ANIMAL SPECIES & TERRESTRIAL BIODIVERSITY ASSESSMENT

PROPOSED DEVELOPMENT ON PORTIONS 66 & 67 OF THE FARM 433, PLETTENBERG BAY.

PREPARED IN 2022 AND UPDATED FOR ECO ROUTE ENVIRONMENTAL CONSULTANCY, SEDGEFIELD, JANUARY, 2023

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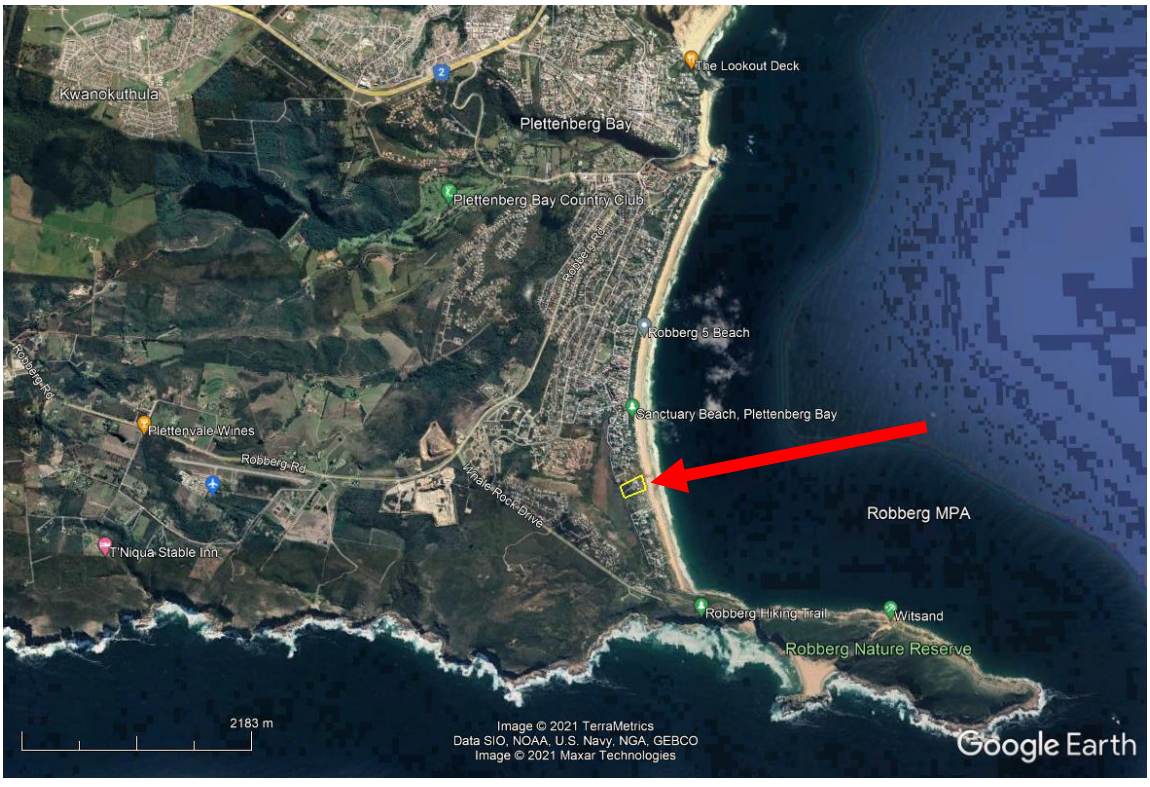
1. INTRODUCTION, CREDENTIALS AND DECLARATION

1.1 INTRODUCTION

Ken Coetzee, of *Conservation Management Services*, was contracted by client representative and EAP working with the EIA application, Andrew West of Andrew West Environmental Consultancy (November 2021), and more recently by Eco Route Environmental Consultancy (December 2022), to do a fauna sensitivity analysis of Portions 66 & 67 of the Farm 443, Plettenberg bay (see Figure 1 for the locality of the study site).

The brief included the following:

i. Inventory of vertebrate fauna.
ii. Fauna and fauna habitat sensitivity analysis in terms of Red Data classified species predicted to occur on the study site and evaluate the outcomes of the EIA screening tool in terms of the identified sensitive fauna.
iii. Evaluate condition and value of habitat and correlate with other specialist studies.
iv. Determine the critical landscape connectivity corridors present on the study site if any.
v. Produce all of the data in a Terrestrial Animal Specialist Assessment report and a Terrestrial Biodiversity Specialist Assessment report.



<u>Figure 1</u>: Locality of the study site in Plettenberg bay.

1.2 CREDENTIALS OF THE AUTHOR

The author of this report, Mr Ken Coetzee, is registered with the South African Council for Natural Scientific Professions (Reg No 400099/08) as a "Professional Natural Scientist", in the field of Ecological Science.

Mr Coetzee is a Master of Technology graduate of the School of Forestry and Nature Conservation of the Nelson Mandela Metropolitan University (Saasveld Campus) in the field of Ecological Science. His Master of Science thesis was a landscape fragmentation study of an endangered small mammal, the riverine rabbit (*Bunolagus monticularis)*. Mr. Coetzee is thus well qualified to carry out a fauna study which has the interests of sensitive fauna species and habitat as its core objective.

Mr Coetzee has over 40 years of relevant experience in the field of nature conservation and management, the most recent 26 years of which were self-employed as a biodiversity specialist consultant, involved in a wide variety of nature conservation, landscape planning, habitat evaluation, commercial game ranch and impact assessment projects as fauna specialist.

1.3 DECLARATION OF INDEPENDENCE AND COMPETANCY

I hereby declare that I, Ken Coetzee trading as Conservation Management Services, comply with all the conditions of PWC: DEA&DP for a person appointed in terms of the NEMA EIA Regulations to compile a specialist report, *viz*:

- I am independent; (see declaration form on page 40)
-

- I have the required expertise, including knowledge of the NEMA, the EIA Regulations and any guidelines that have relevance to the proposed activity and specialist input or study;

- I have performed 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 fully comply with NEMA, the EIA Regulations and all other applicable legislation;

- I have disclosed to the applicant, EAP and the Department all material information in the possession of the person that reasonably has or may have the potential of influencing –

    (i) any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or

(ii) the objectivity of any report, plan or document to be prepared by the person in terms of these Regulations for submission to the competent authority;

2.

- I ensure EIA and EMP best practice and clear communication on the methodologies used, and the assumptions, uncertainties and gaps in knowledge; and

- I adhere to the National Environmental Management principles contained in Section 2 of NEMA and the general objectives of Integrated Environmental management contained in Section 23 of NEMA.

2. DETAILS OF THE EVALUATION

2.1 Field assessment date: 3 November 2021
Report submitted to the EAP: 16 November 2021

2.2 Duration of the field work: seven hours.

2.3 Season of the field visit: First half of summer (November). The study area lies within an all- year-round rainfall zone and there is very little difference in habitat condition at the study site between the seasons except that winter is marginally wetter and a little cooler. The natural habitats of the identified animal species will thus be little affected by season.

2.4 Methodology

The method used was to walk the study site from west to east in four broad transects to familiarize myself with the habitat types. This was followed by similarly walking the area from north to south, also in four broad transects. During these transects information about the various habitat types was recorded and this information is captured in Table 1. This habitat information was then later compared to the recorded preferred habitat of the sensitive animal species that were identified by means of the screening tool.

Animal presence could thus not be according to actual observations of the species, but rather was based on habitat suitability and so no densities of observations can be provided.

Suitability of habitat was the graded as *suitable*, *marginal* or *unsuitable* and the presence of the species of concern was graded as *likely to occur, possibly can occur* or *unlikely to occur*. The suitability of habitat on the study site was then taken up in tabular form in Appendices 1 to 4. These predictions were then use as a baseline for the evaluations of the sensitive species identified by means of the screening tool.

Due to the overall level of accuracy with the field work and confidence with the predictions in this survey report, it is confirmed that the overall sensitivity rating is low and that only this compliance statement will be necessary and that a full faunal assessment is not required.

Appendices 5A and 5B shows that the legal requirements of the Protocols for the assessments have been fully met in the reporting.

3. DESCRIPTION OF THE STUDY SITE

3.1 TOPOGRAPHY

The topography of the study site can be described as gently sloping to the East (sea shore) and also to the West (towards a low elevation wetland).

The entire site is located on a dune ridge, which has high points in the central area (see Plate 1). The two sloping planes (West and East facing) are relatively flat except for the dune peak. (see Figure 2A for the site layout and 2B for surrounding land use).

<u>Figure 2A</u>: The layout of the study site showing the existing single development structure.

<u>Figure 2B</u>: The locality of the study site showing the wetland to the West and the sea-shore to the East and development on both sides of the proposed development site.

Plate 1: One of the sand dune high-points on the study site.

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3.2 HABITAT DESCRIPTION AND EVALUATION

This section thus does not attempt to provide a specialist botanical report, although there will be considerable overlap with the botanical report completed for the study site. Reference can thus be made to the botanical report (Vlok, 2020) for plant species information and details of plant communities.

For the purpose of this report, it is necessary to examine vegetation as wildlife habitat at a different scale than that of biome, veld type or vegetation type. This is done further in this section on faunal habitats. (Refer to Figure 3).

It must be appreciated, however, that these units do not describe botanical communities, but rather broad topographical wildlife habitats, of which the vegetation is an important component.

It must also be appreciated that there are usually no clearly defined edges between these habitat types (vegetation units) and that overlap may be considerable. Similarly, there will be numerous internal variations within each unit.

The habitats identified are thus a broad habitat description based on topography, soil type as well vegetation type and structure, from the point of view of the wild animals, and it disregards minor community variation within each unit. The habitat types identified also represent practical and relatively homogenous units for habitat management purposes. The approximate extent of each of the habitat types is shown in Figure 3.

3.2.1 VEGETATION

A study of the vegetation was carried out by Vlok (2020) and is briefly summarized here for ease of reference.

According to Vlok (2020) the vegetation on the study site is in an ecologically degraded condition with a consequently poor plant diversity. The residential development of the surrounding area has transformed most of the area. According to Vlok (2020) alien *Acacia cyclops* was cleared away on the study site in the past but the plants returned in great density after a recent fire. The plant species recorded on the study site are typical of Goukamma Dune Thicket which consists of a mixture of Thicket patches in a Fynbos matrix.

The species that are present on the study area are less typical of Garden Route Shale Fynbos and the relatively high incidence of typical coastal thicket plant species indicates a plant cover more reminiscent of dune thicket vegetation, albeit severely invaded by alien plants. Irrespective of vegetation classification, animal habitat was evaluated in this study at the very much finer scale of individual animal habitat preference. Vlok (2020) recorded a total of 52 indigenous plant species, the most prevalent of which follow:

Trees: *Acacia cyclops, Acacia saligna, Apodytes dimidiata, Colpoon compressum, Euclea racemosa, Gymnosporia buxifolia, Searsia crenata, Searsia glauca, Hippobromus pauciflorus, Mystrozylon aethiopicum, Syderoxylon inerme* and*Tarchonanthus littoralis*.

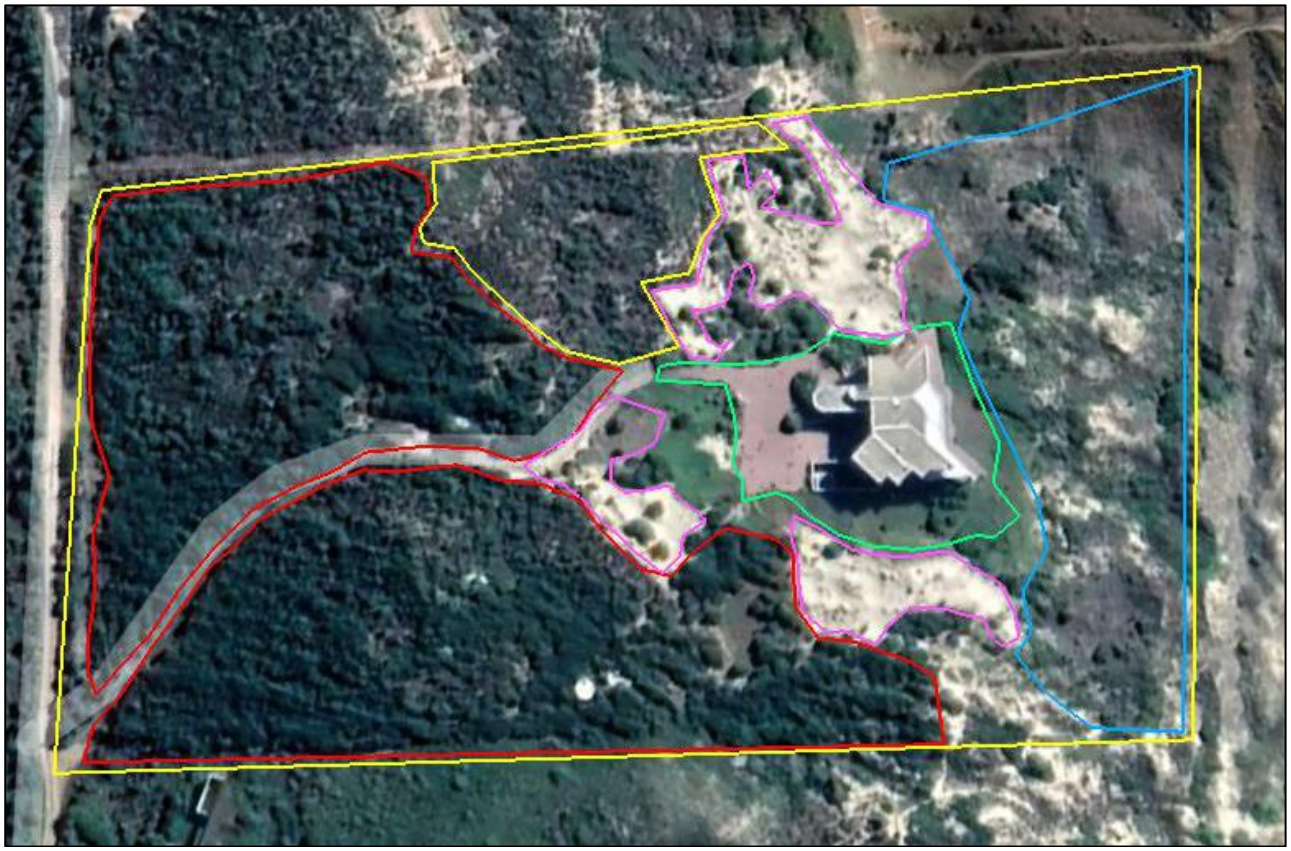

Figure 3: Approximate delineation of the identified habitat types on the study area. The roadway habitat is not mapped, it lies between the two red units.

Indigenous thicket invaded by Acacia cyclops/

Fynbos patches invaded by Acacia cyclops

Buildings, garden & driveway

Disturbed and exposed sandy areas

Foredune thicket/Fynbos

Shrubs and herbs: *Carissa bispinosa***,** *Putterlickia pyracantha, Agathosma apiculata, Anthospermum aethiopicum, Arctotis pinnatifida, Chaenostoma campanulatum, Grewia occidentalis, Helichrysum cymosum, H. teretifolium, Limoneum scabrum, Metalasia muricata, Osteospermum moniliferum, Passerina vulgaris, Pelargonium capitatum, Pharnaceum thunbergii, Polygala myrtillifolia, Salvia africana-lutea, Senecio elegans, Tetragonia fruticose, Solanum quadrangularis, Plantago lanceolata* and *Zaluzianskya capensis*.

Creepers: *Asparagus aethiopicus*, *Cissampelos capensis, Cynanchum ellipticum, C. obtusifolium, Rhoicissus tridentata* and *Solanum africanum*.

7.

Graminoids: *Sporobolus africanus***,** *Cynodon dactylon, Cyperus ustitatus, Ehrharta villosa, Ficinia arenicola, F. oligantha, F. ramosissima, Hellmuthia membracacea, Imperata cylindrica, Melica racemosa, Avena fatua, Lolium perenne, Restio Eleocharis* and *Stipagrostis zeyheri.*

Geophytes: *Anemone vesicatoria, Chasmanthe aethiopica* and*Cyanella lutea*.
Succulents: *Carpabrotus edulis*, *C. acinaciformis*, *Crassula expansa* and *Mesembryanthemum crystallinum*.
No rare or threatened species were found or are suspected to occur on the proposed development site.

3.2.2 SUMMARY OF ANIMAL HABITAT POTENTIAL

The following Table (1) illustrates the range of habitats that are available for wildlife on the study site (see Figure 3). These habitat descriptions are based on the physical characteristics, availability of water, the vegetation types and also the degree of disturbance at the site.

Table 1: Summarized description of habitat for wildlife. (Alien plants a shown in bold type).

HABITAT DESCRIPTION	IMPORTANT PHYSICAL AND HABITAT FEATURES	IMPORTANT VEGETATION COVER SPECIES

1. Indigenous Thicket & *Acacia cyclops* bush	Consists of a very dense mix of indigenous thicket shrubs and small trees dominated by ***Acacia cyclops*** on a dune sand substrate. See Plate 2.	***Acacia cyclops***, *Searsia glauca, Tarchonanthus littoralis, Sideroxylon inerme, Mystroxylon aethiopicum, Grewia occidentalis, Osteospermum moniliferum, Polygala myrtillifolia, Carissa bispinosa, Cussonia thyrsiflora* and ***Acacia saligna.***
2. Fynbos matrix patches variously invaded by *Acacia cyclops*	Consists of relatively open habitat on dune sand with mostly a sparse fynbos plant cover with light to moderately dense cover of ***Acacia cyclops.*** Physical features include higher sand dunes, mostly vegetated. See Plate 3.	*Anthospermum aethiopicum, Helichrysum teretifolium, Metalasia muricata, Passerina vulgaris, Tetragonia fruticosa and Pelargoinium capitatum.*
3. Disturbed and exposed sandy habitats	Flatter areas disturbed by previous building activity and consisting of open sand with pathes of crushed stone, tile rubble with a sparse cover of pioneer dune plant species and grasses. See Plate 4.	*Solanum quadrangularis, Carpobrotus acinaciformis, C. edulis, Ehrharta villosa,* ***Bromus diandrus,*** *Pelargonium capitatum and Crassula expansa..*
4. Buildings	Large double story building providing some cover for small animals.	No plant cover, other than ***Pennisetum clandestinum*** on paving and on former lawn areas.
5. Roadway	Variously stabilized road with sandy verges covered in grasses, sometimes densely. See Plate 5.	*Cynodon dactylon, Imperata cylindrica*, *Melica racemosa* and *Sporobolus africanus.*
6. Foredune	Densely vegetated and almost intact Thicket/Fynbos mosaic on the primary dune, apparently undisturbed but also invaded by ***Acacia cyclops*.** See Plate 6.	All the Thicket tree and shrub species listed in 1. above but also with a dense cover of *Ehrharta villosa* and a thick layer of plant litter.

<u>Plate 2</u>: The area of dense Thicket, completely dominated by the alien invasive *Acacia cyclops.*

<u>Plate 3</u>: Small areas of Fynbos within the Thicket/Fynbos matrix, variously Invaded by *Acacia cyclops.* The red plant is *Crassula expansa*.

<u>Plate 4</u>: An exposed area of sand that was disturbed by the original building activities on the study site.

<u>Plate 5</u>: The access roadway to the original house showing a dense cover of grasses on the sandy soil.

<u>Plate 6</u>: The relatively undisturbed foredune area.

3.2.3 A GENERAL DESCRIPTION OF THE STUDY SITE

The study site lies in a line of already developed properties (see Figure 2B). Both to the left and right of the study site the properties are residentially developed with most of each property transformed. The study site itself is partly transformed with a residential development and the disturbance created during its construction. On some of these neighbouring properties some of the original natural vegetation has been retained but natural habitat in the entire developed area can best be described as completely fragmented.

The exception is the foredune area on the Eastern sea-side which appears to be undisturbed and the reed filled wetland to the West which is also relatively undisturbed (see Figure 2). The wetland is also bound by a rocky cliff-face on its Western side, which introduces a whole different range of interesting habitat possibilities (for example for crevasse-roosting bats and gecko and lizard habitat).

The natural fauna in these foredune and wetland areas may be intact, but the line of development along the coast has effectively cut-off natural dispersal and foraging movement by animals (with the exception of some birds) between the two habitat types. The study site thus represents a very narrow and relatively natural link between the natural habitats between the foredune area and the wetland. This link is however not considered to be a critical link or corridor due to its narrow width and its generally poor condition.

The small wetland area that lies immediately to the west of the study site is not considered to be a SWSA (strategic water source area) or a FEPA (freshwater ecosystem priority area) as it is not mapped as part of either. The study site, which contains no type of wetland at all, is thus not important in terms of wetlands and wetland biodiversity (see Figure 4A).

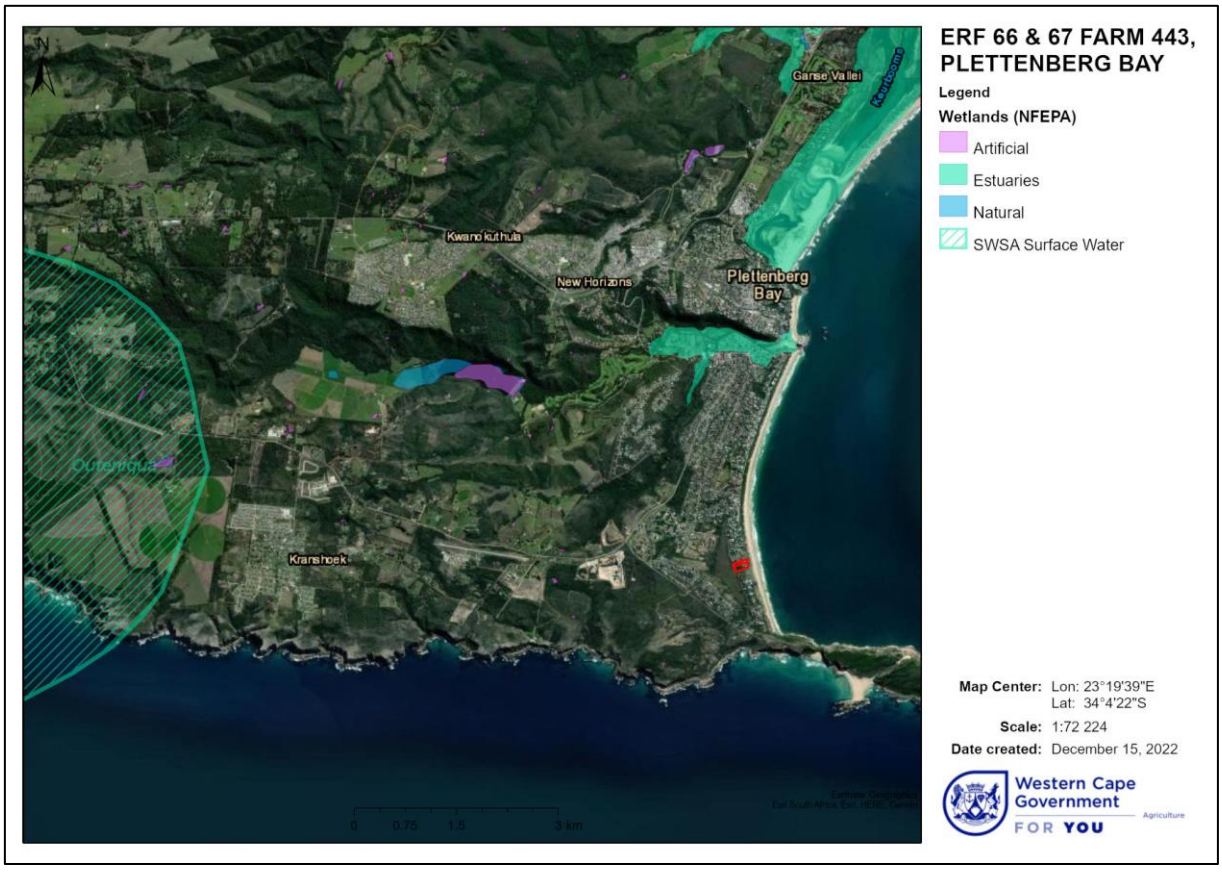

Figure 4A: Map of the Plettenberg Bay area showing that the proposed development site is not part of, or near to, any registered national SWSA or FEPA wetland system

The last remnants of intact natural habitat along the line of development (including the proposed development site) are currently being further degraded by a dense infestation of the alien *Acacia cyclops* which results in severely altered habitat conditions such as soil chemistry modification, altered vegetation structure and reduced opportunities for natural pollination biology. In terms of the local fauna, the development along the primary dune area should never have been approved and no attempt to rectify the situation at this late stage will make it right. The environmental damage has already occurred but the provision of a remedial corridor across the study area may help to restore the natural habitats and fauna of the area post development and once the invasive alien plants are completely under control.

3.2.4 ECOLOGICAL SUPPORT AREA CLASSIFICATION AND FUNCTION

The study site does not contain any Critical Biodiversity areas but is classified as a terrestrial Ecological Support Area (see Figure 4B). In this respect it is ecologically functional in that it can provide part of a functional corridor for connectivity across the site on an east/west axis. This corridor is important at fine scale for smaller terrestrial wildlife such as rodents, birds, reptiles and invertebrates.

This connectivity across the study site will be negatively impacted by the physical structures, hard surfacing and barriers to movement that the proposed development will result in, unless an undeveloped corridor can be retained on an east/west axis across the site.

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Unless suitably mitigated, burrowing habitat, nesting habitat, feeding habitat and general movement across the site will be completely disrupted for most types of fauna.

The potential loss of ecological connectivity can have a knock-on effect in terms of ecosystem services that are provided by the small fauna such as pollination, seed dispersal, functional parasitism and the dispersal of nutrients and trace elements. These potential impacts should, however be considered in the light of the current poor condition of the study site, within which some of the ecosystem functionality will already have been lost.

Such a functional corridor is proposed (see Figure 4C) and, together with the gardens associated with each residence, and the undeveloped areas in between the residences, should provide adequate refuge and movement opportunity for the small wildlife populations of the area.

Figure 4B: Biodiversity sensitivity classification for the general study area. The study area is shown in red and it clearly falls within the terrestrial Ecological Sensitive Area unit.

3.2.5 ECOSYSTEM THREAT STATUS

According to the Ecosystem Threat Status map (see Figure 4C) the study area lies within an area classified as an Endangered Ecosystem, presumably due to the high level of residential development and alien plant invasions that have already transformed the local dune thicket and fynbos ecosystems.

At a finer scale, potential Ecosystem Threat can be mitigated to some extent by means of the proposal made at Ecological Support Area level, namely to provide a suitable corridor for small wildlife movement and occupation.

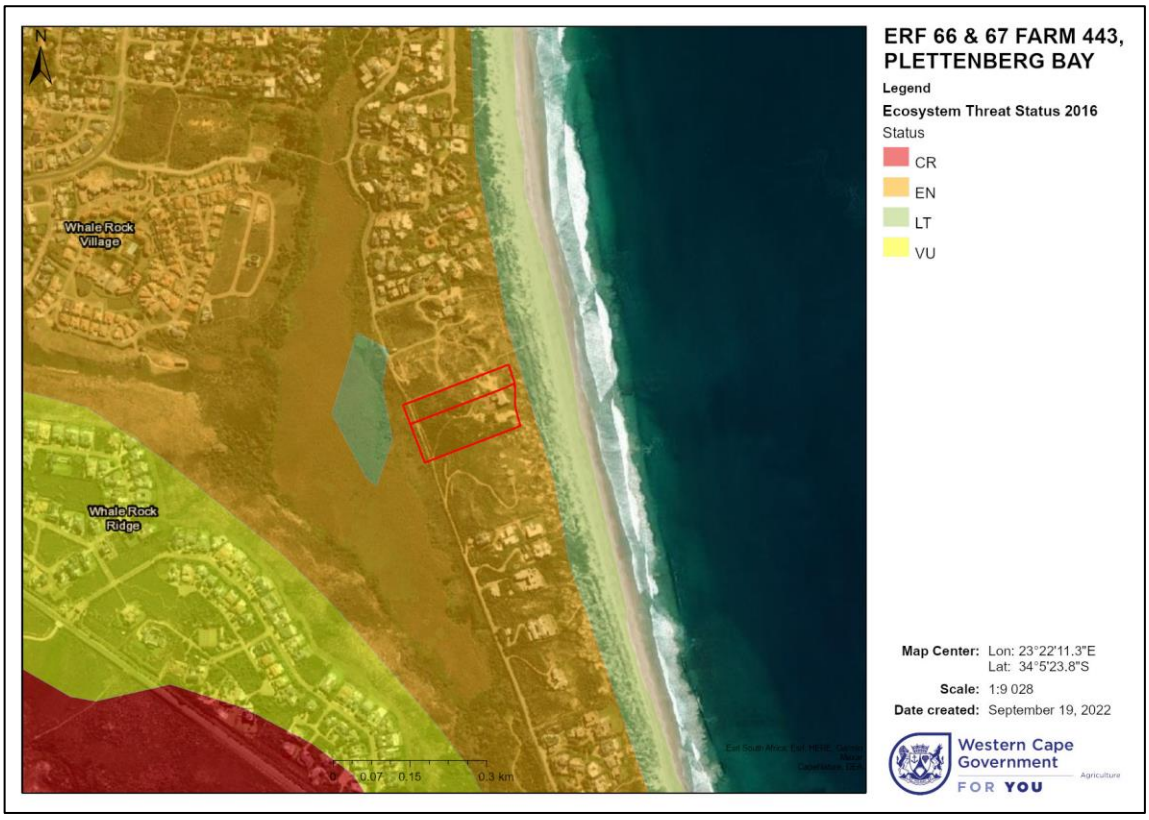


Figure 4C: Ecosystem threat status for the general study area. The study site is indicated in red and it falls within the endangered ecosystem category.

3.2.6 PROTECTED AREAS

The study site does not lie within any area defined by the National Environmental Management: Protected Areas Act of 2004.

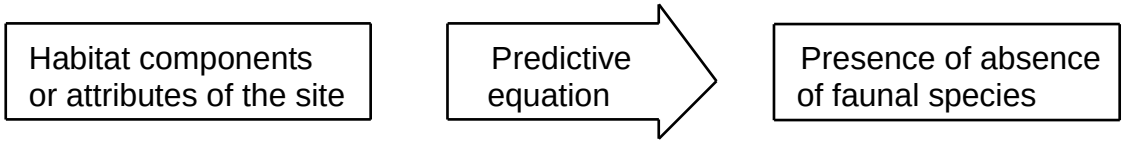
4. FAUNAL OCCURRENCE

4.1 THE BASIC HABITAT MODEL

The fauna of the study area is typical of the South Cape Coastal Thicket/Fynbos Mosaic. It is relatively intact, except that most of the original larger mammal species were eradicated by the end of the nineteenth century. Smaller wildlife, however, is also under threat in the Southern Cape area as a result of habitat destruction for expanding development and the effects of over-frequent fires fueled by invasive alien plants. A habitat model forms the basis for habitat inventory and entails using a set of habitat components or attributes to predict some or other characteristic of a wildlife population (Cooperrider et al, 1986).

For this study, the method used to determine the presence or absence of faunal species closely follows the habitat model of Cooperrider et al (1986) and can be simply illustrated as follows:

BASIC HABITAT MODEL



The single most important predictor of occurrence is probably geographic location. Most wildlife species are quite restricted in geographic distribution, therefore, geographic location, together with knowledge of species distribution, is adequate to predict species potentially present in the area. However, wildlife species are rarely present continuously within their geographic ranges, and complete delineations of all sites used by a species are usually not available. (Cooperrider et al, 1986).

A more accurate prediction of presence and more detailed predictions about population attributes obviously requires much more detailed information on habitat components present (Cooperrider et al, 1986), but this degree of detail is outside of the scope of this study.

4.2 FAUNA INVENTORY

The most recently published distribution data for mammal, reptile, amphibian and avian species were used for this study. The presence of animals in the study area was determined on a probability basis assessed in terms of the habitats found on the study site (Table 2) and the known (published) geographic distribution of each likely species. Local knowledge and site observations were also used to refine the predictions. This method has been widely used for inventory and impact assessment purposes as an alternative to the physical location of fauna which is restrictive and impractical in terms of time and cost.

It must be appreciated that these checklists are preliminary. The following description of the fauna is per faunal group:

4.2.1 AMPHIBIAN INVENTORY

The study site provides no examples of typical amphibian wetland habitat nor are there any indications that such habitat may temporarily become available during the wet season. Of the 15 amphibian species listed, and that are known to occur in the area, only one species, the plain rain frog *Breviceps fuscus* is considered likely to occur on the study site because it does not require open water in which to breed, as is the case with all the other listed species. (See Appendix 1). Distributions were determined with reference to Passmore & Carruthers (1995), Carruthers (2001), Wager (1965) and Minter et al (2004).

4.2.2 REPTILE INVENTORY

The presence or absence of reptiles is much more difficult to predict than that of the amphibians which have a more predictable habitat. Of the 33 reptile species predicted to occur in the area, 5 are excluded due to unsuitable habitat. Of the 28 reptiles

considered to be likely to or possibly occurring on the study site, 3 are *Chelonians* (tortoises), 1 is a chameleon, 18 are snakes, 3 are geckos and 8 are lizards. (See Appendix 2).

8 of the 33 reptile species are endemic to the subregion, most with very small distribution ranges. Although it is highly unlikely that all 33 reptile species actually do occur on the study site, the list merely reflects probability of occurrence based on known distribution and predicted habitat suitability.

Distributions were determined with reference to Fitzimons (1962), Branch (1988) and Bates et al, (2014).

4.2.3 MAMMAL INVENTORY

The limited range of habitats (see Table 2) provide for an equally limited variety of mammal types (see Table 3). Of the 28 species predicted to occur in the general study area, the habitat is unsuitable for 3, 16 are considered likely to occur and 9 are considered possibilities. The breakdown of number of species per mammal group is as follows:

Insectivores (shrews, moles)	- 4
Chiroptera (bats)	- 3
Lagomorphs (rabbits and hares)	- 1
Rodents (rats and mice)	-13
Carnivores (genets and mongooses)	- 2
Ungulates (antelopes)	- 1

Distribution was determined with reference to Skinner & Chimimba (2005) Stuart & Stuart (1996), Mills & Hess (1997), Roberts (1951) and Friedman & Daly (2004).

4.2.4 BIRD (AVIFAUNA) INVENTORY

Birds are comparatively more mobile than other animals and their predicted and observed presence on the study site does not necessarily indicate permanent residence or occupation of the available habitats. Kelp gulls, for example, observed during the fieldwork may only use the study site buildings as resting refuge and will feed on the nearby seashore. The habitats available to birds on the study site may thus constitute only part of the ecological requirements for certain species. Habitat variability on the study area for birds, however, is minimal, which is reflected in the relatively low diversity of species predicted to occur.

Of the 43 bird species predicted to occur, either permanently or partly on the study area, 14 were by sightings made during the fieldwork (See Appendix 4 for the full checklist).

Distributions were determined with reference to Sinclair et al (1997), Maclean (1985), Harrison et al (1997) and Taylor et al (2015).

4.2.5 INVERTEBRATE INVENTORY

There is no concise inventory for the invertebrates of the general Plettenberg Bay study site nor was it within the scope of this study to produce such an inventory. Both the screening tool and SANBI (2021) identifies two insect species of high sensitivity that may occur at the study site as follows:

A. *Aneuryphymus montanus* – yellow winged agile grasshopper. This grasshopper occurs in fynbos in rocky foothills, particularly on the cooler south-facing slopes. Threatened by farmland expansion and alien plant invasions. It is known to occur in the Southern Cape but details are not available.

B. *Aloeides thyra orientalis* – red copper wing (Brenton subspecies). This butterfly occurs on the Brenton peninsula near Knysna. It occurs in coastal Fynbos on flat sandy ground and the butterfly is dependent on host plants in the *Aspalathus* genus. The butterfly is severely affected by alien plant invasion.

5. RED DATA CLASSIFICATION, OCCURRENCE AND HABITAT SENSITIVITY

Animals have been classified in terms of the ever-increasing threats of overexploitation, illegal trade or habitat transformation. They are rated in terms of their vulnerability to extinction in Red Data lists, one for each animal group. See Appendix 5 for Red Data classifications (ie: degree of vulnerability).

The screening tool identified a number of sensitive species that may occur in the study area or that may be impacted by the proposed development. These species will be discussed separately under each faunal group.

5.1 AMPHIBIAN AND REPTILE SENSITIVITY

With respect to amphibians, Minter et al (2004) state that "habitat loss or modification as a result of agriculture and other forms of human activity remains the most important single threat to the survival of amphibian populations, because of the scale of these changes and their relative permanence. At greatest risk are species that have limited distributions." It is thus clear that the remaining natural habitats on the study area should also be considered in terms of amphibian conservation and impacted as little as possible, in the interests of herptile persistence in the area.

Species identified by the screening tool: *Afrixalus knysnae*

Only one of the amphibians predicted to occur in the general area is listed as a Red Data species (endangered). (See Table 2). The endemic Knysna leaf-folding frog occurs in Mountain Fynbos and Afromontane Forest, usually in swampy wetland

areas within these habitats. On the study site there is no habitat that meets these requirements so the Knysna leaf folding frog is thus not considered likely, or even a possibility, to occur on the study site.

All of the substrates on the study site consist of deep marine sand and dunes, with no water holding capacity, the habitat is thus too dry for *A. knysnae.* It is possible that this species may occur in the wetland to the West, but definitely not on the study site.

Species identified by the screening tool: *Tetradactylus Fitzsimonsi*

Fitzsimons long tailed seps is classed as vulnerable and none of the other reptile species predicted to occur in the study area are listed as Red Data species (see Table 2 and Appendix 2). The long tailed seps is only known to occur at three sites, Port Elizabeth, Humansdorp and George. It is thus not known to occur in the Plettenberg Bay area and thus also not on the study site.

TABLE 2: Red Data classification and occurrence potential for the Amphibians and Reptiles that were predicted by the screening tool to occur on the study site.

COMMON NAME	SCIENTIFIC NAME	RED DATA CATEGORY	PREDICTED OCCURRENCE ON THE STUDY SITE	HABITAT REQUIREMENTS (Minter et al,2004 & Bates et al, 2014)
Knysna leaf-folding frog	*Afrixalus knysnae*	Endangered (Minter et al, 2004)	Does not occur Due to habitat unsuitability	Mountain Fynbos / Afromontane Forest Mosaic. Roadside pools in forest clearings, ponds in Fynbos.
Fitzsimons long tailed seps	*Tetradactylus fitzsimonsi*	Vulnerable (Bates et al, 2014)	Not known to occur in the study site area, only known from Port Elizabeth, Humansdorp and George	Habitat not well known, the other seps species occur mostly in grassland and marshy areas.

5.2 MAMMAL SENSITIVITY

Table 3 lists the Red Data listed mammal species which were identified by the screening tool as well as other species which are Red Data listed mammal species but not identified by the screening tool. (See Table 3 and Appendix 3).

Species identified by the screening tool: *Chlorotalpa duthieae*

Duthies golden mole is classified as *endangered.* This mole occurs in alluvial sands and sandy loam soils within the coastal forests of the fynbos biome. It is not likely to

occur on the study site due to habitat unsuitability, there is no forest or similar habitat on the study site.

Other Red Data listed mammals: *Myosorex longicaudatus*

The long-tailed forest shrew is classified as *endangered*. It is essentially a forest animal but it also occurs in Forest/Fynbos ecotones and fynbos, but always in moist bog-like habitat. It is not likely to occur on the study site due to habitat unsuitability because there are definitely no wetland-like or moist habitats on the study site. It is all dry dune sand. The long-tailed forest shrew is classed as endangered due to the sustained and increasing loss and fragmentation of forest and thicket habitat in its distribution area. Fortunately, this does not apply to the study area.

Other Red Data listed mammals: *Philantomba monticola*

The blue duiker is classified as *vulnerable.* They occur in forests, thickets and very dense coastal bush along the East coast of South Africa. The rooikrans invaded thicket/Fynbos on the study site does not provide suitable habitat as it does not contain suitable forage or cover habitat. Blue duiker is thus not likely to occur on the study site.

Other Red Data listed mammal species: *Mystromus albicaudatus*

The white-tailed mouse is classified as *vulnerable*. It is essentially a grassland animal but it also occurs in the Fynbos biome, preferring the more-grassy habitats (De Graaff, 1981). The study site does not provide suitable habitat. The loose sandy soil of the dunes is not the typical substrate habitat of this mouse although the forage appears to be suitable. According to Skinner and Chimimba (2005), the study site lies within a marginal area for this species. According to De Graaff (1981) there are no distribution records for this species in the general study area.

TABLE 3: Red Data classification and occurrence potential for the Mammals that were predicted by the screening tool to occur on the study site and that were excluded from the mammal checklist (Appendix 3) due to habitat unsuitability.

COMMON NAME	SCIENTIFIC NAME	RED DATA CATEGORY (SANBI, 2016)	PREDICTED OCCURRENCE ON THE STUDY SITE	HABITAT REQUIREMENTS (Skinner & Chimimba, 2005)
Duthies golden mole	*Chlorotalpa duthieae*	Endangered	Does not occur on the study site due to habitat unsuitability, there is no forest habitat on the study site.	Occur in alluvial sands and sandy loam soils within the coastal forests of the fynbos biome.
Long-tailed forest shrew	*Myosorex longicaudatus*	Endangered	Does not occur on the study site due to habitat unsuitability. There are	Essentially a forest animal l also occurs in ecotones and fynbos, but

			definitely no wetland-like or moist habitats on the study site.	always in moist bog-like habitat.
Blue duiker	*Philantomba monticola*	Vulnerable	Will not occur on the study site. The rooikrans invaded Thicket/Fynbos on the study site does not provide suitable foraging or cover habitat.	Occur in forests, thickets and very dense coastal bush. The rooikrans invaded thicket/Fynbos on the study site does not provide suitable habitat.
White tailed mouse	*Mystromys albicaudatus*	Vulnerable	The study site does not provide suitable habitat. The loose sandy soil of the dunes is not the typical substrate of this mouse but forage appears to be suitable.	Essentially a grassland animal but also occur in the Fynbos biome, preferring grassy habitats (De Graaff, 1981).

5.3 AVIFAUNA SENSITIVITY

The Red Data Classification and probability of occurrence for the birds predicted by the screening tool to occur on the study site is listed in Table 4. Red Data classification is according to Taylor (2015).

Species identified by the screening tool: *Circus ranivorus*.

The marsh harrier is classified as *endangered.* It is not considered to be likely or even a possible to occur on the study site because it is dependent on permanent wetland habitat. There are no such wetlands on the study site but the marsh harrier may occur in the wetland to the West of the study site.

Species identified by the screening tool: *Neotis denhami*

Denhams bustard is classified as *vulnerable.* This bustard does not occur on the study site due to the complete lack of suitable habitat. The rooikrans invaded Thicket/Fynbos is certainly not suitable habitat in terms of food potential or cover, bustards prefer open pasture, cropland, grassy or dwarf shrub habitats. Denhams bustard may occur in the general area on farmlands and pastures but certainly not on the alien tree invaded study site.

Species identified by the screening tool: *Bradypterus sylvaticus*.

The Knysna warbler is classified as *vulnerable*. They occur along edges of Afro--temperate forest and in thick tangled vegetation along drainages in the Forest and Fynbos Biomes. It is thus unlikely that they occur on the study site due to the lack of

suitable habitat. The rooikrans invaded Fynbos/Thicket on the study site does not provide the preferred habitat for this species. The sea-shore locality is also not typical Knysna warbler habitat.

Species identified by the screening tool: *Campethera notata*

The Knysna woodpecker is classified as *near threatened*. They occur in occur in dense arboreal (tree rich) habitats, coastal bush and other forest types. It is unlikely that they occur on the study site due to the lack of any kind of dense tree habitat on the site. The Knysna woodpecker is known to nest in stands of alien trees but this applies to large alien trees in which they can excavate their nests into the trunks of the trees and this is not the situation on the study site. The sea-shore locality of the site is also not typical woodpecker habitat.

TABLE 4: Red Data classification and occurrence potential for the BIRDS that were predicted by the screening tool to occur on the study site.

COMMON NAME	SCIENTIFIC NAME	RED DATA CATEGORY (Taylor et al, 2015)	PREDICTED OCCURRENCE ON THE STUDY SITE	HABITAT REQUIREMENTS (Taylor et al, 2015)
African marsh harrier	*Circus ranivorus*	Endangered	Does not occur due to habitat unsuitability	Dependant on permanent wetlands, inland and coastal. May hunt over Fynbos but breeds and feeds in wetlands.
Denhams bustard	*Neotis denhami*	Vulnerable	Does not occur on the study site due to the lack of suitable habitat. The rooikrans invaded Thicket/Fynbos is certainly not suitable habitat.	Occurs in groups on pastures, croplands and coastal grasslands.
Knysna warbler	*Bradypterus sylvaticus*	Vulnerable	Does not occur on the study site due to the lack of suitable habitat.	Occurs along edges of Afro-temperate forest and in thick tangled vegetation along drainages in forest and Fynbos
Knysna woodpecker	*Campethera notata*	Near threatened	Does not occur due to the lack of any kind of dense tree habitat	Occurs in dense arboreal (tree rich) habitats, coastal bush and forest. types.

5.4 INVERTEBRATE SENSITIVITY

Species identified by the screening tool: *Aneuryphymus montanus*

The yellow winged agile grasshopper is classified as *vulnerable*. As it is reported to occur in fynbos in rocky foothills, this species is not likely to occur on the study site.

There is no such rocky foothill fynbos on the study site or anywhere near to it. This grasshopper is known to be threatened by the invasions of alien plants and if it did occur in the general study area then residential expansion and repeated generations of alien plant invasions will have eliminated the populations some time ago.

Species identified by the screening tool: *Aloeides thyra orientis*

The red copper wing (Brenton subspecies) is classified as *endangered*. It is reported to occur in coastal Fynbos on flat sandy ground where it is completely dependent on its host plants which are species of the genus *Aspalathus.*

Vlok (2020) did not list any *Aspalathus sp*. in his plant checklist for the study site. In addition to this the butterfly has not been recorded East of the Brenton area, or anywhere near to the Plettenberg Bay general area (Pers. Comm. Dave Edge, 15 Nov. 2021). Alien plant invasions are a particular threat to *Aloeides* and it can be postulated that the dense infestations of *Acacia cyclops* on the study site have made the habitat unsuitable for the red copper wing butterfly.

6. LANDSCAPE CONNECTIVITY

The study site lies in a line of already developed properties (see Figure 2). Both to the left and right (North and South) of the study site the properties are residentially developed with most of each property transformed. The study site itself is partly transformed with a residential development and the disturbance created during its construction. On some of these neighbouring properties, some of the original natural vegetation has been retained but natural habitat in the entire developed area can best be described as completely fragmented and represents very marginal “stepping stone” connectivity.

The exception is the foredune area on the Eastern sea-side which appears to be undisturbed and the reed filled wetland to the West which is also relatively undisturbed (see Figure 2). The wetland is also bound by a rocky cliff-face on its Western side, which introduces a whole different range of interesting habitat possibilities (for example for crevasse-roosting bats and gecko and lizard habitat).

The natural fauna in these foredune and wetland areas may be intact, but the line of development along the coast has already effectively cut-off natural dispersal and foraging movement by animals (with the exception of some birds) between the two habitat types (west and east of the study site) in the area. The study site thus represents a very narrow and relatively natural link between the foredune area and the wetland. This link is however not considered to be a critical link or important corridor due to its limited width and its generally poor condition.

The 6m servitude along the northern boundary can however serve as a suitable corridor for some of the smaller mammals and birds, linking the wetland to the coastal dunes, if it is kept clear of alien plants (see Figure 4D).

The ever-increasing problem of *Acacia cyclops* invasion also has a negative effect on most parts of remaining natural vegetation in the general area because it completely transforms the original natural habitat, such as soil chemistry modification (nitrification), altered vegetation structure and reduced opportunities for natural pollination biology. On the study site *A. cyclops* has invaded approximately half of the site which will eventually result in the loss of half of the original Fynbos/Thicket vegetation. The other half is already transformed by the derelict building and its associated disturbances.

In terms of the local fauna, the development along the primary dune area should never have been approved and no attempt to rectify the situation at this late stage will make it right. The damage has already been irretrievably done and the imposition of remedial corridor provision across the study area is not likely to have anything more than a limited local effect. It is also worth noting that the sensitive animals identified by means of the screening tool are not considered likely to occur on the study site and thus do not require connectivity to, from or across the site.

There is still much heated debate about corridors and their effectivity. Harris & Scheck (1991) suggest the following guide to corridor effectivity:

<u>Figure 4D</u>: The 6m servitude along the northern boundary (shown here in red) can serve as an undisturbed corridor for some of the smaller wildlife, if kept clear of invasive alien plants.

7. ADDITIONAL ENVIRONMENTAL IMPACTS

There are a number of potential additional environmental impacts that can be expected from the proposed development that should be considered:

7.1 Building site preparation: Every effort must be made to restrict building site preparation to the actual footprint that needs to be cleared. Undeveloped areas in between the units, once cleared of alien invasive plants will help to provide natural habitat and movement space for small wildlife and should not be disturbed if at all possible.

7.2 Domestic predators: Occupation of the proposed residences will certainly bring with it a number of domestic predators, in the form of pet dogs and cats. Dogs are generally a pest with larger wildlife but it is the domestic cats that can harm the smaller wildlife. Cats indiscriminately and effectively hunt and kill lizards, snakes, rodents, insectivores, birds and even some insects and thus represent an unwanted and continuous source of predation.

Although this predation will result in an unnatural reduction of the local small wildlife, (a single cat can kill hundreds of small animals per year, two cats can kill double that) this study shows that none of the animals that are likely to occur on the study site are threatened or particularly sensitive. This however does not mitigate the predation loss of the small wildlife that naturally occurs in the area.

There is little point in trying to ban domestic cats, people will want to keep pet cats and their control will be difficult. Domestic cat predation will not be easily mitigated.

7.3 Potential chemical pollution: Everyday householding invariably introduces chemical pollutants such as herbicides, insecticides, rat poison, oil and chemical fertilizers. In time these chemicals can all be harmful to the environment, and its occupants, in excessive amounts and if used irresponsibly. Mitigatory measures follow.

7.4 Potential introduction of invasive alien plants: Future residents in study site area may unintentionally introduce invasive alien plants that could become a serious environmental problem in the area. Such plants are irresponsibly sold at some nurseries and both the seller and the buyer are none the wiser, and permitting is sporadic. Mitigatory measures follow.

7.5 Accidental wildfires: The activities of careless residents, unsupervised workers, irresponsible cigarette smokers and experimental children, both inside the proposed development area as well as from outside of it, can all result in undesirable and destructive wildfires. Fire is a natural occurrence in fynbos but it is completely unwanted in a residential development area such as that proposed. The undeveloped parts of the study site as well as the proposed corridor area can potentially carry fire and a strategy for the management of wildfire is recommended. Harmful wildfire can be effectively mitigated and the proposed measures follow.

7.6 Barriers to animal movement (fences): Wherever property boundary fences are to be erected within the development area and also on its boundary, there is the possibility that the movement of wildlife may become restricted.

Animals like porcupines, hares and larger tortoises may be restricted by fences, particularly fences constructed with wire netting. Smaller wildlife like lizards, snakes,

mice, insectivores and invertebrates will be less restricted and most fences are easily crossed by birds. Practical guidelines for making permeable fences must be included in the EMP if animal movement is not to be restricted, particularly in the corridor area.

8. MITIGATORY MEASURES

Despite the fact that the site is not important for the sensitive animal species that were identified by means of the screening tool, there are nevertheless a number of practical mitigatory measures that can be applied in relation to general biodiversity conservation in the proposed development area. These measures are aimed at general habitat protection and improvement, and they are as follows:

8.1 Foredune conservation: This is an important coastal habitat that should be conserved for biodiversity conservation, to prevent increased wind erosion and as a minor faunal corridor along the edge of the property. This area must be actively excluded from the developed area and must not suffer the dumping and other negative impacts that so often accompany building projects.

8.2 Alien plant eradication: All invasive alien plants should be completely cleared from the property, and where a tree or bush cover is desired, replaced with suitable indigenous species. The suitable planting list of trees and shrubs should be incorporated into the EMP as must a list of the alien plants and how they should be controlled.

8.3 Garden plants: Investing landowners within the proposed development should be encouraged to avoid planting invasive alien plants in favour of locally indigenous plants. Many of the dune-scrub plants are easy to propagate and many are available at nearby nurseries. A list of suitable gardening plants should be included in the EMP.

8.4 Preservation of natural habitats: Wherever there are sections of undisturbed natural habitat within the development area, they should not be impacted by the building activities and should be conserved as small islands of natural resources for the small wildlife of the area. These animals include skinks, rodents, birds and invertebrates. Any area of natural habitat that is not required for the approved development should not be disturbed during construction and should be conserved for small wildlife. This aspect must also be clearly outlined in the EMP.

8.5 Substrate conservation: Areas that are disturbed through building activities (such as the excavations for sewerage pipelines) should be suitably rehabilitated without delay. Failure to do so will have a knock-on effect on biodiversity in the form of an increase in wind erosion, soil exposure and a loss of the soil micro-organisms that are essential for plant growth. The detailed methodology can be described in the EMP but should incorporate a complete cover of locally chipped woody material (for example *Acacia cyclops* stems and branches but not the seed pods)

8.6 Servitude corridor: The 6m wide servitude along the northern boundary of the development area can serve as a corridor for smaller wildlife, linking the wetland to the west with the coastal dunes to the east, provided that it is kept clear of invasive alien plants. The undeveloped parts of the proposed development can be considered as part of the corridor/natural habitat area. Details must be included in the EMP.

8.7 Domestic predators: Dogs need to be kept within a fenced home area (plot) but cats are almost impossible to fence-in. Cats can be kept in-doors at night which is when

they do most of their hunting but completely preventing cats from hunting will be a challenge. Details and recommendations must be taken up in the EMP.

8.8 Chemical pollution: Residents must be made aware of the dangers that accompany the irresponsible use of harmful chemicals. This must be clearly outlined in the EMP which must provide guidelines for suitable alternatives to these harmful chemicals or at least how to use them in a more responsible way.

8.9 Fire management: A strategy for the management and combat of wildfires must be clearly outlined in the EMP. These guidelines must cover the safe domestic use of fire, cigarette smoking awareness, management of undeveloped areas, fire breaks for combatting fire and membership and compliance with the local fire protection association. Of importance in the fire management guidelines will be the control of alien invasive plants which can result in more intense and damaging fires. A practical fire management strategy will also help to prevent catastrophic fires that will destroy the natural habitat of smaller wildlife, such as the undeveloped areas in between the units and in the proposed corridor area.

8.10 Permeable fencing: Wherever fences are needed in the development area and on its boundary, it will be necessary to ensure that wildlife can move through the fences to enable their movement across the landscape. The methods that can be used to do so must be provided in the EMP, with details about construction, materials and frequency of implementation (spacing of permeability).

9. ALTERNATIVE DEVELOPMENT OPTIONS

None of the red Data listed species, or the sensitive animal species that were identified with the screening tool are considered to occur on, or even use the study site on a permanent basis. The study site habitats thus do not represent any kind of critical or specialized resource for any of the identified sensitive animal species.

With this in mind, the consideration of development alternatives does not appear to be critical, or even necessary, for the conservation of sensitive biodiversity on the site.

Possible Alternative 1: An alternative layout with a lower density of residential units (five or six rather than nine) can be considered, but this study has clearly shown that this is not necessary in terms of sensitive, endangered or even potentially vulnerable animal species or the need to conserve important refuge habitat. This alternative is thus considered to be inappropriate.

Possible Alternative 2: The development concept of 15 residential stands that vary between 750m^2 and 1300m^2 in size was first considered, however the density and layout received negative feedback following public participation, and the density was changed to 9 residential stands that vary between ±1319m² and ±1987m² in size. The alternative with the 9 stands has been adopted as the preferred alternative, as it has little impact on the cultural landscape and is more viable than a lower density residential layout.

Possible Alternative 3: In terms of the viability of corridor effectivity, the reduction of the seafront units from five to four may help to provide some additional space for small

wildlife movement. There is, however, no clear justification for this measure in terms of animal sensitivity, as this study has clearly shown. This option can be considered but it is not considered to be critical.

Possible Alternative 4: The illegal structure on the one property could be utilised as a home or maybe a guesthouse, but will require a departure from building lines and height restrictions and coastal setbacks to which it currently encroaches. Since the municipality did not have an opportunity to certify foundations or roof structures during construction, it is uncertain weather, as well as compliance with national building regulations they will be comfortable to approve the building plans and issue a occupation certificate. Presently there are no approved building plans and no occupation certificates and the structure may not be used. This has been the status quo for many years.

The no-go option is not considered to be a sensible alternative to the proposed development layout.

The proposed development is thus supported in terms of this fauna sensitivity study and the only practical alternative layout would be to reduce the number of seaside units from five to four **(Possible Alternative 3),** in the interests of the additional space that will become available for fauna in undeveloped areas as well as for corridor movement and effectivity. This study has shown that it is not necessary so it is thus recommended that the proposed development can thus be approved as it stands.

10. IMPACT ASSESSMENT

In Table 5 below an attempt is made to assess the expected impacts that the proposed development may have, directly and indirectly, on the terrestrial biodiversity of the proposed development area. This assessment does not refer to the identified sensitive animal species because it has been shown that the species identified do not occur on the property. The assessment thus refers to general biodiversity, that is the natural habitat of wildlife (including indigenous vegetation) and the local fauna.

(see Table 5 overleaf).

Table 5: The predicted Impact assessment of the general biodiversity of the study site, without and with mitigatory measures applied.

	Impact without mitigation	Impact with mitigation
Potential impact :	**High impact: Loss of wildlife habitat, rampant alien tree invasion, loss of wildlife, rampant wildfires**	**Low impact; retention of natural habitat along corridor and in between developed areas, fires managed.**
Nature of impact:	**Loss of all natural habitat and small wildlife and invasion of undeveloped areas by alien plants**	**Retention and rehabilitation of natural habitat in a corridor and in the undeveloped areas providing for wildlife habitat and movement**
Extent and duration of impact:	**Local and permanent.**	**Local and short term.**
I*ntensity of the impact*	**High**	**Low.**
Consequence of impact:	**Complete degradation and loss of all natural habitat and small wildlife due to development clearing and alien plant invasion**	**Retention and rehabilitation of some natural habitat and wildlife in a managed corridor and in undeveloped areas in between houses**
Probability of occurrence:	**High**	**Medium**
Degree to which the impact may cause irreplaceable loss of resources:	**Moderate**	**Low**
Degree to which the impact can be reversed:	**Irreversible**	**Reversible**
Indirect impacts:	**Moderate**	**Low**
Cumulative impact prior to mitigation:	**Moderate**	**Low**
Significance of impact prior to mitigation and post mitigation	**High**	**Low**
Degree to which the impact can be avoided:	**Low**	**High**
Degree to which the impact can be managed:	**Low**	**High**
Degree to which the impact can be mitigated:	**Low**	**High**
Proposed mitigation:		**Clear only the necessary footprint to build, remove all invasive alien vegetation, plant only locally indigenous plants, protect natural habitat by means of a fire management strategy, discourage predation by pets**
Cumulative impact post mitigation:		**None**

11. CONCLUSION

Inventories for terrestrial fauna of the general study site were drawn up from the literature. Each species identified was then evaluated in terms of the occurrence of its required habitat on the study site and then listed as likely to occur, a possibility to occur or unlikely to occur on the study site.

The Red Data listed species of each group were then also evaluated in terms of their occurrence on the study site in terms of habitat suitability. Animal species that were identified by means of the screening tool were also evaluated in terms of habitat suitability on the study site.

None of the red Data listed or the screening tool identified species were considered to occur on or even use the study site on a permanent basis. The study site habitats do not represent any kind of critical or specialized resource for any of the sensitive animal species.

The habitats available on the study site are all anthropogenically impacted, to a variable degree, but the current situation is set to deteriorate swiftly due to the devastating impact of invasive alien *Acacia cyclops*, which in the last few years has spread over much of the site and which will mature to the further detriment of all indigenous plant and animal species.

Alien plant infestations should not be used as a reason to develop an area, but it undeniably reduces the quality of natural habitat for the ubiquitous wildlife that persists in it. The currently disturbed habitats cannot be described as useful or necessary linkage habitat, and with the continued spread and maturity of the alien trees, will become even less likely to provide effective linkages for animal movement.

The study site does not represent an important or critical linkage for the movement of sensitive wildlife between the relatively intact foredune area on the Eastern side of the study site and the relatively undisturbed wetland on the Western side of the study site, but the proposed linkage will help to facilitate the movement of the still surviving non-sensitive animals across the site.

It can thus be summarized with a high degree of confidence that the study site is of no importance to the fauna predicted by the screening tool to occur on it and that the other fauna on the site is already in an advanced state of decline due to habitat transformation. The proposed development is thus supported, without conditions, other than the application of the suggested mitigations.

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APPENDIX 1: AMPHIBIA CHECKLIST

SPECIES	COMMON NAME	OCCURRENCE	HABITAT REQUIREMENTS
Bufo pardalis	Eastern leopard toad	Habitat unsuitable	Grassy or open habitats in fynbos, with open water.
Bufo rangeri	Raucus toad	Habitat unsuitable	Vleis, pans, rivers, open pasture areas in fynbos habitats.
Semnodactylus wealii	Rattling frog	Habitat unsuitable	Vleis, ponds, dams in grassland & fynbos.
Hyperolius marmoratus	Marbles reed frog	Habitat unsuitable	Vleis, pans, dams in forest & fynbos habitats.
Hyperolius horstockii	Arum lily frog	Habitat unsuitable	Vegetated shores, reeds, bushes, arums in fynbos habitats.
Afrixalus knysnae	Knysna leaf-folding frog	Habitat unsuitable	Mountain fynbos and Afromontane- forest with open water.
Breviceps fuscus	Plain rain frog	Likely	Live underground in burrows in forest and fynbos.
Xenopus laevis	Common platana	Habitat unsuitable	Permanent water a requirement.
Cacosternum boettgeri	Common caco	Habitat unsuitable	Permanent and/or temporary ponds and puddles.
Cacosternum nanum	Bronze caco	Habitat unsuitable	Marshes, vleis, small streams.
Afrana angolensis	Common river frog	Habitat unsuitable	Permanent water with aquatic vegetation.
Afrana fuscigula	Cape river frog	Habitat unsuitable	Permanent water, still water.
Strongylopus fasciatus	Striped stream frog	Habitat unsuitable	Streams, ponds, dams, seepages with grassy margins.
Strongylopus grayii	Clicking stream frog	Habitat unsuitable	Shallow water with well vegetated borders.
Tomopterna delalandii	Cape sand frog	Habitat unsuitable	Edges of pans, dams, vleis, sandy areas with open water.

Amphibians – Probability of each species occurring on the study site (main reference - Minter et al, 2004)

Confirmed: Species presence actually confirmed by means of sighting, spoor or droppings on the study site.
Likely : Species presence recorded in similar habitats in neighbouring areas and within known distribution.
Possible : Species presence possible on site due to overlap of habitat requirements and nearby known distribution.

APPENDIX 2: REPTILE CHECKLIST

SPECIES	COMMON NAME	OCCURRENCE	HABITAT REQUIREMENTS
Rhinotyphlops lalandei	Delalande's beaked blind snake.	Likely	Varied; fossorial. (Endemic).
Boaedon capensis	Brown house snake.	Likely	Varied.
Lamphrophis aurora	Aurora house snake.	Likely	Fynbos habitat.
Lycodonomorphus inornatus	Olive house snake.	Likely	Moist coastal areas. (Endemic).
Duberria lutrix lutrix	Common slug eater.	Likely	Coastal forest and fynbos – moist areas.
Pseudaspis cana	Mole snake.	Likely	Varied, coastal, sandy fynbos, thicket.
Amplorhinus multimaculatus	Many-spotted snake.	Habitat unsuitable	Mountain streams and vleis.
Psammophylax rhombeatus	Rhombic skaapsteker.	Likely	Forest fynbos – moist areas.
Psammophis cruifer	Montaine grass snake.	Habitat unsuitable	Mountain fynbos/grassveld.
Homoroselaps lacteus	Spotted harlequin snake.	Possible	Varied. (Endemic).
Philothamnus hoplogaster	Eastern green snake.	Possible	Varied.
Dasypeltiis scabra	Common or rhombic egg eater.	Likely	Varied.
Crotaphopeltis hotamboeia	Red-lipped snake.	Possible	Open moist areas.
Dispholidus typus	Boomslang.	Likely	Forest, fynbos.
Causus rhombeatus	Common or rhombic night adder.	Possible	Forest, fynbos – moist areas.
Bitis arietans	Puff adder.	Likely	Varied, sandy coastal, fynbos.
Pachydactylus geitjie	Ocellated, thick-toed gecko.	Possible	Fynbos. (Endemic).
Pachydactylus maculatus	Spotted thick-toed gecko	Possible	Fynbos, coastal bush.

Reptiles. (Continued overleaf).

SPECIES	COMMON NAME	OCCURRENCE	HABITAT REQUIREMENTS
Afrogecko porphyreus	Marbled leaf-toed gecko	Likely	Coastal, fynbos & forest. (Endemic).
Acontias meleagris meleagris	Cape legless skink	Habitat unsuitable	Leaf litter in forest & forest edge. (Endemic).
Trachylepis capensis	Cape skink	Likely	Forest, forest edge & fynbos.
Trachylepis homalocephala	Red-sided skink	Likely	Forest, forest edge & seepages. (Endemic).
Nucras lalandii	Delalande's sandveld lizard	Likely	Open fynbos. (Endemic).
Pedioplanis lineoocellata pulchella	Spotted sand lizard	Likely	Varied.
Tetradactylus seps seps	Short-legged seps	Possible	Fynbos, varied.
Chamaesaura anguina	Cape grass lizard	Likely	Grassy/fynbos slopes.
Agama atra	Southern rock agama	Habitat unsuitable	Fynbos rocky areas.
Gerrhosaurus flavigularis	Yellow-throated plated lizard	Possible	Open coastal forest.
Geochelone pardalis	Leopard tortoise	Likely	Varied, fynbos and thicket.
Homopus areolatus	Parrot-beaked tortoise	Likely	Varied, coastal – must have cover.
Chersina angulata	Angulate tortoise	Likely	Forest, coastal fynbos, sandy areas.
Pelomedusa subrufa	Cape terrapin	Habitat unsuitable	Permanent water, burrows in drought.
Bradypodion damaranum	Knysna dwarf chameleon	Likely	Coastal forest, bush, gardens.

Reptiles – Probability of each species occurring on the study site. (Main reference - Bates et al, 2014)

Confirmed: Species presence actually confirmed by means of sighting, spoor, droppings on the study site.
Likely : Species presence recorded in similar habitats in neighbouring areas and within known distribution.
Possible : Species presence possible on site due to overlap of habitat requirements and nearby known distribution.

APPENDIX 3: MAMMAL CHECKLIST

SPECIES	COMMON NAME	OCCURRENCE	HABITAT REQUIREMENTS
Myosorex longicaudatus	Long-tailed forest shrew	Habitat unsuitable	Forest ecotone – fern clumps, insectivorous.
Myosorex varius	Forest shrew	Habitat unsuitable	Moist, dense habitat, insectivorous.
Crocidura flavescens	Greater musk shrew	Habitat unsuitable	Moist, dense habitat, insectivorous.
Crocidura cyanea	Reddish-grey musk shrew	Possible	Moist – dry habitats.
Crocidura silacea	Lesser grey-brown musk shrew	Possible	Forest / grassland / woodland
Amblysomus corriae	Fynbos golden mole	Likely	Fynbos and forest
Chlorotalpa duthieae	Duthie's golden mole	Possible	Coastal forests.
Miopterus fraterculus	Lesser long-fingered bat	Likely	Various
Neoromicia capensis	Cape serotine bat	Possible	Forest areas, insectivorous.
Rhinolopus capensis	Cape horseshoe bat	Possible	Caves in varied habitats, insectivorous.
Lepus saxatilus	Scrub hare	Possible	Scrub areas, grass cover, vegetarian.
Bathyergus suillus	Cape dune mole-rat	Possible	Sandy soils, vegetarian.
Cryptomus hottentotus	Common mole-rat	Likely	Moist soils, vegetarian.
Myomyscus verreauxi	Verreaux's mouse	Likely	Fynbos scrub. forest edge
Gerbillurus paeba	Hairy-footed gerbil	Likely	Sandy substrates, disturbed sites
Georychus capensis	Cape mole-rat	Possible	Sandy soils, vegetarian.
Hystrix africaeutralis	Porcupine	Likely	Varied habitat, vegetarian.
Otomys irroratus	Vlei rat	Likely	Wetland & swampy areas, eats grass/sedges.
Mus musculus	House mouse	Likely	Varied habitat, eats grass seeds, insects & vegetable matter.
Rhabdomys pumilio	Striped mouse	Likely	Fynbos, shrubveld, wetland.
Mus minutoides	Pygmy mouse	Likely	Fynbos, wetland, disturbed areas.
Mastomys coucha	Multimammate mouse	Likely	Varied habitat, omnivorous.
Saccostomys campestris	Pouched mouse	Likely	Varied habitat.
Mystromys albicaudatus	White-tailed mouse	Possible	Macchia, grassland.
Genetta genetta	Small-spotted genet	Likely	Wooded & wetland areas
Ictonyx striatus	Striped polecat	Likely	Varied habitat, insectivorous & carnivorous.

(Continued overleaf)

SPECIES	COMMON NAME	OCCURRENCE	HABITAT REQUIREMENTS
Galerella pulverulenta	Small grey mongoose	Possible	Forest, scrub & grassland.
Raphiceros melanotis	Grysbok	Possible	Thick bush, hilly areas, fynbos.
Philantomba monticola	Blue duiker	Habitat unsuitable	Forest and dense shrub habitats.

Mammals – Probability of each species occurring on the study site (Friedman & Daly, 2004).

Confirmed: Species presence actually confirmed by means of sighting, spoor, droppings on the study area.
Likely : Species presence recorded in similar habitats in neighbouring areas and within known distribution.
Possible : Species presence possible on site due to overlap of habitat requirements and nearby known distribution.

APPENDIX 4: BIRD CHECKLIST

SPECIES	THICKET/FYNBOS	
	LIKELY	C'FIRMED
Bar-throated apalis	X	
Black-shouldered kite	X	
African goshawk	X	X
Bokmakierie	X	X
Cape batis	X	
Cape bulbul	X	X
Cape bunting	X	
Cape canary	X	
Cape francolin	X	
Cape robin	X	
Cape sparrow	X	
Cape wagtail	X	
Cape white-eye	X	X
Common quail	X	
Common waxbill	X	
Crowned plover	X	
European starling	X	
European swallow	X	X
Familiar chat	X	
Fiscal flycatcher	X	
Fiscal shrike	X	X
Fork tailed drongo	x	
Grassbird	X	
Grassveld pipit	X	
Greater double-collared sunbird	X	
Greater striped swallow	X	
Guinea fowl	X	
Hadeda	X	X
Kelp gull	X	X
Laughing dove	X	X
Lesser double-collared sunbird	X	
Malachite sunbird	X	
Olive thrush	X	X
Orange-breasted sunbird	X	
Red-eyed dove	X	X
Red-necked francolin	X	
Redwing starling	X	
Rock pigeon	X	
Sombre bulbul	X	X
Southern boubou	X	X
Speckled mousebird	X	
Spotted prinia	X	
Turtle dove	X	X

Birds – Probability of each species occurring on the study site (Harrison et al, 1997).

Confirmed: Species presence confirmed by means of sightings and birdsong.

Likely : Species presence recorded in similar habitats in neighbouring areas and within known distribution for each species.

APPENDIX 5A: PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON TERRESTRIAL ANIMAL SPECIES

1	General Information	Report content
1.1	An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified by the screening tool as being of "very high" or "high" sensitivity for terrestrial animal species must submit a Terrestrial Animal Species Specialist Assessment Report.	The STR identified a "**high**" sensitivity. An Animal Species & Terrestrial Biodiversity Assessment was submitted.
1.2	An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of "medium sensitivity" for terrestrial animal species must submit either a Terrestrial Animal Species Specialist Assessment Report or a Terrestrial Animal Species Compliance Statement, depending on the outcome of a site inspection undertaken in accordance with paragraph 4.	NA
1.3	An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of "low" sensitivity for terrestrial animal species must submit a Terrestrial Animal Species Compliance Statement.	NA
1.4	Where the information gathered from the site sensitivity verification differs from the screening tool designation of "very high" or "high", for terrestrial animal species sensitivity and it is found to be of a "low" sensitivity, then a Terrestrial Animal Species Compliance Statement must be submitted.	Section 2.4. An Animal Species Compliance Statement was sufficient in this regard as the terrestrial animal species sensitivity was determined to be "low".
1.5	Where the information gathered from the site sensitivity verification differs from the screening tool designation of "low" terrestrial animal species sensitivity and it is found to be of a "very high" or "high" terrestrial animal species sensitivity, a Terrestrial Animal Species Specialist Assessment must be conducted.	NA
1.6	If any part of the development falls within an area of confirmed "very high" or "high" sensitivity, the assessment and reporting requirements prescribed for the "very high" or "high" sensitivity, apply to the entire development footprint. Development footprint in the context of this protocol means, the area on which the proposed development will take place and includes the area that will be disturbed or impacted.	Yes
1.7	The Terrestrial Animal Species Specialist Assessment and the Terrestrial Animal Species Compliance Statement must be undertaken within the study area.	Yes
1.8	Where the nature of the activity is not expected to have an impact on species of conservation concern (SCC) beyond the boundary of the preferred site, the study area means the proposed development footprint within the preferred site.	No impacts on SCC.
1.9	Where the nature of the activity is expected to have an impact on SCC beyond the boundary of the preferred site, the project areas of influence (PAOI)	NA

	must be determined by the specialist in accordance with Species Environmental Assessment Guideline, and the study area must include the PAOI, as determined.	

VERY HIGH & HIGH SENSITIVITY RATING

2.	Terrestrial Animal Species Specialist Assessment	Report content
2.1	The assessment must be undertaken by a specialist registered with the South African Council for Natural Scientific Professions (SACNASP) with a field of practice relevant to the taxonomic group ("taxa") for which the assessment is being undertaken.	Kenneth Coetzee Registered as a Professional Natural Scientist, in the field of Ecological Science, with the South African Council for Natural Scientific Professions. Reg. No. 400099/08.
2.2	The assessment must be undertaken in accordance with the Species Environmental Assessment Guideline; and must:	
2.2.1	identify the SCC which were found, observed or are likely to occur within the study area;	Section 5 – Red Data List Classification, Occurrence and Habitat Sensitivity.
2.2.2	provide evidence (photographs or sound recordings) of each SCC found or observed within the study area, which must be disseminated by the specialist to a recognized online database facility, immediately after the site inspection has been performed (prior to preparing the report contemplated in paragraph 3)	No SCC were found.
2.2.3	identify the distribution, location, viability and provide a detailed description of population size of the SCC, identified within the study area;	No SCC were found.
2.2.4	identify the nature and the extent of the potential impact of the proposed development on the population of the SCC located within the study area;	No SCC were found.
2.2.5	determine the importance of the conservation of the population of the SCC identified within the study area, based on information available in national and international databases, including the IUCN Red List of Threatened Species, South African Red List of Species, and/or other relevant databases;	No SCC were found.
2.2.6	determine the potential impact of the proposed development on the habitat of the SCC located within the study area	No SCC were found.
2.2.7	include a review of relevant literature on the population size of the SCC, the conservation interventions as well as any national or provincial species management plans for the SCC. This review must provide information on the need to conserve the SCC and indicate whether the development is compliant with the applicable species management plans and if not, include a motivation for the deviation;	Section 5 – Red Data List Classification, Occurrence and Habitat Sensitivity.
2.2.8	identify any dynamic ecological processes occurring within the broader landscape that might be disrupted by the development and result in negative impact on the identified SCC, for example, fires in fire-prone systems;	Section 6 – Landscape Connectivity.

2.2.9	identify any potential impact of ecological connectivity in relation to the broader landscape, resulting in impacts on the identified SCC and its long term viability;	Section 6 – Landscape Connectivity. Section 7 – Additional Environmental Impacts.
2.2.10	determine buffer distances as per the Species Environmental Assessment Guidelines used for the population of each SCC;	No SCC were found.
2.2.11	discuss the presence or likelihood of additional SCC including threatened species not identified by the screening tool, Data Deficient or Near Threatened Species, as well as any undescribed species; or roosting and breeding or foraging areas used by migratory species where these species show significant congregations, occurring in the vicinity; and	Section 3.2.2. – Summary of Animal Habitat Potential. Section 4 – Faunal Occurrence. Appendix 1 – 4, Checklists.
2.2.12	identify any alternative development footprints within the preferred site which would be of "low" or "medium" sensitivity as identified by the screening tool and verified through the site sensitivity verification.	Section 9 – Alternative Development Options.
2.3	The findings of the assessment must be written up in a Terrestrial Animal Species Specialist Assessment Report.	An Animal Species & Terrestrial Biodiversity Assessment was compiled.
3.	**Terrestrial Animal Species Specialist Assessment Report**	**Report content**
3.1	This report must include as a minimum the following information:	
3.1.1	contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the assessment including a curriculum vitae;	Page 41 - 49 (CV)
3.1.2	a signed statement of independence by the specialist;	Page 50
3.1.3	a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 2 – Details of Evaluation.
3.1.4	a description of the methodology used to undertake the site sensitivity verification, impact assessment and site inspection, including equipment and modelling used where relevant;	Section 2.4. – Methodology
3.1.5	a description of the mean density of observations/number of sample sites per unit area and the site inspection observations;	Section 2.4. – Methodology Section 3.2 – Habitat Description and Evaluation
3.1.6	a description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 3.2. Section 11 – Conclusion.
3.1.7	details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;	Section 5 – Red Data List Classification, Occurrence and Habitat Sensitivity.
3.1.8	the online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;	No SCC were found.
3.1.9	the location of areas not suitable for development and to be avoided during construction where relevant;	Section 8 – Mitigation Measures.
3.1.10	a discussion on the cumulative impacts;	Section 10 – Impact Assessment.
3.1.11	impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Section 8 – Mitigation Measures. Section 10 – Impact Assessment.

3.1.12	a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not of the development and if the development should receive approval or not, related to the specific theme being considered, and any conditions to which the opinion is subjected if relevant; and	Section 11 – Conclusion.
3.1.13	a motivation must be provided if there were any development footprints identified as per paragraph 2.2.12 above that were identified as having "low" or "medium" terrestrial animal species sensitivity and were not considered appropriate.	Section 9 – Alternative Development Options.
3.2	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	A signed copy was appended to the BAR.

MEDIUM SENSITIVITY RATING

4.	**Medium Sensitivity Species of Conservation Concern Confirmation**	**Report content**
4.1	Medium sensitivity data represents suspected habitat for SCC based on occurrence records for these species collected prior to 2002 or is based on habitat suitability modelling.	
4.2	The presence or likely presence of the SCC identified by the screening tool must be investigated through a site inspection by a specialist registered with the SACNASP with a field of practice relevant to the taxonomic groups ("taxa") for which the assessment is being undertaken.	
4.3	The assessment must be undertaken within the study area.	
4.4	The site inspection to determine the presence or likely presence of SCC must be undertaken in accordance with the Species Environmental Assessment Guidelines.	
4.5	The site inspection is to confirm the presence, likely presence or confirmed absence of a SCC identified within the site identified as "medium" sensitivity by the screening tool.	
4.6	Where SCC are found on site or have been confirmed to be likely present, a Terrestrial Animal Species Specialist Assessment must be submitted in accordance with the requirements specified for "very high" and "high" sensitivity in this protocol.	
4.7	Similarly, where no SCC are found on site during the site inspection or the presence is confirmed to be unlikely, a Terrestrial Animal Species Compliance Statement must be submitted.	

LOW SENSITIVITY RATING

5.	**Terrestrial Animal Species Compliance Statement**	**Report content**
5.1	The compliance statement must be prepared by a SACNASP registered specialist under one of the two fields of practice (Zoological Science or Ecological Science).	

5.2.1	The compliance statement must:	
5.2.2	be applicable to the study area;	
5.2.3	confirm that the study area, is of "low" sensitivity for terrestrial animal species; and	
5.2.4	indicate whether or not the proposed development will have any impact on SCC.	
5.3	The compliance statement14 must contain, as a minimum, the following information:	
5.3.1	contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the compliance statement including a curriculum vitae;	
5.3.2	a signed statement of independence by the specialist;	
5.3.3	a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	
5.3.4	a description of the methodology used to undertake the site survey and prepare the compliance statement, including equipment and modelling used where relevant;	
5.3.5	the mean density of observations/ number of samples sites per unit area.	
5.3.6	where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion in the EMPr;	
5.3.7	a description of the assumptions made and any uncertainties or gaps in knowledge or data; and	
5.3.8	any conditions to which the compliance statement is subjected.	
6.	A signed copy of the Terrestrial Animal Species Compliance Statement must be appended to the Basic Assessment Report or the Environmental Impact Assessment Report.	

APPENDIX 5B: PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON TERRESTRIAL BIODIVERISTY

1	General Information	Report content
1.1	An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified on the screening tool as being of "very high sensitivity" for terrestrial biodiversity, must submit a Terrestrial Biodiversity Specialist Assessment.	The STR identified a "**very high**" sensitivity. An Animal Species & Terrestrial Biodiversity Assessment was submitted.
1.2	An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being "low sensitivity" for terrestrial biodiversity, must submit a Terrestrial Biodiversity Compliance Statement.	NA
1.3	However, where the information gathered from the site sensitivity verification differs from the designation of "very high" terrestrial biodiversity sensitivity on the screening tool and it is found to be of a "low" sensitivity, then a Terrestrial Biodiversity Compliance Statement must be submitted.	NA
1.4	Similarly, where the information gathered from the site sensitivity verification differs from that identified as having a "low" terrestrial biodiversity sensitivity on the screening tool, a Terrestrial Biodiversity Specialist Assessment must be conducted.	Section 2.4. A Terrestrial Biodiversity Compliance Statement was sufficient in this regard as the terrestrial biodiversity sensitivity was determined to be "low".
1.5	If any part of the proposed development footprint falls within an area of "very high" sensitivity, the assessment and reporting requirements prescribed for the "very high" sensitivity apply to the entire footprint, excluding linear activities for which impacts on terrestrial biodiversity are temporary and the land in the opinion of the terrestrial biodiversity specialist, based on the mitigation and remedial measures, can be returned to the current state within two years of the completion of the construction phase, in which case a compliance statement applies. Development footprint in the context of this protocol means the area on which the proposed development will take place and includes any are that will be disturbed.	NA

VERY HIGH SENSITIVITY RATING

2.	Terrestrial Biodiversity Specialist Assessment	Report content
2.1	The assessment must be prepared by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP) with expertise in the field of terrestrial biodiversity.	Kenneth Coetzee Registered as a Professional Natural Scientist, in the field of Ecological Science, with the South African Council for Natural Scientific Professions. Reg. No. 400099/08.
2.2	The assessment must be undertaken on the preferred site and within the proposed development footprint.	Yes
2.3	The assessment must provide a baseline description of the site which includes, as a minimum, the following aspects:	

2.3.1	a description of the ecological drivers or processes of the system and how the proposed development will impact these;	Section 3.2.3. Section 6 – Landscape Connectivity.
2.3.2	ecological functioning and ecological processes (e.g. fire, migration, pollination, etc.) that operate within the preferred site;	Section 6 – Landscape Connectivity.
2.3.3	the ecological corridors that the proposed development would impede including migration and movement of flora and fauna;	Section 6 – Landscape Connectivity. Section 8 – Mitigation Measures.
2.3.4	the description of any significant terrestrial landscape features (including rare or important flora-faunal associations, presence of strategic water source areas (SWSAs) or freshwater ecosystem priority area (FEPA) sub catchments;	Section 3.2.3.
2.3.5	a description of terrestrial biodiversity and ecosystems on the preferred site, including:	
(a)	main vegetation types	Section 3.2.1.
(b)	threatened ecosystems, including listed ecosystems as well as locally important habitat types identified;	Section 3.2. – habitat Description and Evaluation.
(c)	ecological connectivity, habitat fragmentation, ecological processes and finescale habitats; and	Section 3.2.4 Section 6 – Landscape Connectivity.
(d)	species, distribution, important habitats (e.g. feeding grounds, nesting sites, etc.) and movement patterns identified;	Section 4 – Faunal Occurrence.
2.3.6	the assessment must identify any alternative development footprints within the preferred site which would be of a "low" sensitivity as identified by the screening tool and verified through the site sensitivity verification; and	Section 9 – Alternative Development Options.
2.3.7	the assessment must be based on the results of a site inspection undertaken on the preferred site and must identify:	
2.3.7.1	terrestrial critical biodiversity areas (CBAs), including:	NA – not within a CBA
(a)	the reasons why an area has been identified as a CBA;	
(b)	an indication of whether or not the proposed development is consistent with maintaining the CBA in a natural or near natural state or in achieving the goal of rehabilitation;	
(c)	the impact on species composition and structure of vegetation with an indication of the extent of clearing activities in proportion to the remaining extent of the ecosystem type(s);	
(d)	the impact on ecosystem threat status;	
(e)	the impact on explicit subtypes in the vegetation;	
(f)	the impact on overall species and ecosystem diversity of the site; and	
(g)	the impact on any changes to threat status of populations of species of conservation concern in the CBA;	
2.3.7.2	terrestrial ecological support areas (ESAs), including:	Section 3.3.4 & 3.2.5. Section 6 – Landscape Connectivity.
(a)	the impact on the ecological processes that operate within or across the site;	
(b)	the extent the proposed development will impact on the functionality of the ESA; and	

(c)	loss of ecological connectivity (on site, and in relation to the broader landscape) due to the degradation and severing of ecological corridors or introducing barriers that impede migration and movement of flora and fauna;	
2.3.7.3	protected areas as defined by the National Environmental Management: Protected Areas Act, 2004 including-	NA – not within a protected area. Section 3.2.6.
(a)	an opinion on whether the proposed development aligns with the objectives or purpose of the protected area and the zoning as per the protected area management plan;	
2.3.7.4	priority areas for protected area expansion, including-	NA – not within an area for protected area expansion
(a)	the way in which in which the proposed development will compromise or contribute to the expansion of the protected area network;	
2.3.7.5	SWSAs including:	NA – not within a SWSA
(a)	the impact(s) on the terrestrial habitat of a SWSA; and	
(b)	the impacts of the proposed development on the SWSA water quality and quantity (e.g. describing potential increased runoff leading to increased sediment load in water courses);	
2.3.7.6	FEPA sub catchments, including-	NA – no within a FEPA sub catchment
(a)	the impacts of the proposed development on habitat condition and species in the FEPA sub catchment;	
2.3.7.7	indigenous forests, including:	NA – no within an indigenous forest
(a)	impact on the ecological integrity of the forest; and	
(b)	percentage of natural or near natural indigenous forest area lost and a statement on the implications in relation to the remaining areas.	
2.8	The findings of the assessment must be written up in a Terrestrial Biodiversity Specialist Assessment Report.	An Animal Species & Terrestrial Biodiversity Assessment was compiled.
3.	**Terrestrial Biodiversity Specialist Assessment Report**	**Report content**
3.1	The Terrestrial Biodiversity Specialist Assessment Report must contain, as a minimum, the following information:	
3.1.1	contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Page 41 - 49 (CV)
3.1.2	a signed statement of independence by the specialist;	Page 50
3.1.3	a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 2 – Details of Evaluation.
3.1.4	a description of the methodology used to undertake the site sensitivity verification, impact assessment and site inspection, including equipment and modelling used where relevant;	Section 2.4. – Methodology.
3.1.5	a description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Section 3.2. Section 11 – Conclusion.

3.1.6	a location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Section 8 – Mitigation Measures.
3.1.7	additional environmental impacts expected from the proposed development;	Section 10 – Impact Assessment.
3.1.8	any direct, indirect and cumulative impacts of the proposed development;	Section 10 – Impact Assessment.
3.1.9	the degree to which impacts and risks can be mitigated;	
3.1.10	the degree to which the impacts and risks can be reversed;	
3.1.11	the degree to which the impacts and risks can cause loss of irreplaceable resources;	
3.1.12	proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Section 8 – Mitigation Measures.
3.1.13	a motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate;	Section 9 – Alternative Development Options.
3.1.14	a substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and	Section 11 – Conclusion.
3.1.15	any conditions to which this statement is subjected.	Section 8 – Mitigation Measures.
3.2	The findings of the Terrestrial Biodiversity Specialist Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr where relevant.	Yes
3.3	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	A signed copy was appended to the BAR.

LOW SENSITIVITY RATING

4.	**Terrestrial Biodiversity Compliance Statement**	**Report content**
4.1	The compliance statement must be prepared by a specialist registered with the SACNASP and having expertise in the field of ecological sciences.	
4.2	The compliance statement must:	
4.2.1	be applicable to the preferred site and proposed development footprint;	
4.2.2	confirm that the site is of "low" sensitivity for terrestrial biodiversity; and	
4.2.4	indicate whether or not the proposed development will have any impact on the biodiversity feature.	
4.3	The compliance statement must contain, as a minimum, the following information:	
4.3.1	contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the compliance statement including a curriculum vitae;	

4.3.2	a signed statement of independence by the specialist;	
4.3.3	a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	
4.3.4	a baseline profile description of biodiversity and ecosystems of the site;	
4.3.5	the methodology used to verify the sensitivities of the terrestrial biodiversity features on the site, including equipment and modelling used, where relevant	
4.3.6	in the case of a linear activity, confirmation from the terrestrial biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase;	
4.3.7	where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr;	
4.3.8	a description of the assumptions made and any uncertainties or gaps in knowledge or data; and	
4.3.9	any conditions to which this statement is subjected.	
4.4	A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	

APPENDIX 6

RED DATA BOOK CATEGORIES FOR MAMMALS

(SOURCE: Friedman Y and Daly, B (editors) 2004. Red Data Book of the Mammals of South Africa: A conservation Assessment: CBSG Southern Africa, Conservation Breeding Specialist Group (SSC/IUCN), Endangered Wildlife Trust, South Africa).

EXTINCT (EX)
A taxon is extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time appropriate to the taxon's life cycle and life form.

EXTINCT IN THE WILD (EW)
A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR)
A taxon is Critically Endangered when the best available evidence indicates that it is considered to be facing an extremely high risk extinction in the wild.

ENDANGERED (EN)
A taxon is Endangered when the best available evidence indicates that it is considered to be facing a very high risk extinction in the wild.

VULNERABLE (VU)
A taxon is Vulnerable when the best available evidence indicates that it is considered to be facing a high risk extinction in the wild.

NEAR THREATENED (NT)
A taxon is Near Threatened when it does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

LEAST CONCERN (LC)
A taxon is Least Concern when it has been evaluated and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

DATA DEFICIENT (DD)
A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment on its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

RED DATA BOOK CATEGORIES FOR AMPHIBIANS & REPTILES

(SOURCE: Minter, L R; Burger, M; Harrison, J A; Braak, H H; Bishop, P J & Kloepfer, D (Eds) 2004. Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland. SI/MAB Series 9. Smithsonian Institution, Washington, DC.

Bates, M.F., Branch, W.R., Bauer, A.M., Burger, M, ,Marais, J, Alexander,G.J & De Villiers. 2014.Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland. Suricata 1, SANBI, Pretoria).

EXTINCT (EX)
A taxon is extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time appropriate to the taxon's life cycle and life form.

EXTINCT IN THE WILD (EW)
A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR)
A taxon is Critically Endangered when the best available evidence indicates that it is considered to be facing an extremely high risk of extinction in the wild.

ENDANGERED (EN)
A taxon is Endangered when the best available evidence indicates that it is considered to be facing a very high risk extinction in the wild.

VULNERABLE (VU)
A taxon is Vulnerable when the best available evidence indicates that it is considered to be facing a high risk extinction in the wild.

NEAR THREATENED (NT)
A taxon is Near Threatened when it does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

LEAST CONCERN (LC)
A taxon is Least Concern when it has been evaluated and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

DATA DEFICIENT (DD)
A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment on its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

RED DATA BOOK CATEGORIES FOR BIRDS

(SOURCE: Taylor, M.R Peacock, F. & Wanless, R.M. 2015. The 2015 Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland. Birdlife South Africa, Johannesburg.

EXTINCT (EX)
A taxon is extinct when there is no reasonable doubt that the last individual has died.

EXTINCT IN THE WILD (EW)
A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

REGIONALLY EXTINCT (RE)
A taxon is regionally extinct when there is no reasonable doubt that the last individual potentially capable of reproduction within the region has died or disappeared from the region or, if a former visiting taxon, the last individual has died or disappeared from the region.

CRITICALLY ENDANGERED (CR)
A taxon is Critically Endangered when available scientific evidence indicates that it is considered to be facing an extremely high risk of extinction in the wild.

ENDANGERED (EN)
A taxon is Endangered when available scientific evidence indicates that it is considered to be facing a very high risk extinction in the wild.

VULNERABLE (VU)
A taxon is Vulnerable when the best available scientific evidence indicates that it is considered to be facing a high risk extinction in the wild.

NEAR THREATENED (NT)
A taxon which has been assessed but does not currently qualify for Critically Endangered, Endangered or Vulnerable, but is close to qualifying for or is likely to become Vulnerable in the near future. Also included here are taxa that are the focus of a continuing taxon-specific or habitat-specific conservation programme targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.

LEAST CONCERN (LC)
A taxon which has been assessed but does not qualify for Critically Endangered, Endangered, Vulnerable and does not qualify for Near Threatened.

DATA DEFICIENT (DD)
A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment on its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

CONSERVATION MANAGEMENT SERVICES – Ken Coetzee
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www.conservationmanagementservices.co.za

CURRICULUM VITAE - KEN COETZEE

PERSONAL DETAILS:

Full names:	Kenneth Coetzee
Date of birth:	23 December 1952
ID no:	521223 5058 084
Nationality:	South African
Marital status:	Married
Profession:	Habitat and Wildlife Management Consultant (Present) Nature Conservation Manager (Previous)
Years with firm:	Cape Nature Conservation: 25 years Own consultancy: 27 years.

1. RECORD OF WORK EXPERIENCE:

1.1 CONSERVATION MANAGEMENT SERVICES

Since 30 July 1996 to present date I have been self-employed as a landscape and wildlife management consultant. My business, *Conservation Management Services*, is now 26 years old and has successfully established and retained a considerable client base, with well over 1200 contracts successfully completed. Conservation Management Services provides evaluation and practical advice to a wide range of landowners, including developers, farmers, nature conservation authorities, private nature reserve, game farm owners and the tourism industry.

Our service provides innovative evaluation, advice, design, planning, assessment and current information in the field of wildlife and habitat management, natural resources inventories, habitat rehabilitation and training (with SETA accreditation), natural resource utilization and sensitive development.

To date, more than 1200 contracts have been successfully completed, mostly in the environmental impact assessment and nature reserve / game ranch management planning fields and rehabilitation training for Sanparks. We have satellite offices in Plettenberg Bay and Knysna which includes a rehabilitation work team and extensive experience in rare game breeding.

1.2 SERVICE WITH CAPE NATURE CONSERVATION (CAPE PROVINCIAL GOVERNMENT CONSERVATION AUTHORITY):

1.2.1 1993 – 1996: Divisional Manager (Assistant Director Management) for the Central Cape Division (South Cape area – Karoo and Coastal), based in George. Responsible for all aspects of conservation management, training and administration. Divisional representative in the Cape Town head Office component. During this period, I was particularly concerned with the development of natural resource inventory on nature reserves, the training of field staff and rural area conservation outside formal nature reserves.

The following list reflects further activities of this period:

- ❖ Established Game Guard Training Committee (first in Province).
- ❖ Researched the endangered riverine rabbit (MSc thesis).
- ❖ Co-established Mountain Zebra Working Group (first in country).
- ❖ Established conservancies on private land.
- ❖ Represented South Africa at International Ranger Symposium in Poland.
- ❖ Produced various handbooks on game guard training, conservancy establishment, picnic site construction, bush camp design and monitoring.
- ❖ Delivery of numerous presentations at scientific workshops/symposia.

In July 1996, after an unbroken service of 25 years in formal nature conservation, I applied for a voluntary severance package to be free to start my own business as a range ecologist and wildlife management consultant.

1.2.2 1991 – 1993: District Manager (Chief Nature Conservator) – South Cape Regional and based in Oudtshoorn. Responsible for all aspects of nature reserve management on 12 nature reserves in the Little Karoo and Outeniqua Coastal area. During this period, the development of formal management plans for nature reserves, eco-tourism development and training of field staff was particularly important. The development of formal biological inventory for each conservation area was also important. Performance appraisal of field staff and training were major activities as well.

1.2.3 1986 – 1991: Principal Nature Reserve Manager – Karoo Nature Reserve at Graaff-Reinet (now the Camdeboo National Park). Responsible for all aspects of reserve management with an emphasis on habitat rehabilitation, game introductions and developing eco-tourism facilities. During this period, I developed 6 picnic sites for tourists, an education centre for visiting school groups, self-guided trails for visitors and hikers, a game viewing area with observation hides and a system of mountain trail huts. The establishment and maintenance of an ongoing natural resource inventory was also important.

1.2.4 1975 – 1986: Nature Reserve Manager – Rolfontein Nature Reserve on the south shore of the Vanderkloof Dam on the Orange River. Eventually controlled 30 000 ha under conservation management. Responsible for all veld, game, infrastructural, tourist and administrative management. During this period, I was particularly involved in the following:

- ❖ Veld monitoring system (developed and implemented techniques).
- ❖ Game census (developed and implemented techniques).
- ❖ Established game guards (of the first in the organisation).
- ❖ Field observation recording (developed and implemented techniques).
- ❖ Habitat preference study of large herbivores. (3-year study).
- ❖ Biological inventory and collection. (Registered with Smithsonian Institute).
- ❖ Designed and constructed game holding bomas (design published).
- ❖ Reintroduction of wildlife (including rare species).
- ❖ Game capture (developed and implemented techniques).
- ❖ Soil erosion control (developed and implemented techniques).
- ❖ Developed game viewing systems for tourists.
- ❖ Developed trail network and accommodation.
- ❖ Assisted with phytosociological study. (3-year study).

1.2.5 1972 – 1975: Research Technician – based at the Oviston Nature Reserve on the Gariep Dam – worked largely on fish distribution and production surveys in the Orange River system. During this period, I was also particularly involved in exploratory fish distribution work, seasonal bird inventory along the 100 km lake and vegetation surveys for the reserve.

2. PUBLICATIONS

As further example of work experience, the following list of publications illustrates general proficiency in the field of ecological evaluation and management:

2.1 Coetzee, K. 1985. A permanent facility (boma) for the temporary housing of medium to large wild ungulates. Bontebok 4: 17 – 24.

2.2 Fabricius, C & Coetzee, K. 1992. Geographic information system and artificial intelligence to predict the presence or absence of mountain reedbuck. S Afr J Wild Res 22: 80 – 86.

2.3 Coetzee, K. 1994. The riverine rabbit (*Bunolagus monticularis*) and its habitat: Conservation implications of an unnaturally fragmented distribution. Master's Degree Thesis (MTech). Saasveld School of Forestry, Port Elizabeth Technikon.(Unpublished dissertation)

2.4 Coetzee, K: The fynbos and renosterveld in: Bothma, J du P (2016) Ed: Game Ranch management-6th edition Van Schaik, Pretoria.

2.5 Coetzee, K: The Succulent Karoo in: Bothma, J du P (2016) Ed: Game Ranch management, 6th edition. Van Schaik, Pretoria.

2.6 Coetzee, K : Veld rehabilitation in: Bothma, J du P (2016) Ed: Game Ranch management – sixth edition. Van Schaik, Pretoria.

2.7 Coetzee, K : Game management in: Esler, KJ; Milton, SJ and Dean, WRJ. (2006). (Eds): Karoo veld - ecology and management. Briza, Pretoria.

2.8 Coetzee, K (2005). Caring for natural rangelands. University of Kwazulu-Natal Press, Scottsville.

2.9 Coetzee, K : Game Management in: Esler, KJ: Pierce, SM: De Villiers, C (2010). (Eds.): Fynbos Ecology and Management. Briza publication, Pretoria.

2.10 Coetzee, K. 2013. Game Guard Management. New Voices Publishing Services, Cape Town.

2.11 Coetzee, K. 2016. Practical Techniques for Habitat and Wildlife Management. New Voices Publishing Services, Cape Town (In Print).

3. EDUCATION:

3.1 Master's Degree in Technology (M Tech).

Obtained between 1992 and 1994 at the Saasveld School of Forestry, (now George Campus), Nelson Mandela University.
Dissertation title: The riverine rabbit (*Bunolagus monticularis*) and its habitat: Conservation implications of an unnaturally fragmented distribution. 1994.

3.2 National Higher Diploma (B Tech) Forestry Conservation.

Obtained between 1989 and 1990 at the Saasveld School of Forestry, Port Elizabeth Technikon. Recipient of an award for 'The Best Higher Diploma Student for 1990.'

3.3 National Diploma in Nature Conservation and Wildlife Management (N Dip).

3-Year course. Obtained between 1974 and 1976 at the Pretoria Technikon.

Other than my education qualifications, I have gathered over 40 years of uninterrupted experience in the field of scientific and practical nature conservation management. This experience was gained in my capacity as scientific research technician, nature reserve manager, regional conservation manager, researcher and veld and wildlife management consultant and lecturer.

I am registered as a Professional Natural Scientist, in the field of *Ecological Science*, with the South African Council for Natural Scientific Professions. Reg. No. 400099/08.

4. MEMBERSHIP IN PROFESSIONAL SOCIETIES, NATURE CONSERVATION INITIATIVES AND LECTURING:

4.1 Member of the Game Rangers' Association of Africa for 25 years. Member of the Executive Committee for 10 years. Editor of the Association Journal for 5 years. Now Honorary member.

4.2 Member of the Wildlife Management Association. (15+ years).

4.3 Board member (Chairman) of the Gouritz Cluster Biosphere Reserve (GCBR). I have also undertaken a contract with the GCBR to identify best options for corridor routes through private land in the Little Karoo and also a landscape scale training needs analysis for environmental training.

4.4 Subcontracted to the Cedarberg Biodiversity Corridor Initiative, to prepare guidelines for the introduction and maintenance of wildlife in the corridor area.

4.5 Part time lecturing for the Game Ranch Management and Nature Conservation Resource Management courses at the George Campus of the Nelson Mandela University, George. 2011 to 2022.

5. RANGE OF WORK UNDERTAKEN BY CONSERVATION MANAGEMENT SERVICES:

To date we have successfully completed a more than 1 000 individual consultation projects. The following lists the typical range of some of the projects undertaken:

- Murtala Tukur: Development of a 100,000ha wildlife reserve in Eastern Nigeria.
- Jacob Mwanzia: Meletse Game Reserve, Limpopo, management plan.
- Crown Prince Abu Dhabi: Management plan for Al Maha Farm, Morocco.
- Johann Venter: Touwsberg Nature Reserve, Little Karoo, management plan.
- Nicolaas Marais: Develop a management plan for the Aardvark Nature Reserve near Vanwyksdorp.
- Louis de Swart: Brulberg: Complete game farm management plan including natural resources inventory. Middelburg.
- Mark Barnard: Development of a Management Plan for the Kleeberg Game Ranch in Namibia.
- Mark MacAdam: Development of a Management Plan for the Desert Star game Ranch near Colesberg.
- Ron Begby: Kuzuko Game Reserve (Greater Addo Park Complex): Veld and wildlife management plan: Somerset East.
- Dr Fred Roux: Quaggasfontein: Feasibility study and guidelines for hippopotamus, buffalo and cheetah introduction: Colesberg.

- Sabine Plattner (Racing Stables): Rondeberg Nature Reserve: Veld and game management guidelines: Yzerfontein.

- Botha Schabort: Rietfontein Private Nature Reserve: Veld and wildlife management guidelines: Beaufort West.

- Chris Mulder Ass Inc: Hanglip Private Nature Reserve: Veld and wildlife management guidelines: Plettenberg Bay.

- Sanbona Game Reserve: Assessment of the impact of introduction of extralimital giraffe and white rhinoceros.

- Chris Mulder Ass Inc: Gansevallei Development: Veld and wildlife management guidelines: Plettenberg Bay.

- Bill McAdam: Bushmans Kloof Game Reserve: Habitat and game management plan including natural resources inventory: Clanwilliam.

- Cape Technikon: B Tech (Nature Conservation) Part Time Lecturer for five years: Cape Town.

- Southern African Wildlife College (WWF): Develop modules and lecture guidelines for courses: Ecology; Vegetation Management; Animal Management; Management Planning and Interpretation.

- Mike Cawood: Witdraai Game Reserve: Game count: Beaufort West.

- Squire, Smith & Laurie: Game reserve and tourism management assessment: Expert witness for the State: Eastern Cape.

- Martin Flavell: Shamwari Game Reserve: Buffalo investment investigation: Patterson.

- Irene van Lippe: Bergplaas, New Bethesda: Veld and game management guidelines including natural resources inventory.

- Bill McAdam: Hunter's Moon Game Ranch management plan including natural resources inventory: Colesberg.

- Cape Nature Conservation, Oudtshoorn: Fish ladder design, Olifant's River.

- Pieter Coetzee: Assegaay Bosch Game Ranch game management plan including natural resources inventory: Van Wyksdorp

- Paarl Municipality, Paarl: Assessment of development of potential of Paarl Mountain Reserve for tourism.

- SRK Consulting: Namibia: Fauna impact study at Otjiwarongo Cement Factory.

- Jannie Mouton: Koktyls Private Nature Reserve Management Plan: Barrydale

- ❖ Niel Warmenhoven: Westbrook Nature Reserve. Veld and wildlife management guidelines: Graaff-Reinet.

- ❖ John Vye: Agtersneeuberg Game Ranch. Veld and wildlife management plan. Graaff-Reinet.

- ❖ Mark & Sarah Tompkins: King Karoo Ranch: Development of reserve management plan: Graaff-Reinet.

- ❖ Anglo American Mines: Management plan for the Black Mountain Mine area, Aggeneys.

- ❖ SRK Consulting: Game impact assessment: Port Elizabeth

- ❖ Ostrich Industry Business Chamber Biodiversity Unit: Ostrich veld damage rehabilitation guidelines and implementation: Oudtshoorn.

- ❖ East Cape Parks Board: Oviston Nature Reserve Management Plan: Oviston.

- ❖ South African Parks Board: Agulhas National Park game introduction and veld management guidelines: Agulhas.

- ❖ Endangered Wildlife Trust: Rehabilitation of Riverine rabbit habitat on the Sak River of the Great Karoo

SAMPLE OF ADDITIONAL CONSULTING CONTRACTS

1	Oubaai Golf Development, Mossel Bay.	Fauna impact assessment.
2	Koktyls Private Game Reserve, Barrydale.	Preparation of game introduction & reserve management plans.
3	Hunter's Moon Game Ranch, Colesberg.	Preparation of game introduction & reserve management plan and annual follow-up audits.
4	Quaggasfontein Private Game Ranch, Colesberg.	Feasibility study & guidelines for hippopotamus and brown hyaena introduction.
5	Buffelsdrift Private game Reserve, Oudtshoorn.	Preparation of game introduction & reserve management plans.
6	Pezula Country Estate, Knysna.	Preparation of game introduction & reserve management plans.
7	Cape Technikon, Cape Town.	Preparation and presentation of B Tech Degree lectures in Nature Conservation Management (10 years).
8	Rietfontein Private Game Ranch, Beaufort West.	Preparation of game introduction & reserve management plans.
9	African Farm Nature Reserve, Montagu.	Management plan for cheetah breeding project.
10	Hartenbos Lifestyle Reserve, Mossel Bay.	Vegetation sensitivity analysis for development proposal.
11	Western Cape Nature Conservation Board, George.	Assist with provincial nature reserve management audits.
12	King Karoo Game Ranch, Graaff-Reinet.	Feasibility study and introduction plan for white rhinoceros.
13	Groenkloof Private Game Reserve, Graaff-Reinet.	Preparation of game introduction & reserve management plans.
14	Retreat Private Game Reserve, Kuruman.	Preparation of game introduction & reserve management plans.
15	Bosluiskloof Private Game Lodge, Ladismith.	Preparation of game introduction & reserve management plans.
16	Gamka Private Wilderness Reserve, Calitzdorp.	Preparation of game introduction & reserve management plans.

17	Vaale Valley Estate, Mossel Bay.	Vegetation impact assessment.
18	Boschenbach Private Nature Reserve, Lambert's Bay.	Introduction plan for captive lions.
19	San Bona Wildlife Reserve, Barrydale.	Habitat evaluation for giraffe and white rhinoceros.
20	Gouritz Initiative (Gouritz Cluster Biosphere Reserve).	Evaluation and potential for landscape corridor.

21	Sharples' Environmental Services (Hartenbos 1).	Operational phase management plan.
22	Koktyls Private Game Reserve, Barrydale.	Feasibility study for buffalo introduction.
23	Greater Cederberg Biodiversity Corridor, Porterville.	Wildlife introduction and management guidelines.
24	Berg en Dal Private Game Reserve, Mossel Bay.	Impact assessment for giraffe introduction.
25	Fancourt Country Estate, George.	Alien vegetation control management plan.
26	Karoo Heritage Estate and Golf Course, Oudtshoorn.	Biodiversity impact assessment.
27	Hartenbos Private Game Farm, Mossel Bay.	Preparation of fire management plan.
28	Camdeboo Stud Game Farm, Graaff-Reinet.	Preparation of game introduction & reserve management plans.
29	Oviston Nature Reserve, East Cape Parks.	Preparation of fauna, infrastructure and fire sections of management plan.
30	Cape Town City Council, Cape Town.	Preparation of management plans for Helderberg, Rietvlei and Tygerberg Nature Reserves.
31	Indalu Wildlife Projects, Mossel Bay.	Feasibility study & preparation of plans for introduction of elephant, white rhinoceros, buffalo & captive carnivores.
32	Wind Farm Project, Municipality of Beaufort West.	Biodiversity impact assessment.
33	Solar Power Generation Project, UCT, Cape Town	Biodiversity impact assessment.
34	Bland's Drift Private Game Farm, Mossel Bay.	Management plan for intensive buffalo and sable farming.
35	South African Ostrich Industry Chamber, Oudtshoorn.	Preparation of soil erosion control guidelines.
36	Inverdoorn Private Game Reserve, Touws River.	Impact assessment for elephant introduction.
37	Conservation South Africa, Kammieskroon.	Rehabilitation training for local farmers.
38	Koesanie White Rhino Project, Swellendam.	White rhinoceros intensive breeding management plan.
39	Rietfontein Private Game Reserve, Beaufort West.	Habitat monitoring plan and implementation.
40	Welgevonden Private Game Ranch, De Rust.	Evaluation and preparation of corridor management plan.
41	Nyaru Private Game Reserve, Mossel Bay.	Preparation of game introduction & reserve management plans.

Note: Most of the management plans and guideline documents contain substantial sections on veld rehabilitation, ecological monitoring, resource inventory, wildlife management infrastructure and road maintenance guidelines. The EIA contracts relate to biodiversity impact assessments as well as Environmental Management Plans.

6. CERTIFICATION:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe my qualifications, my experience and myself.

Kenneth Coetzee **DATE: 26 August 2022**

THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I …Kenneth Coetzee……, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I :

- in terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
  - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- in terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the Specialist:	
Name of Company:	Conservation Management Services
Date:	26 August 2022