ANIMAL SPECIES IMPACT ASSESSMENT

FOR THE

PROPOSED SWIMMING POOL, RECREATIONAL FACILITIES AND ASSOCIATED INFRASTRUCTURE AT DIE STROOM PICNIC SITE IN THE BONTEBOK NATIONAL PARK ON ERF RE/5338, SWELLENDAM

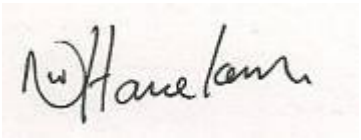
Prepared by: Nicolaas Hanekom
Pri.Sci.Nat (Ecology) 004415
Contact details: Telephone: 0769636450
or email: nicolaas@enviro-eap.co.za

MAY 2025

DECLARATION OF THE SPECIALIST

I **Nicolaas Willem Hanekom**, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- 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
- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- I 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
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.



Nicolaas Hanekom
Pri.Sci.Nat (Ecology) 004415 **13 May 2025**
Signature of the Specialist: Date:

Enviro-EAP (Pty) Ltd
Name of company (if applicable):

COMPLIANCE WITH THE DEPARTMENT OF ENVIRONMENTAL AFFAIRS SCREENING TOOL PROTOCOLS (GOVERNMENT NOTICE NO.1150, GOVERNMENT GAZETTE 43855: 30 OCTOBER 2020)

Department of Environmental Affairs screening Tool (GOVERNMENT NOTICE NO.1150, GOVERNMENT GAZETTE 43855: 30 OCTOBER 2020)	**ADDRESSED IN SPECIALIST REPORT**
Contact details and curriculum vitae of the specialist including SACNASP registration number and field of expertise and their curriculum vitae	Page 1
A signed statement of independence by the specialist	Page 2 of report
Duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment	Section 1.8
A description of the methodology used to undertake the impact assessment and site inspection, including equipment and modelling used where relevant	Section 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 1.6
Details of all Species of Conservation Concern (SCC) found or suspected to occur on site, ensuring sensitive species are appropriately reported	Section 4.4
The online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area	Section 4.4
The location of areas not suitable for development and to be avoided during construction where relevant	Section 4.4
Areas not suitable for development, to be avoided during construction and operation (where relevant)	Section 4.4
Additional environmental impacts expected from the proposed development based on those already evident on the site and a discussion on the cumulative impacts	Section 5
A discussion on the cumulative impacts	Section 5
Impact management actions and impact management outcomes proposed by the specialist for inclusion in the EMPr	Section 5
A motivation where the development footprint was not considered stating reasons why these were not being considered	Section 1 and 6
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, and any conditions to which the statement is subjected	Section 6
A motivation must be provided if there were any development footprints identified as above that were identified as having “low” or “medium” animal species sensitivity and were not considered appropriate	Section 6

TABLE OF CONTENT

1. INTRODUCTION AND METHODOLOGY

The Department of Environmental Affairs screening report from the national web based environmental screening tool reported a "high sensitivity for five animal species and two others were mapped a medium sensitivity rating. The site sensitivity verification and specialist assessment does differ from the designation of

“high” animal species as identified in the national web based environmental screening tool.

1.1. Background & Competency

Nicolaas Hanekom is a registered Professional Natural Scientist in the ecological science field with the South African Council for Natural Scientific Professions (“SACNASP”), (Ecology field) and a qualified registered Environmental Assessment Practitioner (“EAP”) who holds a Masters Technologiae, Nature Conservation (“Vegetation, Animal, Ecology and Biodiversity Assessment”) degree from the Cape Peninsula University of Technology (Refer to Appendix A, CV). The protocols required that the specialist is 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. In this case the relevant taxa is Avi-Fauna. The SACNASP does not have a specific registration field for Avi-fauna and therefore the experience of Nicolaas Hanekom become relevant. Nicolaas Hanekom has done fauna and biodiversity impact assessment (these fields cover both the Avi-fauna, Herpetologist and invertebrates) since 2006 and the SACNASP registration under the ecology and conservation fields is a suitably qualified and registered field with the necessary experience in the animal species listed in the environmental screen tool report and knowledge of the field and area to conduct the specialist study. Nicolaas Hanekom is suitably qualified SACNASP registered specialist.

1.2. Conditions Relating to this Report

The findings, results, observations, conclusions and recommendations given in this report are based on the author’s best scientific and professional knowledge as well as available information and knowledge of the area. Nicolaas Hanekom reserves the right to modify aspects of the report including the recommendations if and when new information may become available from on-going research or further work in this field, pertaining to this assessment.

This report may not be altered or added to without the prior written consent of the author. This restraint also refers to electronic copies of this report which are supplied as sub portion of other reports, including main reports. Similarly, any recommendations, statements, or conclusions drawn from or based on this report must specifically refer to this report. If such comments form part of a main report for this investigation, the report must be included in its entirety as an appendix or separate section to the main report.

1.3. Scope and Objectives

The assessments entailed both a literature review of the region, as well as on site evaluations, during which specific primary data will be collected and evaluated. In addition, the identification of animal species features will be undertaken allowing for the interpretation of the prevailing habitat form and associated processes. The assessment is also based on previous knowledge of the area and habitat on site.

All data collected in the field and during the literature review will be evaluated and interpreted in order to provide an understanding of the nature of the prevailing environment at a landscape and habitat level. In addition, specific evaluation of data relating to habitat form and structure will be undertaken, aiding in the identification of bio-physical anomalies within the prevailing environment. Such variance may be considered to be indicative of differing habitat forms, which under consideration, may be of higher order ecological value in relation of the prevailing environment. The protocol[1] provides the criteria for the reporting of requirements for the assessment and reporting of impacts on animal species for activities requiring environmental authorisation.

General Information

An applicant intending to undertake an activity identified in the Scope of this Protocol, on a site identified as being of "high sensitivity" for animal species on the national web based environmental screening tool must submit an animal species impact assessment report. Where the information gathered from the Initial Site Sensitivity Verification and the specialist assessment differs from the designation of "very high, high or medium" animal species sensitivity from the national web based environmental screening tool and it is found to be of a "low" sensitivity, then an animal species impact assessment is not required. Should this apply, an animal species Compliance Statement is to be provided.

1.4. Terms of Reference

The assessment must be undertaken by a suitably qualified and SACNASP registered specialist, within the preferred development site and on the preferred development footprint. The description of the preferred site must include the following aspects, as a minimum and must be considered in the baseline description:

- The assessment must be undertaken in accordance with the *Species Environmental Assessment Guideline*[2]; and must; identify the SCC which were found, observed or are likely to occur within the study area;
- 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[3], immediately after the site inspection has been performed (prior to preparing the report contemplated in paragraph 3);
- identify the distribution, location, viability[4] and provide a detailed description of population size of the SCC, identified within the study area;
- 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;
- determine the importance of the conservation of the population of the SCC identified within the study area, based on information available in national and

[1] Published in Government Notice No. 1150. GOVERNMENT GAZETTE 43855 30 OCTOBER 2020.This gazette is also available free online at www.gpwonline.co.za
[2] Available athttps://bgis.sanbi.org/
[3] The preferred platform is iNaturalist.org but any other national or international virtual museum
[4] the ability to survive and reproduce in the long term

international databases, including the IUCN Red List of Threatened Species, South African Red List of Species, and/or other relevant databases;
- determine the potential impact of the proposed development on the habitat of the SCC located within the study area;
- 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;
- 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;
- 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;
- determine buffer distances as per the *Species Environmental Assessment Guidelines* used for the population of each SCC;
- 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[5]; or roosting and breeding or foraging areas used by migratory species where these species show significant congregations, occurring in the vicinity; and
- 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.

The findings of the Animal Species Impact Assessment must be written up in an Animal Species Impact Assessment Report. This report must include as a minimum the following information:
- Contact details and curriculum vitae of the specialist including SACNASP registration number and field of expertise and their curriculum vitae;
- A signed statement of independence by the specialist;
- Duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
- A description of the methodology used to undertake the impact assessment and site inspection, including equipment and modelling used where relevant; a description of the mean density of observations/number of sample sites per unit area[6] and the site inspection observations;
- a description of the assumptions made and any uncertainties or gaps in knowledge or data;
- details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;
- the online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;
- the location of areas not suitable for development and to be avoided during construction where relevant;

[5] Undescribed species are to be assessed as "High Sensitivity"
[6] Species Environmental Assessment Guideline

- a discussion on the cumulative impacts;
- impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);
- 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
- a motivation must be provided if there were any development footprints identified as above that were identified as having “low” or “medium” animal species sensitivity and were not considered appropriate.

1.5. Approach and Methodology

A literature review and desktop analysis were undertaken prior to the field investigation, utilizing various sources including the South African National Biodiversity Institute (SANBI) data and other relevant sources. Recent and historical aerial imagery of the site was reviewed in order to identify points for investigation during the field survey. Utilising the above information, a field investigation was undertaken whereby:

- Sites of geomorphological or topographic variance were identified and subjected to an evaluation of species present within line transects established across the selected site.
- Species were identified and collated.
- Additional random sample points were selected from other sites surrounding the proposed impacted areas for comparative purposes.
- Any additional species of significance, not identified within the sample sites were also noted.

The sampling and analysis of the site was conducted on 16 January 2019, 17 August 2022 and 26 March 2025 and in optimum seasons and times and provides suitable data and results to present an informed decision on the species.

All data was collated and subjected to evaluation using methods in order to:

- Give consideration to the overall structure of habitat within the subject site.
- Identify any habitat anomalies that may be identified in such analysis.
- Allow for the interpretation of such data in order to prioritise and evaluate habitat form and structure within the study area.

1.6. Assumptions and limitations

The presence of fauna must be evaluated based on the literature and available databases but in many cases, these databases are not intended for fine-scale use and the reliability and adequacy of these data sources relies heavily on the extent to which the area has been sampled in the past. Many areas have not been well sampled with the result that the species lists derived for the area do not always adequately reflect the actual fauna and flora present at the site. This is acknowledged as a limitation of the study. The assessment was undertaken using sampling methods appropriate to the protocols, terms of reference and methodologies described above. The timing of the survey is therefore regarded as

optimal in terms of accurately assessing the fauna (animals) of the site. The overall condition of the animal species and habitat can still be determined with a high degree of confidence. The overall confidence in the completeness and accuracy of the animal species findings at this point in time is considered to be good. A follow-up survey is not considered essential for decision-making.

1.7. Source of Information

This assessment was undertaken utilising:

- 1:50 000 topographic mapping sourced from the Surveyor General's office;
- Aerial imagery sourced from Google Earth.
- Aerial imagery sourced from ESRI.
- Vegetation types and their conservation status was extracted from the South African National Vegetation Map (Mucina and Rutherford 2018).
- Information on plant and animal species recorded for the Quarter Degree Squares (QDS) was extracted from the SABIF/SIBIS database hosted by SANBI.
- Threatened Ecosystem data was extracted from the National List of Threatened Ecosystems 2022.
- Important catchments and protected areas expansion areas were extracted from the National Protected Areas Expansion Strategy 2008 (NPAES).

In addition, use was made of the following data:

- SANBI veld types data; and
- Literature as referenced

1.8. Site Visit

The site survey was conducted on 16 January 2019, 17 August 2022 and 26 March 2025. The surveys were conducted in an ideal period for the assessment of animal species within this region. The sampling and analysis of the site during the optimal season provides suitable data and results to present an informed decision on the local animal species. During the site visit, the different biodiversity features, habitat, vegetation and landscape units present were identified and recorded in the field. Walk-through-surveys were conducted of representative habitats and areas of interest and all animal species observed were recorded. Searches for listed and protected animal species at the site were conducted and the location of all listed animal species observed was recorded (if present).

No fauna or avifauna species of conservation concern was recorded within the proposed development site during the time of the surveys however fauna and avifauna species of conservation concern are present within the national park i.e. Bontebok. Evidence of mole heaps, termites, mice and weasels were also observed throughout the site. The proposed development areas are however also located on and adjacent to the existing Die Stroom picnic site and the ongoing human activities within this area makes it highly unlikely that the particular proposed development site is being used as preferred breeding or nesting areas for the indigenous fauna and avifauna species and these areas will most likely only be occasionally visited by fauna and avifauna species when looking for food. It is therefore also highly unlikely that any fauna or avifauna species of conservation

concern or their associated preferred habitat and breeding areas will be significantly impacted by the proposed development.

There is also a probability that at least some animal and/or bird SCCs known to occur within the general area may frequent the site and surrounds. Apart from the Bontebok antelope these SCC are also likely to include Denham's Bustard (*Neotis denhami*) and Black Harrier (*Circus maurus*), however the construction and operational phase of the proposed developments are not expected to impact on the presence and habits of these species any more than the current picnic site activities are impacting upon them.

The animal species listed in Environmental Screen tool report are *Circus ranivorus, Circus maurus, Neotis denhami, Polemaetus bellicosus, Hydroprogne caspia* and *Aneuryphymus montanus*.

Damaliscus pygargus Dorcas weren't one of the species flagged in the screening tool as high or medium sensitivity despite the very well-known occurrence of this subspecies at this location. The management plan states that Cape vulture (listed as endangered nationally and vulnerable internationally) and black storks (listed as vulnerable nationally and least concern internationally) have been recorded in the park.

The facility occupy a small area surrounded by the protected area and the animal and avifauna species will simply move into the bigger surrounding area during construction.

1.9. Sensitivity Mapping and Assessment

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY

Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Circus ranivorus
High	Aves-Circus maurus
High	Aves-Neotis denhami
High	Aves-Polemaetus bellicosus
High	Aves-Afrotis afra
Medium	Aves-Hydroprogne caspia
Medium	Invertebrate-Aneuryphymus montanus

Figure 1: PAIO map relevant to plant species as per the environmental screen tool report.

Species	Threat status	Habitat requirements	Likelihood of occurrence based on habitat and current records
African Marsh Harrier *Circus ranivorus*	VU	The distribution of this species is from South Africa north to Democratic Republic of Congo and southern Sudan with a likely stronghold in the Okavango marshes (Botswana). It has an EOO 9,470,000km^2. South Africa hosts ±3,000-6,000 pairs. This species inhabits wetlands where it breeds and primarily forages over reeds and lake margins remain for small mammals, particularly striped mouse *Rhabdomys pumilio* (BirdLife Int., 2016).	**Medium** Was not recorded on site and only likely to roam the area. *Rhabdomys pumilio* (although not recorded its presence is know from historic visits) is expected to occur in the project area suggesting that it could use the project area for foraging. Primary nesting habitat is not present on the impacted areas. They will simply move into the bigger surrounding area during construction. The current picnic site and activities already impacted on them.
Black Harrier *Circus maurus*	EN	1,340,000km^2 251-999 individuals This species occurs in coastal and montane fynbos in the Western Cape particularly near vleis, marshes, streams or dams as well as dry grasslands, Karoo subdesert scrub, open plains with low shrubs and croplands. In renosterveld breeding restricted to intact patches exceeding 100ha. Breeds close to coastal and upland marshes with tall shrubs or reeds, damp sites, near vleis, marshes or streams, are preferred for	**Medium** Was not recorded on site and only likely to roam the area. *Rhabdomys pumilio* (although not recorded its precense is know from historic visits) is expected to occur in the project area suggesting that it could use the project area for foraging. Primary nesting habitat is not present on the impacted areas. They will simply move into the bigger surrounding area during construction. The current picnic site and activities already impacted on them.

		breeding. Nests are shallow platform nests built on the ground, either dry or damp underfoot and not over water. Concealed by rank vegetation. This species breeds from Aug- Nov with nestlings departing approximately two months later. Prefers open ground with low vegetation for hunting, where it feeds on a diet comprising mainly of small mammals, especially *Otomys* and *Rhabdomys* species at coastal sites and birds in montane habitats. At inland sites the diet shifts between small mammals to birds depending on the season. (BirdLife Int., 2016; Taylor et al., 2015; Tarboton, 2014 and Chittenden, 2009)	
Neotis denhami	VU	Denham's Bustard has a wide but fragmented Afrotropical range, occurring in a band stretching from Mauritania to Ethiopia, and southwards through Kenya, Tanzania, southern Democratic Republic of the Congo and Zambia to northern Botswana; it is a non-breeding visitor to Angola and Congo (see also Taxonomy). Within the region, an isolated population occurs widely but	**Low** Was not recorded on site. Habitat in the project area is appropriate for this species. Was recorded in the park. However, due to the closeness of the impact area to the picnic area and on its edge, this species utilize the bigger surrounded areas in the park.

		sparsely over much of mesic eastern half of South Africa, from the Overberg in Western Cape through Eastern Cape and KwaZulu-Natal to the high-lying grasslands of Mpumalanga, with an outlying sub-population in Limpopo Province. In Western Cape, Denham's Bustard can be locally numerous in mosaics of cultivated pastures, agricultural croplands and natural vegetation with clear seasonal differences in the use of each habitat type (Allan 2002). In Eastern Cape, Clancey (1972) described its range as the coastal and sub-coastal belt, extending to the Karoo Midlands, and noted that it occurred seasonally on the upland grassveld of East Griqualand. The species is uncommon in Free State, occurring only in the extreme north-eastern Highveld of that province (Maclean 1957, Herholdt 1988). Denham's Bustard is widespread in KwaZulu-Natal, where it is found in both upland grasslands and low-lying coastal grasslands of north-eastern Zululand and adjacent Mozambique (Cyrus and Robson	

		1980). The sour grassveld areas of Mpumalanga, from Wakkerstroom to Dullstroom, and westwards to the border of Gauteng, hold several populations. At the northern extremes of its range, fragmented populations persist in the Graskop area above the Blyde River Canyon, as well as on the grassy plateau of the Waterberg in Limpopo Province (Kemp et al. 1985). It avoids the dry western and central parts of South Africa, and occasional (erroneous) claims from the Karoo are attributable to the similarity of Ludwig's N. ludwigii and Denham's bustards (Herholdt 1988); in reality the latter occurs there only as a vagrant or along ecotones where the Karoo meets the Grassland and Fynbos biomes (Allan 2002). The species occurs marginally in Swaziland, where it is restricted to the western Highveld regions, with breeding records from Malolotja National Park. It is considered a non-breeding vagrant to Lesotho (Osborne and	

		Tigar 1990). Birds have been reported moving to lower-lying areas during winter, but this has not been confirmed (Herholdt 1988). The regional population of Denham's Bustard Neotis denhami is suspected to be undergoing a decline of greater than 30% over a three generation period (50.5 years) which qualifies the species as regionally Vulnerable.	
Southern Black Korhaan *Afrotis afra*	EN	Endemic to southwestern SA occurring in Northern Cape, Western Cape and Eastern Cape provinces. With an EOO: 254,000km^2. Occurs in non-grassy fynbos and succulent Karoo biomes and Nama-Karoo biome. It inhabits semi-arid scrub and dunes with succulent vegetation, and extends into renosterveld scrub, semi-arid karoo and occasionally cultivated fields. It is absent from vegetation that is too dense and high to provide good visibility and easy terrestrial mobility. The diet consists of insects, small reptiles and plant material, including seeds and green shoots (BirdLife	**Low** Was not recorded on site. Habitat in the project area is appropriate for this species. Was recorded in the park. However, due to the closeness of the impact area to the picnic area and on its edge, this species utilize the bigger surrounded areas in the park.

		Int., 2016; Hofmeyr and Taylor. 2015).	
Polemaetus bellicosus	EN	The regional population of the majestic Martial Eagle Polemaetus bellicosus is estimated at c. 800 mature individuals and is believed to be undergoing a continuous population decline of greater than 20% over a period of two generations. In addition, there appears to have been a suspected population size reduction of greater than 30% over the last three generations where the reduction or its causes may not have ceased or may not be understood or may not be reversible. For these reasons, it is listed as regionally Endangered. The Martial Eagle is found throughout sub-Saharan Africa, only being absent from the lowland forests of West Africa (Ferguson-Lees and Christie 2001). With the exception of Lesotho, the species is widespread in the region but is more commonly encountered in protected areas such as in the Lowveld and Kalahari (Barnes 2000). Two conservation areas, the Kruger National Park and the	**Low** Was not recorded on site. Habitat in the project area is appropriate for this species. Was recorded in the park. However, due to the closeness of the impact area to the picnic area and on its edge, this species utilize the bigger surrounded areas in the park.

		Kgalagadi Transfrontier Park, together hold a substantial proportion of the region's population. Outside of protected areas in the former Transvaal, Martial Eagle territory sizes are on average between 300 and 1 000 km^2 in extent; however, such territory sizes are probably not natural, and may be attributable to persecution and human-induced alteration of primary productivity (van Zyl 1992). In more natural situations, Martial Eagles still require an exceptionally large home range, in excess of 130 km2 (Brown et al. 1982). Densities in areas stocked with indigenous game are higher than in areas supporting only domestic stock, and the species is virtually absent from cultivated areas (Machange et al. 2005). Breeding adults are thought to be sedentary; juveniles and immature birds, however, wander widely from their natal areas (Simmons 2005). The recent SABAP2 maps indicate a decrease in EoO (13.99%) while the AoO estimates show an alarming	

		decrease of 53.47% indicating that it has not been detected in more than half of its former range. The pressure that this species is facing outside of the large protected areas is even more dramatic with reporting rates from the SABAP2 project showing large decreases or even absence from large areas of their former range. According to Parker (1999) it is scarce in neighbouring Sul do Save, southern Mozambique. The global population has not been estimated (BirdLife International 2014) although tens of thousands seems probable (Ferguson-Lees and Christie 2001). Despite this large population size, the Martial Eagle is threatened across its range and has experienced a decline in population numbers within the region (Boshoff 1997), as well as outside the region, with declines reported in Namibia (Brown 1991), southern Mozambique (Parker 1999), and possibly Zimbabwe. No regional population estimate currently exists. Figures from 1982 suggested approximately 300	

		mature individuals occurred in Western, Eastern and Northern Cape provinces combined (Brooke 1984). However, a survey of a single electricity pylon line of 1 400 km in the central and south-western Karoo by Machange et al. (2005) estimated 34 active Martial Eagle territories indicating that the estimate provided by Brooke (1984) was more than likely an underestimate. Although Tarboton and Allan (1984) suggested 1 000 mature individuals occurred in the former Transvaal, with 137 pairs in Kruger National Park, numbers must be much less than this today. Murn et al. (2012) estimated a breeding population of 110 mature individuals in the Kruger National Park based upon their 2011 aerial survey of nests, a decrease of at least 50%. In 1994, the Swaziland total was estimated at 40 mature individuals (Parker 1994) while more recently Monadjem and Rasmussen (2008) estimated that there were 14 mature individuals within protected areas in Swaziland representing a decline of greater than 50%. In	

		summary, Brooke (1984) suggested a total regional population of less than 2 000 mature individuals while Barnes (2000) estimated there to be less than1 200 mature individuals in the region. Taking into account historical as well as reported decreases, the present regional population is estimated be c. 800 mature individuals. The confidence in this regional population estimate is medium. The global population trend is difficult to quantify but is suspected to have undergone a moderately rapid decline over the past 56 years (BirdLife International 2014). Lower reporting rates outside protected and sparsely inhabited areas suggest a dramatic decrease in densities throughout the region. Worryingly, reporting rates for large protected areas, such as Kruger National Park, also show a large decrease. The large number of checklists available for pentads in these areas means that the differences in protocol between SABAP1 and SABAP2 cannot be responsible for the consistent	

		decrease in reporting rates. Based upon this, the decline seen in past years is probably ongoing and is believed to have been greater than 40% over the past three generations (56 years). This reduction in population size has not ceased and may not be reversible. The confidence in this regional population trend estimate is medium[7].	
Hydroprogne caspia	VU	The regional population of Caspian Tern *Sterna caspia* is estimated to be less than 1 000 mature individuals. In addition, the species has a restricted number of breeding locations leaving it prone to the effects of human activities or stochastic events within a short time period. Accordingly, the species is assessed as regionally Vulnerable. Despite being distributed globally, the species is thinly spread throughout the Holarctic, Australasian, Oriental and Afrotropical regions (Voous 1960). Within the region, it is concentrated at estuaries and sheltered bays along the coastline and at	**Low.** Not at all its habitat as they are close to the ocean and its habitat is not present in or close to the site.

[7] https://speciesstatus.sanbi.org/assessment/last-assessment/3140/

		large, permanent inland waterbodies (Brooke 1984). Twenty-eight historical breeding localities are known although the species currently breeds at only ten sites, two of which are Important Bird Areas, namely iSimangaliso Wetland Park (IBA SA058) and West Coast National Park and Saldanha Bay Islands (IBA SA105). The movement of a ringed bird from Algoa Bay, Eastern Cape to Lake St Lucia suggests that the southern African breeding populations may not be isolated from each other (Martin 1991). The global population is estimated to number c. 240 000-420 000 mature individuals (Dodman and Diagana 2006). The regional population is a small portion of this. In 2011 in Western Cape, 69 pairs bred on private property near Velddrif; eight pairs bred at Caspian Island in the southern portion of Langebaan Lagoon; one pair bred on each of Jutten, Meeuw and Schaapen islands in Saldanha Bay; and one pair bred on Robben Island offshore from Cape Town (Crawford et al. 2012). Further east,	

		several pairs breed at De Mond Nature Reserve near Aniston. Crawford et al. (2009) reported c. 50 pairs at the Swartkops River estuary in Eastern Cape and c. 170 pairs at False Bay in Lake St Lucia, KwaZulu-Natal. The regional breeding population is in the order of 300-316 pairs (Kemper et al. 2007, Crawford et al. 2012). The confidence in this population estimate is high. The global population trend is increasing, although some populations are decreasing, stable, or have unknown trends (Dodman and Diagana 2006). Between 1980-1991, Cooper et al. (1992) estimated the regional population to be in the order of 1 500 birds with about 1 000 of those being mature individuals. It must be noted that there is sometimes extreme fluctuations in the number of birds breeding at a locality; for example, counts at Lake St Lucia, KwaZulu-Natal between 1975 and 1985 ranged from as low as six to a maximum of 833 birds (Ryan et al. 1986). The current population estimate of 600-650 mature individuals represents a reduction	

		of 30-35% over three generations. Confidence in this regional trend estimate is medium[8].	
Aneuryphymus montanus	VU	This species is only known from six localities in the Cape region of South Africa. Its estimated extent of occurrence (EOO) is ca 170,000 km², while its area of occupancy (AOO) is probably between 100 and 1,000 km². A record from Maclear (Armstrong and van Hensbergen 1999) is considered here uncertain as it is quite far away from the rest of the range. The species is associated with fynbos vegetation, where it has been collected "amongst partly burnt stands of evergreen Sclerophyll in rocky foothills" (Brown 1960). It prefers south-facing cool slopes (Kinvig 2005).	**Low** Was not recorded on site. Habitat in the project area is not appropriate for this species.
Damaliscus pygargus pygargus	Vulnerable B2ab(ii)+D1*	The Bontebok is a subspecies endemic to the East Coast Renosterveld bioregion within the Cape Floristic Region (CFR) of the Western Cape. It is an important South African conservation success story where a subspecies has been brought back from the brink of extinction in	**High** There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the

[8] https://speciesstatus.sanbi.org/assessment/last-assessment/3181/

		the 1830s by farmers in the Bredasdorp area. Currently (2014), the population estimate within the natural distribution range is 515 mature individuals (using a 75% mature population structure) on formally protected areas (including the Denel Overberg Test Range managed as an ecological unit within De Hoop Nature Reserve). Due to a lack of natural habitat availability within the natural range, the provincial conservation management authority, CapeNature, allows benign introductions of subpopulations outside of the natural range, in areas geographically adjacent to the natural range and possessing broadly similar habitat. Reintroductions into two such formally protected areas have been in place for at least five years with successful reproduction and these have increased the mature population to 664 individuals. Bontebok also exist on ranchlands and other private properties within the natural and benign introduction range. However, there are known incidences of intensive management and/or hybridisation with	bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

		Blesbok within these subpopulations. Preliminary estimates of privately owned subpopulations nationally, suggest that only 33–39% of these subpopulations can be considered sufficiently wild to be included in this assessment. This adds between 118 and 1,272 individuals (by extrapolating this proportion to the private properties with the most or least abundant subpopulations respectively), which potentially increases the mature population size to between 752 and 1,618 individuals. However, the overall numbers of pure Bontebok within this population range and the intensity of management of these subpopulations are currently unknown. Although Bontebok numbers within the benign introduction and extra-limital ranges are increasing, the core population within the natural range has not increased since 2004 (770 individuals in formally protected areas in 2004 compared to 686 individuals in 2014). Protected area expansion possibilities are limited within the natural range, thereby	

		limiting core population growth. Currently, the extent of occurrence within the natural range is estimated at 8,779 km^2 and the current observed area of occupancy is 602 km^2. Including all known Bontebok-containing areas within both the natural and benign introduction ranges yields 1,453 km^2 of observed occupancy. We infer a continuing loss of suitable habitat from ongoing agricultural and urban expansion within the CFR (within the Western Cape, 107 km2 land was converted to agriculture per year between 2006 and 2011, 31% occurred within Critical Biodiversity Areas; and there has been an 8.6% increase, from 1,029 km^2 to 1,118 km2, in urban expansion between 2000 and 2013)[9].	
Gyps coprotheres	EN	The regional population of Cape Vulture *Gyps coprotheres* is classified as Endangered, having satisfied criterion A2: an observed, estimated, inferred or suspected population	**Low** Recorded to previously roam and visit the park. They breed at Potberg which is in close proximity and therefore roam the area in search of food. The impact area is next to existing WTW operations and therefore

[9] Radloff FGT, Birss C, Cowell C, Peinke D, Dalton D, Kotze A, Kerley GIH, Child MF. 2016. A conservation assessment of Damaliscus pygargus pygargus. In Child MF, Roxburgh L, Do Linh San E, Raimondo D, Davies-Mostert HT, editors. The Red List of Mammals of South Africa, Swaziland and Lesotho. South African National Biodiversity Institute and Endangered Wildlife Trust, South Africa.

		size reduction of ≥50% over the last 48 years (three-generation period) where the reduction or its causes may not have ceased and may not be reversible. The Cape Vulture has one of the most limited distributions of any Old World vulture species, being restricted to southern Africa and predominantly South Africa and Lesotho (Mundy et al. 1992). The regional population is divided into three primary 'nodes', one each in the north-east (Limpopo, Mpumalanga, North West and Gauteng provinces), south-east (mainly in Lesotho and the KwaZulu-Natal and Eastern Cape provinces, extending marginally into adjacent parts of Free State Province and Swaziland) and south-west (Western Cape Province) of the region. In the north-eastern node, there are breeding colonies in Limpopo, North West and Gauteng provinces (Benson et al. 1990, Benson 2004, Whittington-Jones et al. 2011), which are characteristically relatively few in number but are large in size, i.e. up to 1 000	will not impact this species negatively.

		pairs (Benson et al. 1990, Mundy et al. 1992). The species apparently no longer breeds in Mpumalanga Province (Herholdt et al. 1997). Relevant to the south-eastern node, in Lesotho the species now breeds only in the highlands (Jilbert 1983, Donnay 1990, Maphisa 1997). In KwaZulu-Natal, breeding occurs mainly along the Drakensberg Escarpment and adjacent parts of the 'Little Berg', although breeding is now largely restricted to the northern parts of this region (Brown and Piper 1988). Away from this area, the only remaining breeding localities in KwaZulu-Natal are a colony at Oribi Flats near Port Shepstone (Piper and Neethling 2002) and a site in the Greytown District that may only support a single remnant pair (SC Krüger, Ezemvelo KwaZulu-Natal Wildlife, unpubl. data). In Eastern Cape Province, the breeding range of the Cape Vulture has contracted to the eastern half of the province, largely within or adjacent to the former Transkei region (Boshoff and Vernon 1980, Boshoff et al. 2009). In contrast	

		to the position in the north-eastern node, the breeding colonies in the south-eastern node are characteristically relatively many in number but are small in size, i.e. typically far fewer than 200 pairs (Mundy et al. 1992). The species no longer breeds in Free State Province and the single possible remnant colony mentioned by Colahan (2004) as present in 1983 is no longer active (DG Allan unpubl. data). The south-western node in Western Cape Province now encompasses only a single, fairly small and highly isolated breeding colony: Potberg , which supported 69 pairs in 2012 (Boshoff and Vernon 1980, Shaw 2004). Outside the region, the species also occurs in Mozambique, Zimbabwe, Botswana and Namibia, and is a vagrant to Angola and Zambia (Mundy et al. 1997, Parker 1999, Bamford et al. 2007). Outside the region, it only breeds in Botswana (Borello and Borello 2002) and Mozambique, although the most recent published account of breeding at the single	

		(and small) colony in the latter country dates to July 2002, when six incubating adults were observed (Monadjem 2003). The Cape Vulture is now extinct as a breeding species in Namibia (Simmons 2002) and does not currently breed at the single locality where they have bred in the past in Zimbabwe (Mundy 1997, Mundy et al. 1997). The most comprehensive estimate of the Cape Vulture's population size is that contained in the unpublished PhD thesis of Piper (1994) who estimated the global population at about 12 000 birds and 4 400 breeding pairs (i.e. 8 800 mature individuals). Of these, about 11 000 birds and 4 050 pairs (8 100 mature individuals) were claimed for the region (South Africa, Lesotho and Swaziland). Piper (2004a, 2004b, 2005), however, presented revised global population estimates, for the years 2000 (in the first instance) and 2003 (in the second and third instances), of 8 000, 10 000 and 8 000 birds, and 3 000+ (in the first two instances) and 3 000 breeding pairs, respectively, but	

		without presenting supporting details. Piper (2004a) suggested that the breeding population had decreased by about 15% between 1980 and 2000, i.e. -0.79% per year, but again without providing supporting details. A 2013 update of the global estimate of the current number of breeding pairs provides very similar, but marginally larger, numbers to those of Piper: 4 700 pairs (9 400 mature individuals) of which 4 400 pairs (8 800 mature individuals) occur in the region (BirdLife South Africa in prep.). The north-eastern node supports c. 56% of the regional breeding pairs, the south-eastern node 42% and the south-western node 2%. The regional population is estimated at 8 800 mature individuals. Confidence in this population estimate is high. Comprehensive, regular, long-term monitoring of the total number of breeding pairs (i.e. mature individuals) at each and every Cape Vulture breeding colony in the region has not been achieved so far and would be logistically challenging.	

		Therefore the most feasible way to estimate the trend in Cape Vulture numbers would be to examine information from the relatively few breeding colonies monitored on a regular basis over an adequate time period (i.e. over three generations or 48 years; see below). Unfortunately, only three Cape Vulture colonies have accurate count information extending this far back in time, i.e. to about the mid-1960's, and all three are small to medium-sized colonies. Potberg (Western Cape) supported 32 pairs in 1965 and 69 in 2012, Aasvoelberg (near Zastron, Free State) had 41 pairs in 1965 but is now extinct as a breeding site, and Wilge River (Mpumalanga) had 12 pairs in 1962 but breeding also no longer occurs there (BirdLife South Africa in prep.). A much larger sample of breeding colonies, 32 in total, was known in the 1960s, but accurate count information from this early time period is not available for these (BirdLife South Africa in prep.). The provinces in which these additional sites	

		are located are as follows (from north to south): Limpopo - 2 (extant), Mpumalanga - 1 (extinct), North West - 2 (one extant), Gauteng - 1 (extant), Free State - 2 (extinct), KwaZulu-Natal - 1 (extinct) and Eastern Cape - 23 (seven extant). Of these 32 localities, only 11 still support breeding pairs today. Taken together, this information from the total of 35 Cape Vulture breeding colonies known in the 1960's, suggests a 66% decrease in the number of colonies between that time period and currently, i.e. over three generations, and may infer a similar reduction in the total number of mature individuals. It should also be noted that Colahan and Esterhuizen (1997) document at least 32 breeding colonies as present in the Free State ‘around 1960', all now extinct. If this information is integrated with that above, the total regional number of known colonies in the 1960's rises to 64 of which 12 are extant (none in the Free State), i.e. an 81% reduction in colonies, and, by inference, the	

		total number of mature individuals. This estimate is heavily biased towards colonies in Free State, where the species has undergone a particularly severe decrease and likely not representative of the entire regional range as a whole. However in the absence of suitable baseline data, it is suspected from the available data that the decrease in the regional population has been greater than 50% over a 48 year period. Confidence in this regional population trend estimate is medium[10].	
Ciconia nigra	VU	Black Stork *Ciconia nigra* occur widely from Western Europe to northern China and Japan, with non-breeding birds migrating annually to East Africa and the Sahel, northern India and eastern China. What makes the southern African population unusual is the fact that they are resident breeders, and are believed to undergo only regional migrations between seasons. Although the Black Stork of southern Africa have a widespread distribution, ranging	**Low** Recorded to previously roam and visit the park. The impact area is next to existing WTW operations and therefore will not impact this species negatively.

[10] https://speciesstatus.sanbi.org/assessment/last-assessment/3068/

		from Zambia to South Africa, the population is fairly sparse, as these birds prefer remote areas and have particular feeding habits. The Black Stork's diet consists mainly of fish, caught in clear streams, estuaries and dams. Unlike Black Stork in Eurasia, which breeds in trees, the southern African population breeds on cliffs in remote mountainous regions. Breeding occurs during winter (May to July) when the birds can capitalise on the abundance of prey available when the water is receding. Although the southern African population is thought to have been isolated from the European population for quite some time, any possible genetic exchange between the two populations is yet to be confirmed[11].	

Evaluation of Site Ecological Importance (SEI) of habitat and SCC

Habitat / Species	**Conservation Importance (CI)**	**Functional Integrity (FI)**	**Receptor Resilience**	**SEI**
Swellendam Silcrete Fynbos(EN)	Very high The condition of the vegetation outside of existing disturbance	Very high The condition of the vegetation outside of existing disturbance footprints is in a good condition.	High The condition of the vegetation outside of existing disturbance	**High.** Only for the non disturbed small area. The rest of the site has a low

[11] https://www.birdlife.org.za/what-we-do/species-conservation/what-we-do/large-terrestrial-birds/black-stork/

	footprints is in a good condition. The Bontebok National Park Management Plan (2013 – 2023) refers to a day visitor facility and picnic area in the concept development plan for development within the timeframes of the plan and is included in the associated map (SANParks 2013). The location is within the low intensity leisure zone. The development proposal can therefore be considered to be aligned to the management plan at a broad scale.	The Bontebok National Park Management Plan (2013 – 2023) refers to a day visitor facility and picnic area in the concept development plan for development within the timeframes of the plan and is included in the associated map (SANParks 2013). The location is within the low intensity leisure zone. The development proposal can therefore be considered to be aligned to the management plan at a broad scale.	footprints is in a good condition. The Bontebok National Park Management Plan (2013 – 2023) refers to a day visitor facility and picnic area in the concept development plan for development within the timeframes of the plan and is included in the associated map (SANParks 2013). The location is within the low intensity leisure zone. The development proposal can therefore be considered to be aligned to the management plan at a broad scale.	sensitivity.

2. APPLICABLE LEGISLATION AND PERMIT REQUIREMENTS

The proposed development within the study site is considered to elicit a requirement for possible compliance with the following legislation applicable to this assessment.

- The National Environmental Management: Biodiversity Act (Act 10 of 2004)

The potential applicability of the abovementioned acts to the subject site is provided below:

The National Environmental Management: Biodiversity Act (Act 10 of 2004)
This Act serves to control the disturbance and land utilisation within certain habitats, as well as the planting and control of certain exotic species. The effective disturbance and removal of species identified above, as well as possible other species (i.e. Threatened or Protected Species (TOPS) species), will require specific permission from the applicable authorities. In addition, the planting and management of exotic plant species on site, if and where required, will be governed by the Alien and Invasive Species (AIS) regulations, which were gazetted in 2014. These regulations compel landowners to manage exotic weeds on land under their jurisdiction and control. No animal species of conservation concern that need any permits for relocation during search and rescue operation sis required.

3. DESCRIPTION OF PROJECT ASPECTS RELEVANT TO ANIMAL SPECIES FEATURES

The proposed swimming pool, recreational facilities and associated infrastructure at Die Stroom Picnic Site in the Bontebok National Park, Swellendam will include the following:

- Pool Backwash tank slab = 15m^2 for 5000liter JoJo
- Septic tank and Pump chamber = 40m^2
- Pool pump room = 40m^2
- Ablutions/Shower/Change Area = 105m^2
- Swimming Pool = 315m^2
- Terrace less Pool = 1115m^2
- Fence = 210m long and 1.5m high
- Physically Disabled Ramp =80m^2
- Parking = 240m²
- Underground electrical cable = 110m long (Area measured in sewer trench calculation)
- Sewer line /Soak-away = 260m long (Area = 390m^2)
- Pool back-wash and soak-away = 260m long (Area measured in sewer trench calculation)
- Water supply line = 25m long (Area 25m^2) (Balance of area measured in sewer trench calculation)
- Soak-away = 150m^2 (15m x 10m)
- 2 x Biofilters = 64m^2 (4m x 8m each)

Construction footprint = 0.44ha

Proposed development will lead to the permanent clearance of ±0.2ha of indigenous vegetation.

The final development footprint for the developments as described above = ± 0.28Ha

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT.

4.1. Locality

Die Stroom picnic is an historical picnic site next to the Breerivier that's been used

by the local community for a number of years. As per the agreement between the Municipality and SANParks, the local community would still have access to Die Stroom for recreational purposes. Subsequent to the proclamation of the Consumer Protection Act (CPA), SANParks Risk Management deemed the Breede River to be unsafe for various reasons, including water quality, clarity, depth and hazardous rubble found on the river bed, the lack of lifeguards on duty and possible attacks by Zambezi (bull) sharks, which have been documented as dwellers of the Breede River. SANParks has therefore cited “swim at own risk” for the afore-mentioned reasons at the relevant picnic site. As the Breede River is traditionally utilised by the local communities for swimming, SANParks would like to provide visitors with a safe swimming environment. The proposed development with offer day visitors an enclosed swimming pool with dedicated ablutions including male and female shower facilities and toilets. The proposed development will also ensure privacy to Die Stroom Function Venue charted to visitors at an extra cost to visitors.

As far as possible the proposed development has been placed on already cleared and impacted areas and along existing roads and pipeline routes to minimise impacts on the natural environment and indigenous vegetation. The proposed development is also to be located behind the existing picnic area, outside of the 1:100 year floodline area of the Breerivier.

Figure 2: Locality Map

4.2. Topography

The topography of the overall site slopes from northwest to southeast towards the Breerivier, with an elevation of between 67m to 55m.

4.3. Geology and Soils

Soil – Glenrosa and/or Mispah forms (other soils may occur), lime rare or absent in upland soils but generally present in low-lying soils
Geology – Shale, siltstone and subordinate sandstone of the Bokkeveld and Witteberg Groups, occasionally covered by various surficial deposits
Source: Soils & Geology (ENPAT – Cape Farm Mapper 20/08/2022)

4.4. Description of the Animal (Fauna) Species

Fauna occurring on site include assemblages within the ecosystem and these could include mammals, birds, reptiles, amphibians, fish and invertebrates.

4.4.1. Identify The SCC Which Were Found, Observed Or Are Likely To Occur Within The Study Area

The proposed development, although it can possibly impact on animal species, will not result in the loss or significant impacts on the population size of any species and change the conservation status of these species nor lead to its extension. This is because the impacted area and habitat loss is very small in terms of the total available habitat for these species.

4.4.2. Provide Evidence (Photographs Or Sound Recordings) Of Each SCC Found Or Observed Within The Study Area

There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

4.4.3. Identify The Distribution, Location, Viability And Provide A Detailed Description Of Population Size Of The SCC

The Bontebok is a subspecies endemic to the East Coast Renosterveld bioregion within the Cape Floristic Region (CFR) of the Western Cape. It is an important South African conservation success story where a subspecies has been brought back from the brink of extinction in the 1830s by farmers in the Bredasdorp area. Currently (2014), the population estimate within the natural distribution range is 515 mature individuals (using a 75% mature population structure) on formally protected areas (including the Denel Overberg Test Range managed as an ecological unit within De Hoop Nature Reserve). Due to a lack of natural habitat availability within the natural range, the provincial conservation management authority, CapeNature, allows benign introductions of subpopulations outside of the natural range, in areas geographically adjacent to the natural range and possessing broadly similar habitat. Reintroductions into two such formally protected areas have been in place for at

least five years with successful reproduction and these have increased the mature population to 664 individuals. Bontebok also exist on ranchlands and other private properties within the natural and benign introduction range. However, there are known incidences of intensive management and/or hybridisation with Blesbok within these subpopulations. Preliminary estimates of privately owned subpopulations nationally, suggest that only 33–39% of these subpopulations can be considered sufficiently wild to be included in this assessment. This adds between 118 and 1,272 individuals (by extrapolating this proportion to the private properties with the most or least abundant subpopulations respectively), which potentially increases the mature population size to between 752 and 1,618 individuals. However, the overall numbers of pure Bontebok within this population range and the intensity of management of these subpopulations are currently unknown. Although Bontebok numbers within the benign introduction and extra-limital ranges are increasing, the core population within the natural range has not increased since 2004 (770 individuals in formally protected areas in 2004 compared to 686 individuals in 2014). Protected area expansion possibilities are limited within the natural range, thereby limiting core population growth. Currently, the extent of occurrence within the natural range is estimated at 8,779 km2 and the current observed area of occupancy is 602 km^2. Including all known Bontebok-containing areas within both the natural and benign introduction ranges yields 1,453 km^2 of observed occupancy. We infer a continuing loss of suitable habitat from ongoing agricultural and urban expansion within the CFR (within the Western Cape, 107 km^2 land was converted to agriculture per year between 2006 and 2011, 31% occurred within Critical Biodiversity Areas; and there has been an 8.6% increase, from 1,029 km^2 to 1,118 km^2, in urban expansion between 2000 and 2013).

There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

4.4.4. Identify The Nature And The Extent Of The Potential Impact Of The Proposed Development On The Population Of The SCC

There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

4.4.5. Determine The Importance Of The Conservation Of The Population Of The SCC Identified Within The Study Area

To appropriately distribute grazing pressure in space and time, it was suggested that the bontebok population be reduced from a maximum stocking rate of 200 animals to fluctuating between 130 and 170 individuals (Kraaij & Novellie 2010). The stocking rate of bontebok should continually be re-evaluated in view of vegetation condition. Vegetation monitoring should thus be done to determine if changes in vegetation cover and composition occur as a result of the altered management (fire and stocking) regime (Kraaij & Novellie 2010; Novellie & Kraaij 2010). The swimming pool and parking area will take up a small area of their habitat and will not affect the stocking rate numbers in the park. Another aspect that should be considered in monitoring the effects of herbivory is the dynamics of bontebok grazing lawns (Novellie & Kraaij 2010). Territorial males prefer those vegetation types that have small patches of either grazing lawns or naturally occurring *Cynodon dactylon* lawns regardless of the nature of the surrounding vegetation. Hence the reason why they are observed at the picnic area is because these areas consist of grazing lawn habitat. The proposed development areas do not have any grazing lawn areas.

4.4.6. List of Species, and/or other relevant databases

This survey did not identify the study area as a regionally important specific site from an animal species point of view, as it affect any priority animal species corridors, habitat or home ranges. The park is responsible for the management of bontebok and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

4.4.7. Determine The Potential Impact Of The Proposed Development On The Habitat Of The SCC Located Within The Study Area

The park is responsible for the management of bontebok and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

4.4.8. 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

To appropriately distribute grazing pressure in space and time, it was suggested that the bontebok population be reduced from a maximum stocking rate of 200 animals to fluctuating between 130 and 170 individuals (Kraaij & Novellie 2010). The stocking rate of bontebok should continually be re-evaluated in view of vegetation condition. Vegetation monitoring should thus be done to determine if changes in vegetation cover and composition occur as a result of the altered management (fire and stocking) regime (Kraaij & Novellie 2010; Novellie & Kraaij 2010). The swimming pool and parking area will take up a small area of their habitat and will not affect the stocking rate numbers in the park.

4.4.9. 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

Territorial males prefer those vegetation types that have small patches of either grazing lawns or naturally occurring *Cynodon dactylon* lawns regardless of the nature of the surrounding vegetation. Hence the reason why they are observed at the picnic area is because these areas consist of grazing lawn habitat. The proposed development areas do not have any grazing lawn areas.

4.4.10. Identify Any Potential Impact Of Ecological Connectivity In Relation To The Broader Landscape

This survey did not identify the study area as a regionally important specific site from an animal species point of view, as it affect any priority animal species corridors, habitat or home ranges. The park is responsible for the management of bontebok and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

4.4.11. Discuss The Presence Or Likelihood Of Additional SCC Including Threatened Species Not Identified By The Screening Tool

Territorial males prefer those vegetation types that have small patches of either grazing lawns or naturally occurring *Cynodon dactylon* lawns regardless of the nature of the surrounding vegetation. Hence the reason why they are observed at the picnic area is because these areas consist of grazing lawn habitat. The proposed development areas do not have any grazing lawn areas.

4.4.12. Identify Any Alternative Development Footprints Within The Preferred Site Which Would Be Of "Low" Or "Medium" Sensitivity

High Ecological Important Areas and sensitivity terrestrial biodiversity areas were identified on site. The impact on animals' species and their Ecological Important areas is however low.

5. IMPACT ASSESSMENT

5.1. Assessment & Significance Criteria

The assessment criteria used in the assessment are drawn from the protocol for the specialist assessment and minimum report content requirements for environmental impacts (published in Government Notice **no. 1150 in** Government Gazette **43855** 30 October 2020) were used.

5.2. Assessment of Potential Impacts

The impacts identified are assessed below, before and after mitigation as well as during construction.

The impact assessment which follows is based on the site sensitivity and any deviations from the site sensitivity map as provided may invalidate the results of the assessment.

5.3. Risk Assessment Criteria

Step 1: Determine the **PROBABILITY** of the impact by calculating the average between the Frequency of the Aspect, the Availability of a pathway to the receptor and the availability of the receptor (thus: Sum of the three column scores below ÷ 3)

Frequency of Aspect / Unwanted Event	Score	Availability of pathway from the source to the receptor	Score	Availability of receptor	Score
Never known to have happened, but may happen	1	A pathway to allow for the impact to occur is never available	1	The receptor is never available	1
Known to happen in industry	2	A pathway to allow for the impact to occur is almost never available	2	The receptor is almost never available	2
< once a year	3	A pathway to allow for the impact to occur is sometimes available	3	The receptor is sometimes available	3
Once per year to up to once per month	4	A pathway to allow for the impact to occur is almost always available	4	The receptor is almost always available	4
Once a month - Continuous	5	A pathway to allow for the impact to occur is always available	5	The receptor is always available	5

Step 2: Determine the **MAGNITUDE** of the impact by calculating the average of the factors below (thus: Sum of all six column ratings below ÷ 6)

Source								Receptor			
Duration of impact	**Score**	**Extent**	**Score**	**Volume / Quantity / Intensity**	**Score**	**Toxicity / Destruction Effect**	**Score**	**Reversibility**	**Score**	**Sensitivity of environmental component**	**Score**
Lasting days to a month	1	Effect limited to the site. (metres);	1	Very small quantities / volumes / intensity (e.g. < 50L or < 1Ha)	1	Nontoxic (e.g. water) / Very low potential to create damage or destruction to the environment	1	Bio-physical and/or social functions and/or processes will remain unaltered.	1	Current environmental component(s) are largely disturbed from the natural state. Receptor of low significance / sensitivity	1
Lasting 1 month to 1 year	2	Effect limited to the activity and its immediate surroundings. (tens of metres)	2	Small quantities / volumes / intensity (e.g. 50L to 210L or 1Ha to 5Ha)	2	Slightly toxic / Harmful (e.g. diluted brine) / Low potential to create damage or destruction to the environment	2	Bio-physical and/or social functions and/or processes might be negligibly altered or enhanced / Still reversible	2	Current environmental component(s) are moderately disturbed from the natural state. No environmentally sensitive components.	2
Lasting 1 – 5 years	3	Impacts on extended area beyond site boundary (hundreds of metres)	3	Moderate quantities / volumes / intensity (e.g. > 210 L < 5000L or 5 – 8Ha)	3	Moderately toxic (e.g. slimes) Potential to create damage or destruction to the environment	3	Bio-physical and/or social functions and/or processes might be notably altered or enhanced / Partially reversible	3	Current environmental component(s) are a mix of disturbed and undisturbed areas. Area with some environmental sensitivity (scarce / valuable environment etc.).	3
Lasting 5 years to Life of Organisation	4	Impact on local scale / adjacent sites (km's)	4	Very large quantities / volumes / intensity (e.g. 5000 L –	4	Toxic (e.g. diesel & Sodium Hydroxide)	4	Bio-physical and/or social functions and/or processes might be considera	4	Current environmental component(s) are in a natural state. Environmentally sensitive environment / receptor (endangered	4

Source								Receptor			
Duration of impact	**Score**	**Extent**	**Score**	**Volume / Quantity / Intensity**	**Score**	**Toxicity / Destruction Effect**	**Score**	**Reversibility**	**Score**	**Sensitivity of environmental component**	**Score**
				10 000 L or 8Ha–12Ha)				bly altered or enhanced / potentially irreversible		species / habitats etc.).	
Beyond life of Organization / Permanent impacts	5	Extends widely (nationally or globally)	5	Very large quantities / volumes / intensity (e.g. > 10 000 L or > 12Ha)	5	Highly toxic (e.g. arsenic or TCE)	5	Bio-physical and/or social functions and/or processes might be severely/substantially altered or enhanced / Irreversible	5	Current environmental component(s) are in a pristine natural state. Highly Sensitive area (endangered species, wetlands, protected habitats etc.)	5

Step 3: Determine the **SEVERITY** of the impact by plotting the averages that were obtained above for Probability and Magnitude in the table below.

ENVIRONMENTAL IMPACT RATING / PRIORITY					
	MAGNITUDE				
PROBABILITY	**1 Minor**	**2 Low**	**3 Medium**	**4 High**	**5 Major**
5 Almost Certain	Low	Medium	High	High	High
4 Likely	Low	Medium	High	High	High
3 Possible	Low	Medium	Medium	High	High
2 Unlikely	Low	Low	Medium	Medium	High
1 Rare	Low	Low	Low	Medium	Medium

ANIMAL SPECIES IMPACTS ASSESSMENT

(a) Impacts that may result from the planning, design and **construction phases** (briefly describe and compare the impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that may occur as a result of the planning, design and construction phases.

Nature of potential impact:
Impacts of construction activities on indigenous fauna and avifauna habitat associated with Endangered – Swellendam Silcrete Fynbos as part of a mapped Protected Area

Discussion:
The habitat was assessed to have a high sensitivity due to the presence of endangered vegetation type and it is located in the Bontebok National Park. The Bontebok National Park Management Plan (2013 – 2023) refers to a day visitor facility and picnic area in the concept development plan for development within the timeframes of the plan and is included in the associated map (SANParks 2013). The location is within the low intensity leisure zone. The development proposal can therefore be considered to be aligned to the management plan at a broad scale.

Bontebok *Damaliscus pygargus pygargus* was assessed having a high sensitivity rating. There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

African Marsh Harrier *Circus ranivorus* and Black Harrier *Circus ranivorus* was assessed having a medium sensitivity rating. These species was not recorded on site and only likely to roam the area. *Rhabdomys pumilio* (although not recorded its presence is know from historic visits) is expected to occur in the project area suggesting that it could use the project area for foraging. Primary nesting habitat is not present on the impacted areas. They will simply move into the bigger surrounding area during construction. The current picnic site and activities already impacted on them.

The other species mapped in the screen tool report or known to be in the area was assessed to have a low sensitivity.

The development of the site would have a **Low Negative** impact on animal species. The proposed development will have relatively little animal species impacts provided that appropriate management measures included in the EMPr and adhered to.

Cumulative impacts:
During construction a total area of ±0.44ha will be impacted upon/cleared however only ±0.2ha of indigenous vegetation will be permanently cleared.

Mitigation:

- Clearance of indigenous vegetation must be kept to a minimum clearly demarcating the proposed development area before construction commencement, maintaining the demarcation throughout the construction phase and only clearing the area required for the development.
- All unused construction materials must be removed from site immediately after construction completion.
- No waste pollution may occur due to the construction activities and all waste must be contained and disposed of at the municipal landfill site on a daily basis.
- All landscaping of undeveloped and areas disturbed during construction must be done with indigenous vegetation.
- Construction activities must be completed as quickly as possible to limit disturbance caused to animal and bird life as far as possible

Criteria	Layout Alternative 1	No-Go Alternative

	Without Mitigation	With Mitigation			Without Mitigation	With Mitigation
Extent	1	1			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	5	5				
Magnitude	4	1				
Probability	5	4				
Significance	50 - Medium	28 – Low				
Status	Medium Negative Significance without Mitigation	Low Negative Significance with Mitigation				
Reversibility	100% Reversible					
Irreplaceable loss of resources	2 – Partly, some loss of indigenous vegetation will occur but will be limited.					
Can impacts be mitigated?	2 – Partly, some loss of indigenous vegetation will occur but will be limited.					

Nature of potential impact:
Impacts of construction activities on indigenous fauna and avifauna Species of Conservation Concern

Discussion:
No fauna or avifauna species of conservation concern was recorded within the proposed development site during the time of the surveys however fauna and avifauna species of conservation concern are present within the national park i.e. Bontebok. Evidence of mole heaps, termites, mice and weasels were also observed throughout the site. The proposed development areas are however also located on and adjacent to the existing Die Stroom picnic site and the ongoing human activities within this area makes it highly unlikely that the particular proposed development site is being used as preferred breeding or nesting areas for the indigenous fauna and avifauna species and these areas will most likely only be occasionally visited by fauna and avifauna species when looking for food. It is therefore also highly unlikely that any fauna or avifauna species of conservation concern or their associated preferred habitat and breeding areas will be significantly impacted by the proposed development.

There is also a probability that at least some animal and/or bird SCCs known to occur within the general area may frequent the site and surrounds. Apart from the Bontebok antelope these SCC are also likely to include Denham's Bustard (*Neotis denhami*) and Black Harrier (*Circus maurus*), however the construction and operational phase of the proposed developments are not expected to impact on the presence and habits of these species any more than the current picnic site activities are impacting upon them.

Bontebok *Damaliscus pygargus pygargus* was assessed having a high sensitivity rating. There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

African Marsh Harrier *Circus ranivorus* and Black Harrier *Circus ranivorus* was assessed having a medium sensitivity rating. These species was not recorded on site and only likely to roam the area. *Rhabdomys pumilio* (although not recorded its presence is know from historic visits) is expected to occur in the project area suggesting that it could use the project area for foraging. Primary nesting habitat is not present on the impacted areas. They will simply move into the bigger surrounding area during construction. The current picnic site and activities already impacted on them.

The other species mapped in the screen tool report or known to be in the area was assessed to have a low

sensitivity.

The development of the site would have a **Low Negative** impact on animal species. The proposed development will have relatively little animal species impacts provided that appropriate management measures included in the EMPr and adhered to.

Cumulative impacts:
Potential cumulative impacts of the construction activities may be loss or disturbance to fauna and avifauna species of conservation concern

Mitigation:

- Clearance of indigenous vegetation must be kept to a minimum clearly demarcating the proposed development area before construction commencement, maintaining the demarcation throughout the construction phase and only clearing the area required for the development.
- All unused construction materials must be removed from site immediately after construction completion.
- No waste pollution may occur due to the construction activities and all waste must be contained and disposed of at the municipal landfill site on a daily basis.
- All landscaping of undeveloped and areas disturbed during construction must be done with indigenous vegetation. .
- Construction activities must be completed as quickly as possible to limit disturbance caused to animal and bird life as far as possible
- No trapping, hunting or any injury to animal or birdlife may occur during construction activities.
- Search and rescue operations must be conducted before site clearance activities commences and should any local animal or birdlife be found within the construction area they must be carefully moved to the adjacent natural areas by park management not to be impacted upon.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	2	2			Not Applicable (No construction activities to take place during the No-Go Alternative)	
Duration	1	1				
Magnitude	6	6				
Probability	3	3				
Significance	27 – Low	27 – Low				
Status	Low Negative Significance without Mitigation	Low Negative Significance with Mitigation				
Reversibility	100% Reversible					
Irreplaceable loss of resources	2 – Partly, some disturbance will occur but will be limited.					
Can impacts be mitigated?	2 – Partly, some disturbance will occur but will be limited.					

(b) Impacts that may result from the **operational phase** (briefly describe and compare impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the operational phase.

Nature of potential impact:
Impacts of operational activities on the indigenous animal and bird life including species of conservation concern.

Discussion:
Ongoing human activities on the site and surrounds due to it being used as a picnic site may lead disturbances to animal and birdlife if not properly managed. However, the site has already been managed by park management for a number of years and will continue to be managed as such once additional developments have been completed.

There is also a probability that at least some animal and/or bird SCCs known to occur within the general area may frequent the site and surrounds. Apart from the Bontebok antelope these SCC are also likely to include Denham's Bustard (*Neotis denhami*) and Black Harrier (*Circus maurus*), however the construction and operational phase of the proposed developments are not expected to impact on the presence and habits of these species any more than the current picnic site activities are impacting upon them.

Bontebok *Damaliscus pygargus pygargus* was assessed having a high sensitivity rating. There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

African Marsh Harrier *Circus ranivorus* and Black Harrier *Circus ranivorus* was assessed having a medium sensitivity rating. These species was not recorded on site and only likely to roam the area. *Rhabdomys pumilio* (although not recorded its presence is know from historic visits) is expected to occur in the project area suggesting that it could use the project area for foraging. Primary nesting habitat is not present on the impacted areas. They will simply move into the bigger surrounding area during construction. The current picnic site and activities already impacted on them.

Cumulative impacts:
Cumulative impacts of the operational activities on animal and bird life will be disturbances caused to local animal and bird life due to ongoing human activities such as recreational use of the swimming pool and facilities provided.

Mitigation:

- No trapping, hunting or any injury to animal or birdlife may occur during operational activities. Should any local animal or birdlife be found within the fenced swimming pool area during operational activities they must either be left undisturbed or carefully be moved to the adjacent natural areas by park management not to be impacted upon.
- The discharge of stormwater and management of effluent must not lead to waste pollution or erosion of surrounding indigenous vegetation areas.
- Ongoing monitoring of erosion within and around the development site and should any signs of erosion be detected immediate rectification and further prevention measures must be put in place under the guidance of a qualified ecological specialist so as to prevent any additional cumulative impacts on the environment.
- The impacted site must be monitored for alien vegetation encroachment and should alien vegetation encroach on the impacted site it must be removed and monitored in accordance with the parks alien vegetation management plan.
- All infrastructure and developments must be maintained in a good working condition not leading to any environmental degradation.
- Good waste management practices must be implemented not allowing any waste to accumulate or be disposed of in surrounding natural areas or landscaped indigenous vegetation areas.
- No high intensity lights may be left on during the night that shines outwards unto the adjacent indigenous vegetation areas as this will lead to light pollution impacting on especially nocturnal animal and bird species.
- Undeveloped and landscaped indigenous vegetation areas on the property must be maintained in such a manner that the use of the facilities at Die Stroom picnic site does not lead to destruction of any additional indigenous vegetation. To achieve this the park must maintain the swimming pool fencing, remove any alien vegetation on the which may encroach on natural areas, make sure that planted indigenous grass does not encroach on adjacent undeveloped and landscaped indigenous vegetation areas and place sign boards conspicuously along the edge of the undeveloped areas indicating that indigenous vegetation may not be picked/destroyed and is to be conserved at all times.

Criteria	Layout Alternative 1 Without Mitigation	With Mitigation			No-Go Alternative Without Mitigation	With Mitigation
Extent	2	1			Not Applicable (No	

Duration	5	5			construction activities to take place during the No-Go Alternative)
Magnitude	6	2			
Probability	3	2			
Significance	39 – Medium	16 – Low			
Status	Medium Negative Significance without Mitigation	Low Negative Significance with Mitigation			
Reversibility	100% Reversible				
Irreplaceable loss of resources	2 – Partly, some loss of indigenous vegetation will occur but will be limited.				
Can impacts be mitigated?	2 – Partly, some loss of indigenous vegetation will occur but will be limited.				

(c) Impacts that may result from the **No-Development Option**

If the proposed Die Stroom picnic site swimming pool, recreational facilities and infrastructure upgrades are not to proceed it is not expected that any significant detrimental impacts will occur in terms of the terrestrial features of the site and surrounds and processes will continue as is. However, the aim of the proposed swimming pool and picnic area upgrade next to the Breerivier is to enhance the experience of the local community and visitors use to visiting the site and provide safer conditions for swimming etc. It is also proposed to provide much needed additional public ablution facilities, additional parking areas and formal picnic areas to prevent the public from impacting on the surrounding natural vegetation areas like parking within natural areas because there are currently not enough formal facilities provided at the popular picnic spot, hence potentially decreasing terrestrial biodiversity impacts due to uncontrolled human activities in the long term.

Cumulative Impacts

Cumulative impacts arise from the combined presence of several similar developments within an area which affect animal species. There are other developments that also represents a source of disturbance and habitat loss, which when combined with the proposed development would result in some cumulative impact. However, when taken in context of the broader landscape, the cumulative impacts are not likely to be highly significant given the animal species known to occur in the broader area.

6. CONCLUSION AND RECOMMENDATIONS

The sampling and analysis of the site during the optimum season and year, provides suitable data and results to present an informed decision on the local animal species. The lists of species for the site are based on those observed at the site, during the survey and previously, as well as those likely to occur in the area based on their distribution and habitat preferences. This represents a sufficiently conservative and cautious approach. During the site visit, the different biodiversity features, habitat,

vegetation and landscape units present were identified and recorded in the field. Walk-through-surveys were conducted of representative habitats and areas of interest and species observed were recorded. Searches for listed species of conservation concern at the site were conducted.

The habitat was assessed to have a high sensitivity due to the presence of endangered vegetation type and it is located in the Bontebok National Park. The Bontebok National Park Management Plan (2013 – 2023) refers to a day visitor facility and picnic area in the concept development plan for development within the timeframes of the plan and is included in the associated map (SANParks 2013). The location is within the low intensity leisure zone. The development proposal can therefore be considered to be aligned to the management plan at a broad scale.

Bontebok *Damaliscus pygargus pygargus* was assessed having a high sensitivity rating. There are recent records of bontebok within the Die Stroom picnic site. Based on the available information, the proposed footprint is within confirmed habitat for an SCC and the sensitivity therefore be rated as high in accordance with the protocols. Since the bontebok is known to be at the stroom area, it is proof that they area adapted and that the human activities do not impact on them. Furthermore, the park is responsible for the management of this species and the current management actions are sufficient and appropriate which is evidence of them being in the area. The swimming pool and parking area will take up a small area of their habitat and they will not be affected.

African Marsh Harrier *Circus ranivorus* and Black Harrier *Circus ranivorus* was assessed having a medium sensitivity rating. These species was not recorded on site and only likely to roam the area. *Rhabdomys pumilio* (although not recorded its presence is know from historic visits) is expected to occur in the project area suggesting that it could use the project area for foraging. Primary nesting habitat is not present on the impacted areas. They will simply move into the bigger surrounding area during construction. The current picnic site and activities already impacted on them.

The other species mapped in the screen tool report or known to be in the area was assessed to have a low sensitivity.

The development of the site would have a **Low Negative** impact on animal species. The proposed development will have relatively little animal species impacts provided that appropriate management measures included in the EMPr and adhered to.

Mitigation measures proposed:

- Clearance of indigenous vegetation must be kept to a minimum clearly demarcating the proposed development area before construction commencement, maintaining the demarcation throughout the construction phase and only clearing the area required for the development.
- All unused construction materials must be removed from site immediately after construction completion.
- No waste pollution may occur due to the construction activities and all waste must be contained and disposed of at the municipal landfill site on a daily basis.

- All landscaping of undeveloped and areas disturbed during construction must be done with indigenous vegetation.
- Construction activities must be completed as quickly as possible to limit disturbance caused to animal and bird life as far as possible.
- No trapping, hunting or any injury to animal or birdlife may occur during construction activities.
- Search and rescue operations must be conducted before site clearance activities commences and should any local animal or birdlife be found within the construction area they must be carefully moved to the adjacent natural areas by park management not to be impacted upon.
- No trapping, hunting or any injury to animal or birdlife may occur during operational activities. Should any local animal or birdlife be found within the fenced swimming pool area during operational activities they must either be left undisturbed or carefully be moved to the adjacent natural areas by park management not to be impacted upon.
- The discharge of stormwater and management of effluent must not lead to waste pollution or erosion of surrounding indigenous vegetation areas.
- Ongoing monitoring of erosion within and around the development site and should any signs of erosion be detected immediate rectification and further prevention measures must be put in place under the guidance of a qualified ecological specialist so as to prevent any additional cumulative impacts on the environment.
- The impacted site must be monitored for alien vegetation encroachment and should alien vegetation encroach on the impacted site it must be removed and monitored in accordance with the parks alien vegetation management plan.
- All infrastructure and developments must be maintained in a good working condition not leading to any environmental degradation.
- Good waste management practices must be implemented not allowing any waste to accumulate or be disposed of in surrounding natural areas or landscaped indigenous vegetation areas.
- No high intensity lights may be left on during the night that shines outwards unto the adjacent indigenous vegetation areas as this will lead to light pollution impacting on especially nocturnal animal and bird species.
- Undeveloped and landscaped indigenous vegetation areas on the property must be maintained in such a manner that the use of the facilities at Die Stroom picnic site does not lead to destruction of any additional indigenous vegetation. To achieve this the park must maintain the swimming pool fencing, remove any alien vegetation on the which may encroach on natural areas, make sure that planted indigenous grass does not encroach on adjacent undeveloped and landscaped indigenous vegetation areas and place sign boards conspicuously along the edge of the undeveloped areas indicating that indigenous vegetation may not be picked/destroyed and is to be conserved at all times.

No additional survey or further assessment is in the authors view recommended.

Provided that activities are restricted to the site and the mitigation measures to reduce

the impacts of the activities are implemented, then the activities are not likely to result in long-term degradation of the receiving environment or significant net loss of SCC animal species.

7. REFERENCES

Alexander G and Marais J. 2007. A Guide to The Reptiles of Southern Africa.

Barnes K.N. 2000. The Eskom Red Data book of birds of South Africa, Lesotho and Swaziland. BirdLife South Africa, Johannesburg.

Branch W.R. (ed.) 1988. South African Red Data book – reptiles and amphibians. SA National Scientific programmes Report No. 151. CSIR, Pretoria.

BirdLife International (2012). Endemic Bird Area factsheet. Downloaded from http://www.birdlife.org .

Brownlie, S. 2005. Guideline for Involving Biodiversity Specialists in EIA Processes: Edition 1. CSIR Report No ENV-S-C 2005 053 C. Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town. 63 pp.

Department of Environmental Affairs and Tourism, 2007. National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): Publication of lists of Critically Endangered, Endangered, Vulnerable and Protected Species. Government Gazette, Republic of South Africa.

Department of Water Affairs and Forestry (DWAF). 2008. Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas.

Driver, Nel, Snaddon, Murray, Roux, Hill (2011). Implementation Manual for Freshwater Ecosystem Priority Areas. Draft Report for the Water Research Commission.

Driver A., Cowling R.M., & Maze K. 2003. Planning for living landscapes: perspectives and lessons from South Africa. Center for Applied Biodiversity Science at Conservation International, Washington DC; Botanical Society of South Africa, Cape Town.

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

Estes, R. (1992). “The behaviour guide to African mammals: including hoofed mammals, carnivores, primates”. University of California Press.

IUCN Red List www.iucnredlist.org.

Friedmann Y. & Daly B. (eds) 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.

Hockey PAR., Dean WRJ & Ryan PG. 2006. Roberts Birds of Southern Africa. VIIth Edition.

Miller J.R. 2005. Biodiversity conservation and the extinction of experience. Trends in Ecology and Evolution. 20(8): 430-434.

Minter L.R., Burger M., Harrison J.A., Braack H.H., Bishop P.J. and Kloepfer D. 2004. Atlas and Red Data book of the frogs of South Africa, Lesotho and Swaziland. Smithsonian Institution, Washington D.C.

Mucina, L. and M. Rutherford. *Eds.* 2018 update. Vegetation map of South Africa, Lesotho, and Swaziland. *Strelitzia 19*. South African National Biodiversity Institute, Pretoria.

Picker M, Griffiths c and Weaving A. 2004. Field Guide to Insects of Southern Africa. Struik Publishers, Cape Town.

Smithers RHN. 1983. Land Mammals of Southern Africa. A field Guide

APPENDIX A
SPECIALIST CV

CURRICULUM VITAE – NICOLAAS WILLEM HANEKOM

Profession: Environmental Scientist and Environmental Assessment Practitioner

Date of Birth: 01/02/1967

BIOGRAPHICAL SKETCH

Nicolaas Hanekom is a qualified Environmental Assessment Practitioner (”EAP”) who holds a Masters Technologiae, Nature Conservation (“Vegetation Ecology and

Biodiversity Assessment") degree from the Cape Peninsula University of Technology. Nicolaas is certified in terms of section 20(3)(a) of the Natural Scientific Professions Act, 2003 (Act 27 of 2003), as a Professional Natural Scientist Ecological Science (Pri.Sci.Nat); Aquatic Science & Conservation Science (Cand.Sci.Nat), Registration Number: 004415. He further qualified in Environmental Management Systems ISO 14001:2004, at the Centre for Environmental Management, North-West University, as well as Environmental Management Systems ISO 14001:2004 Audit: Internal Auditors Course to ISO 19011:2003 level, from the Centre for Environmental Management, North-West University qualifying him to execute audits to ISO/SANS environmental compliance and EMS standards.

He has also completed the suite of Greener Governance courses with certificates in;

- An Overview of Environmental Management at the Local Government Level, Centre for Environmental Management, North-West University;
- Greener Governance for Local Authorities, Centre for Environmental Management, North-West University;
- Tools for Integrated Environmental Management and Governance, Centre for Environmental Management, North-West University.

He further attended and obtained a certificate on Integrated Protected Area Planning at the Centre for Environmental Development, University of Kwa Zulu Natal and a certificate in Project Management (Theory and Practical), through CS Holdings. Nicolaas has lectured in two subjects at the Cape Peninsula University of Technology. He has 26 years of environmental planning experience, working for Free State and Western Cape departments of environmental affairs, where he reviewed and commented on development (EIA) applications, in the West Coast Region.

He has, as practising EAP been responsible for many environmental impact assessments and EIA applications, waste license and atmospheric emission license applications.

He has also been involved in the implementation of several environmental management systems. He has engaged successfully with various clients as set out below.

Areas of specialisation:	• Ecosystem (terrestrial and aquatic) monitoring and assessments • Design of monitoring programmes for ecosystems (terrestrial and aquatic) • Environmental Impact Assessments • River classification and environmental water requirements • Wetlands Delineation • River and Wetlands management • Water Use Authorization Applications • Water quality management

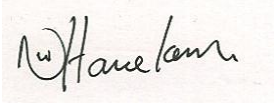
	• River Health Assessments
Countries of Work Experience:	South Africa (Northern Cape, Western Cape, Free State, Mpumalanga, Gauteng)
Employment Record	• Student at Bontebok National Park (1992) • Assistant Reserve Manager at Gariep Dam Nature Reserve, Free State (1993 - 1998) • Reserve Manager, Conservation Services Manager for Western Cape Nature Conservation Board (1998 - 2006) • External Lecturer at Cape Peninsula University of Technology (2003 - 2005) • Director: Environmental Management at Cape Lowlands Environmental Services (2006 – 2010) • Director, Environmental Management and lead Environmental Impact Assessment Practitioner at Eco Impact (Pty) Ltd (2010 – to August 2019) • Director, Environmental Management and lead Environmental Impact Assessment Practitioner at Enviro-EAP (Pty) Ltd (September 2019 – to date)
Professional membership, accreditations and courses	• South African Council for Natural Scientists Professions Pri.Sci.Nat (Ecological Science) • Riparian vegetation identification and health assessment. Internal Western Cape Nature Conservation short course presented by Dr C Boucher (Stellenbosch University) in 2000. • SASS5 Aquatic Biomonitoring Training Course. 2 to 5 September 2013. Ground Truth Water and Environmental Engineering consultancy in partnership with the Department of Water Affairs. • Workshop on “Section 21(c) and (i) Water Use Training: Understanding Watercourses and Managing Impacts to their Characteristics”. 10 May 2017. Presented by Dr Wietsche Roets of the Department of Water and Sanitation (Sub-Directorate: Instream Water Use).
Summary of experience	1992: South African National Parks. Student at Bontebok National Park with management and monitoring actions related to the Breede River. 1993 -1998: Free State Nature Conservation. Ecological management and monitoring actions related to the Gariep Dam, Orange and Caledon Rivers. 1998 -2006: CapeNature. Ecological management and monitoring actions related to the Berg River Estuary, Verlorenvlei, Lamberts bay’s Jackalsvlei, Wadrift Soutpanne, Oliphant’s River mouth, Rocherpan Nature Reserve, etc. Review and assessment of EIA applications, inclusive of Freshwater ecology. Did some site visits with Department of Water Affairs and Forestry (Hester Lyons) to confirm the presence of aquatic ecological features during EIA

	water use registration applications. 2006 to date: Cape Lowland Environmental Services, Eco Impact Legal Consultant and Enviro-EAP. Ecological (Freshwater and aquatic) Specialist input, assessment, monitoring and reports.
Publications and assessment reports	Just to name a few. Was involved in many Ecological Assessments, monitoring and inputs in EIA applications. • Elandskloof Farm 475 Citrusdal Biodiversity Baseline Survey. August 2010. This Biodiversity Assessment Covering Terrestrial and Aquatic Aspects to Inform Decisions Regarding The Proposed Elandskloof Weir Flood Damage Project On Farm 475, In The Citrusdal Area. • Cape Solar Energy Electricity Generation Facility. Farm 187/3 & 187/13 Kenhardt. Biodiversity And Ecological Baseline Survey. January 2011. (Included Terrestrial and aquatic ecological assessments and water use authorization applications) • Prieska Photvoltaic Power Generation Project. Prieska Commonage Northern Cape. Biodiversity And Ecological Baseline Survey. July 2011. (Included Terrestrial and aquatic ecological assessments and water use authorization applications) • Witteklip Erf 123 Extension, Vredenburg. Biodiversity Baseline Survey. Updated - October 2012 (Included Terrestrial and aquatic ecological assessments and water use authorization applications) • Baseline Biodiversity Survey And Wetland Delineation for ECCA Holdings: Cape Bentonite Mine on Erf 1412 Near Heidelberg. Prepared for: Shangoni Management Services Pry (Ltd). October 2014. • Freshwater Impact Assessment Laingsburg Flood Damage Repairs & Storm Water Infrastructure. 18 February 2016. • Ecological Assessment for Swartland Municipality - Upgrades To Voortrekker/Bokomo Road And Voortrekker/Rozenburg Road Intersections and Upgrade to the Diep River Bridge, Malmesbury on A Portion Of Erf 327, Malmesbury (Road) Erf 1530, Diep River Bridge Crossing, and Erf 1528, Property South of Diep River where Road Widening and Turning Circle Will Be Constructed. March 2016. (Freshwater Ecology Inputs and Water Use Registration) • Freshwater Impact Assessment. McGregor Bridge, Robertson Bridge and Willem Nels River Maintenance Management Plan. 24 June 2016. (Freshwater Ecology assessment and input as well as Water Use Registration) • Water Use Authorization Application Risk Matrix. Orange Grove Trust Vegetation Clearing and Agricultural Development on Portion 4 of Farm Glen Heatlie No 316, Worcester. 12 June

	2017. (Freshwater ecological inputs in EIA process and Water Use Registration). • Water Use Authorization Application Risk Matrix Prepared For: Witzenberg Municipality Sand Mine Farm 1 Prince Alfred Hamlet. 28 March 2017. (Freshwater ecological inputs in EIA process and Water Use Registration). • Proposed Hartmanshoop Agri Vegetation Clearing Project and Irrigation on Erf 686, Laingsburg. 12 August 2017. (Freshwater ecological inputs in Water Use Registration). • County Fair: Hocraft Abattoir And Rendering Facility Waste Water Treatment Works "CF Hocraft WWTW" Mosselbank River Second Quarter 2018 Biomonitoring Report. June 2018. (Done quarterly biomonitoring for the last three years).

CERTIFICATION

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



Nicolaas Hanekom Pri Sci Nat (Ecology).
Registration number 004415

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Nicolaas Willem Hanekom

Registration Number: 004415

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Ecological Science (Professional Natural Scientist)
Aquatic Science (Candidate Natural Scientist)
Conservation Science (Candidate Natural Scientist)
Zoological Science (Candidate Natural Scientist)

Effective **27 July 2011** Expires **31 March 2026**

Chairperson

Chief Executive Officer

To verify this certificate scan this code