance statement is applicable to the study areas as described by shape files provided by the client, and shown in Figure 1 with a 500m corridor;
- Due to the nature of the proposed development, the level of habitat transformation and presence of existing impacts along the proposed route, the study area is of very low sensitivity for terrestrial animal species (Table 1);
- The proposed development will not likely have a significant negative impact on the long-term viability or persistence of terrestrial animal SCC in the area;



- The proposed development <u>can be approved from a Terrestrial Animal Species</u> <u>perspective</u>; and
- There are no conditions to which this compliance statement is subjected.

CURRICULUM VITAE Dr Owen Davies Pr. Sci. Nat. (Ecology) Senior Ecologist – Avifaunal Specialist Email:OwenD@arcusconsulting.co.za



Specialisms	 Avifaunal surveys Ecological surveys Field research Data analysis and assessment of ecological data
Summary of Experience	Owen is a Professional Natural Scientist registered with the South African Council for Natural Scientific Professions (SACNASP) and obtained his doctoral degree from the Percy FitzPatrick Institute of African Ornithology, a DST-NRF Centre of Excellence at the University of Cape Town. Owen has been involved in avifaunal monitoring activities for renewable energy projects since 2013. Extensive field research has given Owen experience in the techniques required for conducting biological surveys on a variety of taxa including observations, physical trapping and identification of small terrestrial birds, raptors, bats, small mammals, rodents, snakes, reptiles, scorpions and fish. He is also qualified to conduct observations and acoustic monitoring of marine mammals in the offshore environment. Data collection in a diversity of habitats and ecosystems, combined with formal training in field skills such as off-road driving, enables Owen to conduct ecological surveys across southern Africa. In addition, his skills in data analysis and scientific writing at the PhD level enable him to produce high quality assessments and reports.
Qualifications and Professional Interests	 University of Cape Town, Percy FitzPatrick Institute of African Ornithology, 2010 to 2015 PhD Zoology University of Cape Town, Percy FitzPatrick Institute of African Ornithology, 2008 to 2010 MSc Zoology (upgraded to PhD) University of Cape Town, 2007 BSc Zoology (Hons) University of Cape Town, 2003 to 2006 BSc Zoology BSc Botany
Professional History	 2019 to present - Avifaunal Specialist, Ecologist, field team leader, Arcus Consultancy Services South Africa (Pty) Ltd, Cape Town 2015 to 2017 - Ecologist, Avifaunal Field Team Leader, Arcus Consultancy Services 2014 to 2015 - Bat monitoring field assistant, Arcus Consultancy Services 2013 to 2015 - Avifaunal observer, Arcus Consultancy Services 2009 to 2013 - Research Assistant (birds) to Dr J. Fuchs (Curator of Birds at the Muséum national d'Histoire naturelle, Paris), throughout South Africa 2007 to 2013 - Research Assistant (birds) to Prof T. M. Crowe (Percy FitzPatrick Institute of African Ornithology, Department of Zoology, University of Cape Town), throughout South Africa 2010 - Research Assistant (birds) to Dr I. Little, Endangered Wildlife Trust, Uganda 2010 to 2011 - Research Assistant (small mammals) to Dr B. Smit, University of Pretoria, Northern Cape 2010 - Research Assistant to Dr H. Smit-Robinson, Birdlife SA, Western and Northern Cape

CURRICULUM VITAE

Project Experience

- Confidential WEF near Beaufort West, Western Cape Province (Avifaunal monitoring, data analysis and reporting)
- Confidential WEF near Lutzville, Western Cape Province (Ecological assessment and reporting)
- Umsinde Emoyeni WEF (Avifaunal assessment, data analysis and reporting)
- Confidential WEF near Molteno, Northern Cape Province (Avifaunal monitoring data analysis and reporting)
- Confidential Battery Energy Storage System (BESS) near De Aar, Northern Cape Province (Avifaunal assessment, Ecological Assessment, site-walkthrough and reporting)
- Confidential Grid Connection near De Aar, Northern Cape Province (Avifaunal assessment, Ecological assessment, site-walkthrough, data analysis and reporting)
- Confidential WEF near Yzerfontein, Western Cape Province (Avifaunal assessment, Ecological assessment, site-walkthrough, data analysis and reporting)
- Confidential WEF near Kuruman, Northern Cape Province (Ecological Assessment and reporting)
- Confidential WEF near Pofadder, Northern Cape Province (Avifaunal assessment and reporting)
- Confidential WEF near Nelspoort, Western Cape Province (Avifaunal assessment and reporting)
- Metsimatala Solar (Field team leader, bird observations, data analysis and reporting in collaboration with specialists)
- Kolkies WEF (Field team leader, bird observations, bat mast commission, data analysis and reporting in collaboration with specialists)
- Karee WEF (Field team leader, bird observations, bat mast commission, data analysis and reporting in collaboration with specialists)
- Gouda WEF (Field team leader, bird observations post construction)
- Hopefield WEF (Field team leader, bird observations, data analysis and reporting in collaboration with specialists – post construction)
- Spitzkop West WEF (Bird observations, bat mast commission)
- Pofadder WEF (Bat mast commission)
- Cookhouse WEF (Bat mast commission and decommission)
- Komsberg WEF (Field team leader, bird observations, bat mast commission, data analysis and reporting in collaboration with specialists)
- Bokpoort Solar (Avifaunal assessment, bird observations, data analysis and reporting)

Publications

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JUNKER, K., SPICKETT, A., DAVIES, O.R., JANSEN, R., KRASNOV, B. R. 2021. Gastrointestinal nematodes in two galliform birds from South Africa: patterns associated with host sex and age. Parasitology Research. https://doi.org/10.1007/s00436-021-07254-0

DAVIES, O.R, JUNKER, K, JANSEN, R, CROWE, T.M. & BOOMKER, J. 2008. Age- and sexbased variation in helminth infection of Helmeted Guineafowl (*Numida meleagris*) with comments on Swainson's Spurfowl (*Pternistis swainsonii*) and Orange River Francolin (*Scleroptila levaillantoides*). South African Journal of Wildlife Research 38 (2): 163-170.

JUNKER, K., DAVIES, O.R., JANSEN, R., CROWE, T.M. & BOOMKER, J. 2008. Nematodes of Swainson's Spurfowl *Pternistis swainsonii* and Orange River Francolin *Scleroptila levaillantoides* from the Free State province, South Africa, with a description of *Tetrameres swainsonii*, sp. nov. (Nematoda: Tetrameridae). Journal of Helminthology 82: 365-371.