

BOTANICAL & TERRESTRIAL BIODIVERSITY COMPLIANCE STATEMENT AS PART OF A S24G RECTIFICATION PROCESS

Revision 1

THORN & FEATHER

**THE ALLEGED ILLEGAL DEVELOPMENT OF ADDITIONAL STRUCTURES ON REMAINDER
PORTION 9 OF THE FARM VERMAAKLIKHEID NO. 499 (RIVERSDALE), NEAR
VERMAAKLIKHEID. HESSEQUA MUNICIPALITY, WESTERN CAPE PROVINCE.**



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EXECUTIVE SUMMARY

Thorn & Feather is a self-catering holiday destination, next to the Duivenhoks River, just south of the small town of Vermaaklikheid. It is located on Remainder Portion 9 of Farm Vermaaklikheid No. 499. The property is owned by three shareholders (each with an undivided third share). During 2013, building plans were approved by the Hessequa Municipality for a residential dwelling, which were used by the owners. Since they do not live on the property, the owners started to rent out the property (December 2015) as self-catering tourist accommodation.

Recently the landowner added additional infrastructure (not part of the originally approved building plans) to upgrade and improve the self-catering value of the accommodation. During November 2022, the Department of Environmental Affairs and Development Planning (Directorate Law Enforcement) performed a site visit to the property, based on allegations of illegal development. On the 7th of February 2023, the DEADP issued the landowner with a compliance notice for the alleged unlawful development of infrastructure of more than 50 m², the development of a fixed/floating jetty and the infilling or depositing of more than 5 m³ of material within 100 m inland of the high-water mark of the Duivenhoks River estuary without environmental authorization.

VEGETATION TYPE & STATUS According to the 2018 SA Vegetation map, the development was expected to impact on Canca Limestone Fynbos (Least Threatened) (Refer to Heading 4.1). The site visit showed that the impacted area was located within a thicket patch which is part of the Albany Thicket biome namely **Hartenbos Dune Thicket** (previously named Wetlands Albany Thicket-Valley-bottom) which showed a close affinity with Hartenbos Dune Thicket (Least Threatened) (Refer to Heading 5).

WATER COURSES AND WETLANDS Not discussed in this report. A separate freshwater specialist study was commissioned.

LAND-USE The farm is zoned for Agriculture and the character of the area is rural, but with high ecotourism potential. Being next to the Duivenhoks River the development fits in with the surrounding holiday farms offering tourist accommodation.

VEGETATION ENCOUNTERED The buildings had been constructed on the lower almost south facing slope of the limestone plateau as it drops down towards the Duivenhoks River and is typical of valley-bottom thicket with close affinities to Hartenbos Dune Thicket. On these slope a deeper sandy soil (probably a more neutral soil) were found which supported a dense thicket vegetation dominated by evergreen, sclerophyllous trees, shrubs and vines (many of which have stem spines), without a conspicuous grassy ground layer (Figure 8). Protected from fire and within the valley bottom the tree and tall shrub elements had over time grown into a dense thicket. Unlike, at most the immediate neighbouring properties where these thicket pockets had been reduced to single trees, the forest patch at Thorn & Feather was still almost intact, and almost without any invasive. The tree component showed a close affinity with Hartenbos Dune Thicket.

On farm Kleinefontein No. 503/3 where the footpath and small floating jetty was constructed the vegetation was a typical reedbed that was clearly subject to tidal inundation, forming part of the estuary wetland area.

CONSERVATION PRIORITY AREAS According to 2017 Western Cape Biodiversity Spatial Plan (WCBSBP) for the Hessequa Municipality, the development impacted on both terrestrial and aquatic critical biodiversity areas (CBA's) (refer to Heading 4.3 & Figure 7). The extent of the footprint area was very small and great care was taken to locate the site in harmony with the surrounding natural vegetation and to minimise the impact on the natural veld. The owner is also busy replanting indigenous trees and shrubs back into the thicket area to enhance the feeling of a natural "forest" surroundings. Although not

all of the species replanted are natural Albany Thicket species, the efforts are remarkable.

CONNECTIVITY

Because of the small scale of the development and the way in which it was designed and built, the impact on connectivity is unlikely to have add any significant impact on the ecology of the site. Larger antelope (e.g. bushbuck) might avoid this area when it is occupied but overall, the **impact on connectivity is considered to be low.**

THREATENED AND PROTECTED PLANT SPECIES

The DFFE screening tool identified the plant species theme as high, but this was under the assumption that the development impacted on Canca Limestone Fynbos. None of the sensitive species listed was observed or are expected within the footprint area. The only significant plant observed were the presence of a number of milkwood trees (*Sideroxylon inerme*) (refer to Heading 5.5) within the thicket (which, according to the landowner, was not disturbed).

Based on the findings of this study, sensitivity rating is considered to be **Low Sensitive.**

FAUNA & AVI-FAUNA

The DFFE screening tool identified the animal species theme as high, because of the potential impact on a number of avi-fauna and vertebrate species (refer to Heading 6.1). An evaluation of these species showed that it is not expected that the development would have had any significant impact on any of these species (refer to Table 9).

With regards to the is project the sensitivity rating is considered to be **Low sensitive.**

MAIN CONCLUSION

According to the **DFFE Environmental Screening Report** the relative Terrestrial Biodiversity theme sensitivity is considered of **Very High Sensitivity** because it overlaps critical biodiversity areas.

According to the Terrestrial biodiversity assessment (Table 10) the main impacts associated with development would have been:

- The small and localised impact on vegetation;
- The small and localised impact on conservation priority areas.

Lastly, the way in which the accommodation was designed and the material that was used clearly shows a keen desire to minimize the impact on the environment and to maintain the ecological function of the site. In addition, the landowner is busy with a significant alien clearing program (at his own costs) on the larger farm and is also busy replanting indigenous trees and shrubs back into the thicket area to enhance the feeling of a natural "forest".

It is thus considered unlikely that the development would have contributed significantly to any of the following:

- Significant loss of vegetation type and associated habitat.
- Loss of ecological processes (e.g., migration patterns, pollinators, river function etc.) due to construction and operational activities.
- Loss of local biodiversity and threatened species.
- Loss of ecosystem connectivity.

Because of the small size and the way in which the development was done even the cumulative impact is considered to be **Medium/Low**. The findings of this assessment suggests that the relative terrestrial biodiversity theme sensitivity should be **Medium/Low Sensitive** (not Very High Sensitive as suggested in the DFFE screening report).

INDEPENDENCE & CONDITIONS

PB Consult is an independent entity with no interest in the activity other than fair remuneration for services rendered. Remunerations for services are not linked to approval by decision making authorities and the company have no interest in secondary or downstream development because of the authorization of this project. There are no circumstances that compromise the objectivity of this report. The findings, results, observations and recommendations given in this report are based on the author's best scientific and professional knowledge and available information. The author reserves the right to modify aspects of this report, including the recommendations if new information become available which may have a significant impact on the findings of this report.

RELEVANT QUALIFICATIONS & EXPERIENCE OF THE AUTHOR

Mr. Peet Botes holds a BSc. (Hons.) degree in Plant Ecology from the University of Stellenbosch (Nature Conservation III & IV as extra subjects). Since qualifying with his degree, he had worked for more than 20 years in the environmental management field, first at the Overberg Test Range (a Division of Denel) managing the environmental department of OTR and being responsible for developing and implementing an ISO14001 environmental management system, ensuring environmental compliance, performing environmental risk assessments with regards to missile tests and planning the management of the 26 000 ha of natural veld, working closely with CapeNature (De Hoop Nature Reserve).

In 2005 he joined Enviroscientific, an independent environmental consultancy specializing in wastewater management, botanical and biodiversity assessments, developing environmental management plans and strategies, environmental control work as well as doing environmental compliance audits and was also responsible for helping develop the biodiversity part of the Farming for the Future audit system implemented by Woolworths. During his time with Enviroscientific he performed more than 400 biodiversity and environmental legal compliance audits.

During 2010 he joined EnviroAfrica to move back to the biodiversity aspects of environmental management. Experience with EnviroAfrica includes NEMA EIA applications, environmental management plans for various industries, environmental compliance audits, environmental control work as well as more than 70 biodiversity & botanical specialist studies.

Towards the end of 2017, Mr Botes started his own small environmental consulting business focusing on biodiversity & botanical assessments, biodiversity management plans and environmental compliance audits.

DECLARATION OF INDEPENDENCE

THE INDEPENDENT PERSON WHO COMPILED A SPECIALIST REPORT OR UNDERTOOK A SPECIALIST PROCESS

I Petrus, Jacobus, Johannes Botes, as the appointed independent specialist hereby declare that I:

- act/ed as the independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014, as amended, and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2014 (specifically in terms of regulation 13 of GN No. R. 326) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 13 of GN No. R. 326.

Note: The terms of reference must be attached.



Signature of the specialist:

PB Consult (Sole Proprietor)

Name of company:

22 February 2024

Date:

CONTENTS

DOCUMENT ISSUE STATUS I

DETAILS OF THE AUTHOR I

EXECUTIVE SUMMARY..... II

INDEPENDENCE & CONDITIONS..... IV

RELEVANT QUALIFICATIONS & EXPERIENCE OF THE AUTHOR IV

DECLARATION OF INDEPENDENCE V

1. INTRODUCTION..... 1

 1.1. Legislation governing this report 2

 1.2. Terms of reference 2

2. STUDY AREA 2

 2.1. Location & Layout 2

 2.2. Activity description 4

 2.2.1. DEA&DP Compliance notice 5

 2.3. Climate 7

 2.4. Topography, geology and soils..... 8

3. APPROACH & METHODOLOGY 8

 3.1. Desktop analysis 8

 3.2. Site sensitivity verification 8

 3.3. Limitations, assumptions and uncertainties 9

 3.4. Impact Assessment Method 9

 3.4.1. Determining significance 9

 3.4.2. Criteria used 10

 3.4.3. Significance categories 11

4. DESKTOP ASSESSMENT 13

 4.1. Broad-scale vegetation expected..... 13

 4.2. Ecological drivers & functioning 14

 4.3. Critical biodiversity areas & ecological corridors 14

 4.4. Watercourses and wetlands 16

 4.5. Landuse and cover 16

5. THE VEGETATION 17

 5.1. Evaluation of the Thicket vegetation 17

 5.2. Evaluation of the Reedbed vegetation..... 20

 5.3. Flora encountered 21

 5.4. Threatened and protected plant species 22

 5.5. Plant species sensitivity theme 23

6. FAUNA AND AVI-FAUNA 24

 6.1. Animal species theme sensitivity 24

7. TERRESTRIAL BIODIVERSITY DISCUSSIONS..... 32

 7.1. Extent of the impact 32

 7.2. Biodiversity status evaluation 33

7.3.	Indirect impacts	34
7.4.	Cumulative impacts	34
7.5.	The “No-Go” alternative	34
8.	TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT.....	35
9.	REFERENCES.....	37
	APPENDIX 1: REQUIREMENTS FOR SPECIALIST REPORTS.....	39
	APPENDIX 2: DFFE SCREENING REPORT	40
	APPENDIX 3: SABAP2 BIRD SPECIES LIST (PENTAD 3415_2100)	41
	APPENDIX 4: CURRICULUM VITAE – P.J.J. BOTES.....	45

LIST OF FIGURES

Figure 1:	A map showing the location of the larger Farm 499/9RE, just south of Vermaaklikheid.....	3
Figure 2:	A map showing Farm 499/9RE (red), Farm 503/3 (green) and the general location of the Thorn & Feather facilities (yellow) in relation to these properties.	3
Figure 3:	A Google Image giving an overview of the infrastructure on Farm 499/9RE and the footpath location on Farm 503/3.	4
Figure 4:	Schematic diagram of the additional structures constructed on Farm 499/9RE. <i>Source: Consent use & Building Line Departures Application. Dated 15 September 2022.</i>	5
Figure 5:	A google image showing the alleged unlawful developed structures within 100 m from the high-water mark of the Duivenhoks River. <i>Source: DEA&DP Compliance notice dated 7 February 2023.</i>	6
Figure 6:	Vegetation map of South Africa (2018), showing the expected vegetation type (CapeFarmMapper)	13
Figure 7:	Western Cape Biodiversity Spatial Plan (2017) showing the study area and associated critical biodiversity areas.	15
Figure 8:	A Google Image showing the infrastructure in relation to the thicket (green) and reedbed (yellow) vegetation. ..	17
Figure 9:	Historical Google image (2017) showing the original extent of the thicket patch next to the river (south of the entrance road). The purple area, showing the additional area cleared for orchards and the green area the remaining extent of the thicket area.	32

LIST OF PHOTOS

Photo 1: Compilation of photos showing the alleged unlawful structures. Source: DEA&DP Compliance notice dated 7 February 2023.	6
Photo 2: Alleged unlawful jetty developed on the riverbank on Farm Kleinefontein503/3. Source: DEA&DP Compliance notice dated 7 February 2023.	7
Photo 3: Looking down from the limestone escarpment onto Feather & Thorn. Note the Thicket patch (marked by the yellow polygon) and the dense alien invasive stands (<i>Populus</i> species) on the edge of the reedbed along the river bank (to the left of picture).	18
Photo 4: Dense thicket stands growing next to the footpath leading down towards the Duivenhoks River.	18
Photo 5: Looking south from the stoep of the lounge area over the thicket stand onto the Duivenhoks River.	18
Photo 6: Looking northeast onto the thicket stand from the road to the south of the facility.	19
Photo 7: Lower shrub/thicket next to the entrance road into the site. <i>Clusia alaternoides</i> in the foreground, with <i>Gnidia squarrosa</i> to the right and <i>Polygala myrtifolia</i> to the left.	19
Photo 8: Looking down from the limestone hill onto the development. Note the Canca Limestone in the foreground, being replaced by denser thicket downhill.	19
Photo 9: The original river access used by the surrounding landowners and local fisherman.	20
Photo 10: The small access walkway through the reeds.	20
Photo 11: The small floating jetty on the edge of the Duivenhoks River.	20

ABBREVIATIONS

BAR	Basic Assessment Report
CBA	Critical biodiversity area
DEA&DP	Department of Environment Affairs and Development Planning
DFFE	Department of Fisheries, Forestry and Environment
EA	Environmental Authorization
EAP	Environmental assessment practitioner
ECO	Environmental Control Officer
EIA	Environmental impact assessment
EMP	Environmental Management Plan or Program
EMS	Environmental management system
EN	Endangered
ESA	Ecological support area
LT	Least Threatened
NEMA	National Environmental Management Act, Act no. 107 of 1998
NFA	National Forest Act, Act 84 of 1998
VU	Vulnerable

1. INTRODUCTION

Vermaaklikheid is slowly becoming a popular holiday destination because of its proximity to the Duivenhoks River while its remote location adds a further lure. Thorn & Feather is a self-catering holiday destination, next to the Duivenhoks River, just south of the small town of Vermaaklikheid. It is located on Remainder Portion 9 of Farm Vermaaklikheid No. 499. The property is owned by three shareholders (each with an undivided third share). During 2013, building plans were approved by the Hessequa Municipality for a residential dwelling, which were used by the owners. Since they do not live on the property, the owners started to rent out the property (from December 2015) as self-catering tourist accommodation.

Recently the landowner added additional infrastructure (not part of the originally approved building plans) to upgrade and improve the self-catering value of the accommodation. During November 2022, the Department of Environmental Affairs and Development Planning (Directorate Law Enforcement) performed a site visit to the property, based on allegations of illegal development. On the 7th of February 2023, the DEADP issued the landowner with a compliance notice for the alleged unlawful development of infrastructure of more than 50 m², the development of a fixed/floating jetty and the infilling or depositing of more than 5 m³ of material within 100 m inland of the high-water mark of the Duivenhoks River estuary without environmental authorization.

The aim of this study is to evaluate the impact on terrestrial biodiversity caused by the development of this infrastructure. A freshwater specialist had been appointed to evaluate the impact on the estuary.

According to the 2018 Vegetation map of South Africa, the additional development would have impacted on Canca Limestone Fynbos (endangered) and non-terrestrial (estuary vegetation). However, apart from the non-terrestrial (estuary component) the vegetation impacted by the development on Farm 499/9, is clearly not Limestone Fynbos, but a patch of thicket that had established along the protected lower slopes of the Limestone hills next to the Duivenhoks River. The soils were deeper, and the vegetation more likely part of the Thicket Biome as described by Low & Rebelo (1996), which in this case showed great affinity with Hartenbos Dune Thicket (the expected vegetation to the east of the property).

The DFFE screening report for the proposed site, compiled by PB Consult on the 9th of November 2023, identified various areas of potential environmental sensitivity, of which the following will be discussed in this report:

- The relative Animal species theme sensitivity is considered of **High Sensitivity**;
- The relative Plant species theme sensitivity is considered of **High Sensitivity**;
- The relative Terrestrial Biodiversity theme sensitivity is considered of **Very High Sensitivity**.

1.1. LEGISLATION GOVERNING THIS REPORT

EnviroAfrica was appointed to facilitate the NEMA EIA application for the project. PB Consult was appointed by EnviroAfrica to evaluate the potential impact of the development on the terrestrial biodiversity of the site.

This is a 'specialist report', compiled in terms of:

- The National Environmental Management Act, Act. 107 of 1998 (NEMA);
- The "Protocol for the Specialist Assessment and Minimum report content requirements for environmental impacts on terrestrial biodiversity" in terms of Sections 24(5)(a) and (h) and 44 of the NEMA (Government Notice No. 320 of 20 March 2020).

1.2. TERMS OF REFERENCE

The Terms of Reference for this study were to undertake a visit to the study area and compile a specialist report that assesses the potential impacts on *Botanical and Terrestrial Biodiversity* features as a result of the development of the additional features.

Study should address:

- Habitat sensitivity;
- Threatened ecosystems (including critical biodiversity areas and ecological support areas) that might have been impacted;
- Flora and fauna species of conservation concern that might have been impacted;
- Any significant botanical or other terrestrial biodiversity features that might have been impacted by the development (using the DFFE Screening Report as baseline).
- Potential direct and cumulative impacts on the receiving environment that have or may result from the development.

2. STUDY AREA

2.1. LOCATION & LAYOUT

Thorn & Feather is a self-catering holiday destination, next to the Duivenhoks River, just south of the small town of Vermaaklikheid. It is located on the Remainder Portion 9 of Farm Vermaaklikheid No. 499, just west of the R323 (the road connecting Vermaaklikheid with Jongensfontein/Stilbaai (Figure 1). Access to the farm is gained *via* a Minor Road 4801, which branches off the R323 and runs down to the Duivenhoks River. The property is just over 220 ha in size and is owned by three shareholders, each with an undivided third share. The farm falls within the Hessequa Municipality of the Western Cape Province.

The Thorn & Feather self-catering accommodation (the subject of this report) is located in the south-western corner of this property (Farm Vermaaklikheid 499/9RE) next to the Duivenhoks River (Figure 2). The farm itself does not have direct access to the Duivenhoks River. Access to the Duivenhoks River is gained (with consent from the landowner) over the neighboring farm, Portion 3 of the Farm Kleinefontein No. 503.



Figure 1: A map showing the location of the larger Farm 499/9RE, just south of Vermaaklikheid.

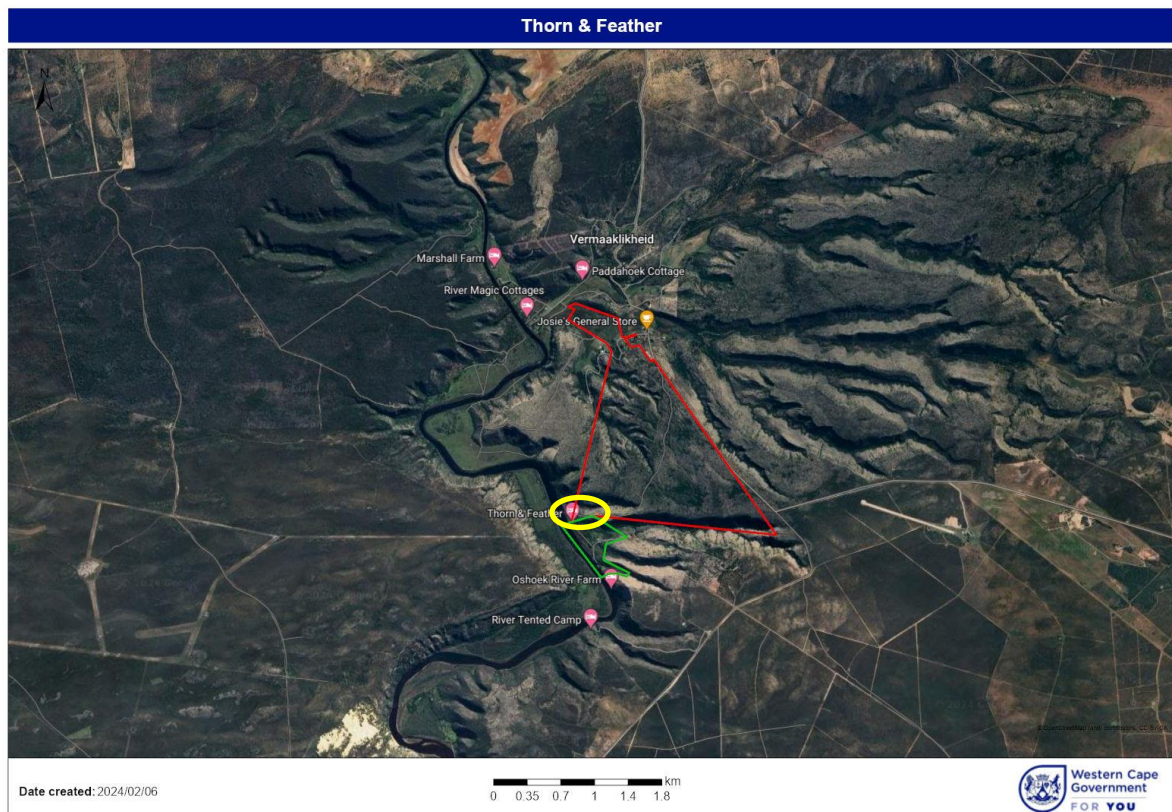


Figure 2: A map showing Farm 499/9RE (red), Farm 503/3 (green) and the general location of the Thorn & Feather facilities (yellow) in relation to these properties.

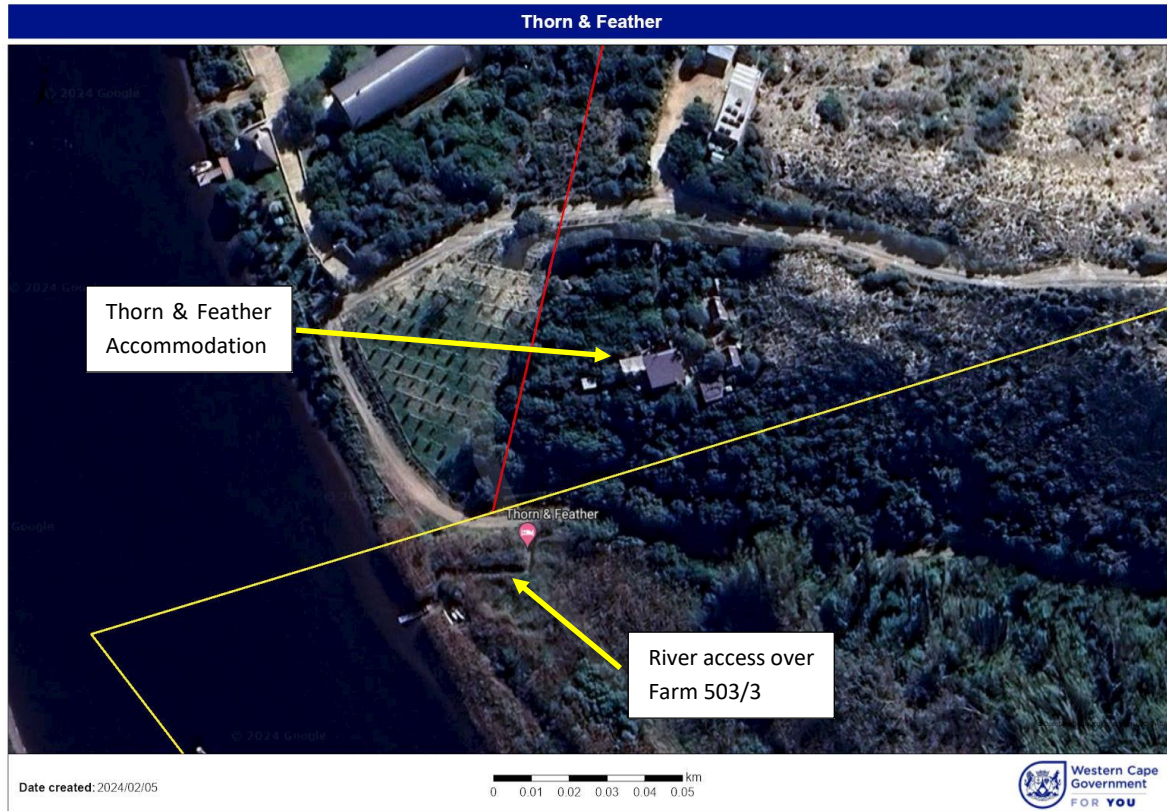


Figure 3: A Google Image giving an overview of the infrastructure on Farm 499/9RE and the footpath location on Farm 503/3.

2.2. ACTIVITY DESCRIPTION

During 2013, building plans were approved by the Hessequa Municipality for a residential dwelling, which were used by the owners. Since they do not reside permanently on the property, the owners started to rent out the property (since December 2015) as self-catering tourist accommodation in order to generate some income. The architectural style of the design is unique in the sense that the accommodation was not built as a typical house, but rather as separate small rooms (where bedrooms, bathrooms and the kitchen/lounge area are separate buildings/apart from each other).

The design allows the buildings to be integrated within the natural vegetation in such a way that it minimizes visual impact as well as the impact on the thickets itself. Even though the bedrooms and bathrooms are separate from the kitchen/lounge area, it functions exactly the same as a three-bedroom house and is advertised as a single residence. The facilities can accommodate a maximum of 6 adults and 3 children and are rented out on an exclusive use basis.

The various buildings are linked with small gravel footpaths and there is no vehicle access to the accommodation itself (vehicles park within a dedicated parking area on the opposite side of the access road – north of the entrance to the accommodation), which again minimizes the impact on the natural vegetation. It is clear that a lot of thought and care was taken with the layout of the facilities in order to integrate the buildings into the natural landscape.

The 2013 building plans allowed for the construction of the following infrastructure (Figure 4):

- The main building, which includes the kitchen and lounge with a wooden deck.
- Two bedrooms (separate from the main building).
- A communal bathroom/toilet area (separate from the main building)

Recently the landowner added additional infrastructure (not part of the originally building plans) to upgrade and improve the self-catering value of the accommodation (Figure 4). This includes the following:

- An additional bedroom (a third bedroom – separate from the main building).
- A second outside shower and toilet.
- An access path and floating jetty to the Duivenhoks riverbank (over Farm Kleinfontein 503/3).

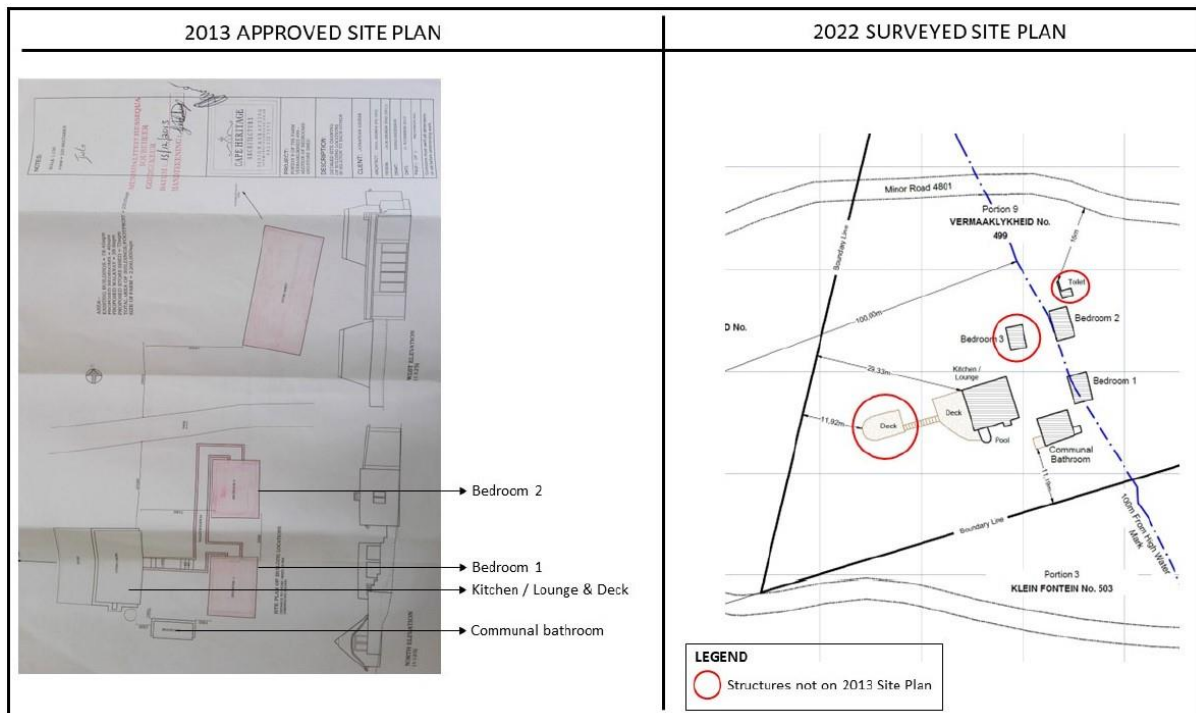


Figure 4: Schematic diagram of the additional structures constructed on Farm 499/9RE. Source: Consent use & Building Line Departures Application. Dated 15 September 2022.

2.2.1. DEA&DP COMPLIANCE NOTICE

A site visit conducted by Environmental Management Inspectors from the DEA&DP: Directorate Environmental Law Enforcement on the 10th of November 2022 confirmed that the landowner has commenced with the alleged unlawful development of infrastructure of more than 50 m², the development of a fixed/floating jetty and the infilling or depositing of more than 5 m³ of material within 100 m inland of the high-water mark of the Duivenhoks River estuary without environmental authorization (Refer to Figure 5).



Figure 5: A google image showing the alleged unlawful developed structures within 100 m from the high-water mark of the Duivenhoks River. Source: DEA&DP Compliance notice dated 7 February 2023.

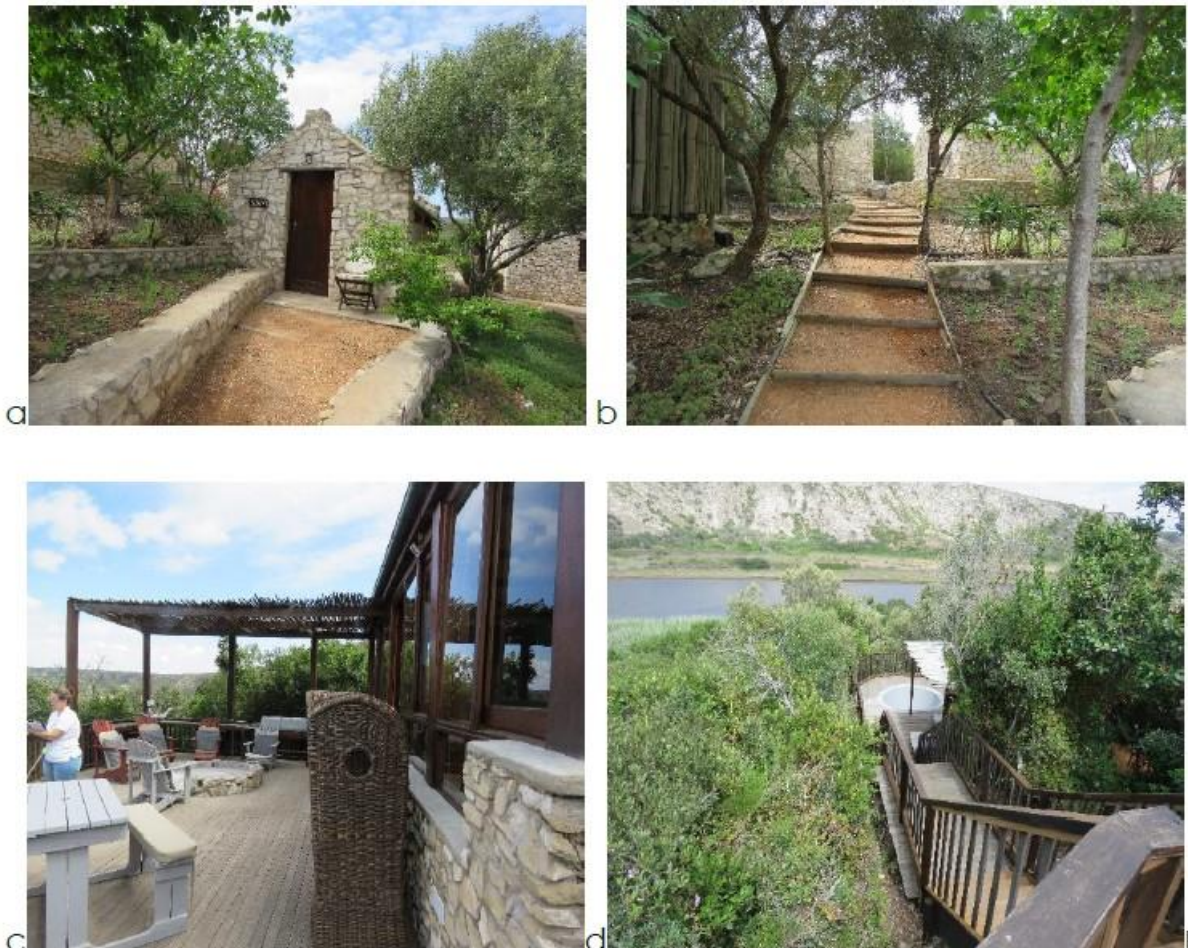


Photo 1: Compilation of photos showing the alleged unlawful structures. Source: DEA&DP Compliance notice dated 7 February 2023.



Photo 2: Alleged unlawful jetty developed on the riverbank on Farm Kleinefontein503/3. Source: DEA&DP Compliance notice dated 7 February 2023.

2.3. CLIMATE

Vermaaklikheid is near Witsand, and just east of the Duivenhoks River, along the southern coast of the Western Cape. It falls within the southern warm temperate climate region with a bimodal rainfall pattern (between the winter rainfall of the Western Cape and the summer rainfall of the Eastern Cape). The mean average precipitation for Witsand is around 466 mm per year, with rainfall peaking during March – April and October – November. September is normally the driest month of the year. Summers (November to March) are mild too hot with maximum temperatures of about 25°C. The winter months are cool with July normally being the coldest months of the year (about 18°C) (Refer to Table 1). (www.climate-data.org).

Table 1: Weather averages for Witsand. Data: 1991 - 2021 (www.climate-data.org)

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C	21.2 °C	21.3 °C	20.2 °C	17.9 °C	16 °C	13.8 °C	13.2 °C	13.6 °C	14.8 °C	16.6 °C	18.1 °C	20.1 °C
(°F)	(70.2) °F	(70.4) °F	(68.3) °F	(64.2) °F	(60.8) °F	(56.9) °F	(55.7) °F	(56.5) °F	(58.7) °F	(61.9) °F	(64.6) °F	(68.2) °F
Min. Temperature °C	18.4 °C	18.7 °C	17.5 °C	15.2 °C	12.9 °C	10.3 °C	9.6 °C	10.1 °C	11.4 °C	13.6 °C	15.1 °C	17.2 °C
(°F)	(65.2) °F	(65.6) °F	(63.5) °F	(59.4) °F	(55.2) °F	(50.5) °F	(49.3) °F	(50.2) °F	(52.6) °F	(56.5) °F	(59.2) °F	(63) °F
Max. Temperature °C	24.4 °C	24.6 °C	23.5 °C	21.3 °C	19.7 °C	17.7 °C	17.1 °C	17.6 °C	18.7 °C	20.1 °C	21.5 °C	23.5 °C
(°F)	(76) °F	(76.2) °F	(74.3) °F	(70.3) °F	(67.5) °F	(63.9) °F	(62.8) °F	(63.6) °F	(65.7) °F	(68.2) °F	(70.7) °F	(74.2) °F
Precipitation / Rainfall	29	29	39	48	38	41	41	37	30	40	41	29
mm (in)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Humidity(%)	70%	72%	73%	76%	76%	74%	74%	73%	70%	71%	69%	69%
Rainy days (d)	5	5	6	6	5	6	6	6	5	5	5	5
avg. Sun hours (hours)	8.6	8.0	7.5	7.3	7.2	7.1	7.0	7.3	8.1	8.5	9.3	9.2

2.4. TOPOGRAPHY, GEOLOGY AND SOILS

The Vermaaklikheid area is characterized by shales of the Bokkeveld Group underlying the whole region. These shales are exposed mainly on the sides of the valleys. The shales are overlaid by calcified old marine and dune sands of the Bredasdorp Group, underlying or forming the surface of the plateau constituting the coastal plain. These marine deposits and sands were typically compressed, cemented, and hardened into soft sandstones, which had been further modified into a hard calcrete capping. Over time the Duivenhoks River and its tributaries have carved their way down through these overlaying sandy and lime-rich formations into the shales, leaving behind an incised plateau with flat river terraces and intervening ridges typical of the Vermaaklikheid landscape (Oberholtzer, 2010).

The Thorn & Feather site is located on a steepish western slope of the limestone hills as it drops down into the Duivenhoks River valley. Although one would expect a shale substrate, deep sandy deposits seem to have accumulated or deposited along the foothills of the hill, which now supports a dense patch of thicket vegetation. As one moves up the slope towards the edge of the last buildings, exposed limestone starts to emerge, and the vegetation changes to the expected Canca Limestone Fynbos.

3. APPROACH & METHODOLOGY

The protocol for specialist assessment and minimum report content and requirements for environmental impacts on terrestrial biodiversity was published in GN. No. 320 of 20 March 2020. It includes the requirements for a desktop analysis and site verification.

3.1. DESKTOP ANALYSIS

The first step of the study was to conduct a desktop analysis of the study area and its immediate surroundings. Using the DFFE screening tool report as basis, spatial information from online databases such as SANBI BGIS, available literature and Google Earth were used to evaluate the site in terms of vegetation, obvious differences in landscape (e.g., variations in soil type, rocky outcrops etc.) or vegetation densities, which might indicate differences in plant community or species composition, critical biodiversity areas and other terrestrial biodiversity features as identified in the screening tool.

This information was used to prepare a study area map, which is used as a reference during the physical site visit. Plant species lists were prepared, and species of special significance were flagged.

3.2. SITE SENSITIVITY VERIFICATION

An initial site visit was done on the 15th of February 2023, but the main fieldwork for project was carried out on the 12th of September 2023. A further follow-up site visit was done early in January 2024. The site itself was relatively small and the survey was conducted, by walking the site and evaluating the vegetation, using a modified approach, based on the Braun-Blanquet vegetation survey method (Werger, 1974). However, the focus of the survey was not so much on identifying all the plant species, but rather on identifying vegetation type and evaluating the conditions of the vegetation itself. Where applicable, protected or other special plants and any terrestrial feature of significance was, marked by waypoints and/ or on the study map, and photographed. A hand-held Garmin GPSMAP 62s was used to track the sampling route and for recording waypoints. During the survey

notes, and photographic records were collected. All efforts were made to ensure that any variation in vegetation or soil condition, which might indicate special botanical features (e.g., rocky outcrops, watercourses or heuweltjies), were evaluated.

3.3. LIMITATIONS, ASSUMPTIONS AND UNCERTAINTIES

The findings are based on single-day site visits (not long-term repetitive sampling). However, most of the trees and plants could be identified. The thicket vegetation was the only vegetation type affected by the Thorn & Feather accommodation infrastructure. Access to the river through farm Kleinefontein resulted in a footpath through dense stand of reeds (estuary vegetation). Essentially all perennial plants were identifiable and a good understanding of the status of the vegetation and plant species in the study areas were obtained and confidence in the findings are high. There should be no limiting factors which could significantly alter the outcome of this study. It is unlikely that a full botanical assessment will result in any additional findings that would have a significant impact on the outcome.

3.4. IMPACT ASSESSMENT METHOD

The concept of environmental impact assessment in terms of the National Environmental Management Act, Act 107 of 1998 (NEMA) and the Environmental Impact Assessment (EIA) was developed to identify and evaluate the nature of potential impact to determine whether an activity is likely to cause significant environmental impact on the environment. The concept of significance is at the core of impact identification, evaluation and decision making, but despite this the concept of significance and the method used for determining significance remains largely undefined and open to interpretation (DEAT, 2002).

The objective of this study was to evaluate the status of the veld within the study area to identify special or significant environmental features which might be impacted by the proposed development.

The Ecosystem Guidelines for Environmental Assessment (De Villiers *et. al.*, 2005), were used to evaluate the botanical significance of the property with emphasis on:

- Significant ecosystems
 - Threatened or protected ecosystems
 - Special habitats
 - Corridors and or conservancy networks
- Significant species
 - Threatened or endangered species
 - Protected species.

3.4.1. DETERMINING SIGNIFICANCE

Determining impact significance from predictions of the nature of the impact has been a source of debate and will remain a source of debate. The author used a combination of scaling and weighting methods to determine significance based on a simple formula. The formula used is based on the method proposed by Edwards (2011). However, the criteria used were adjusted to suite its use for botanical assessment. In this document significance rating was evaluated using the following criteria.

$\text{Significance} = \text{Conservation Value} \times (\text{Likelihood} + \text{Duration} + \text{Extent} + \text{Severity}) \text{ (Edwards 2011)}$

3.4.2. CRITERIA USED

Conservation value: Conservation value refers to the intrinsic value of an attribute (e.g., an ecosystem, a vegetation type, a natural feature or a species) or its relative importance towards the conservation of an ecosystem or species or even natural aesthetics. Conservation status is based on habitat function, its vulnerability to loss and fragmentation or its value in terms of the protection of habitat or species (Refer to Table 2 for categories used).

Likelihood refers to the probability of the specific impact occurring because of the proposed activity (Refer to Table 3, for categories used).

Duration refers to the length in time during which the activity is expected to impact on the environment (Refer to Table 4).

Extent refers to the spatial area that is likely to be impacted or over which the impact will have influence, should it occur (Refer to Table 5).

Severity refers to the direct physical or biophysical impact of the activity on the surrounding environment should it occur (Refer to Table 6).

Table 2: Categories used for evaluating conservation status.

CONSERVATION VALUE	
Low (1)	The attribute is transformed, degraded not sensitive (e.g., Least threatened), with unlikely possibility of species loss.
Medium/low (2)	The attribute is in good condition but not sensitive (e.g., Least threatened), with unlikely possibility of species loss.
Medium (3)	The attribute is in good condition, considered vulnerable (threatened), or falls within an ecological support area or a critical biodiversity area, but with unlikely possibility of species loss.
Medium/high (4)	The attribute is considered endangered or, falls within an ecological support area or a critical biodiversity area, or provides core habitat for endemic or rare & endangered species.
High (5)	The attribute is considered critically endangered or is part of a proclaimed provincial or national protected area.

Table 3: Categories used for evaluating likelihood.

LIKELIHOOD	
Highly Unlikely (1)	Under normal circumstances it is almost certain that the impact will not occur.
Unlikely (2)	The possibility of the impact occurring is very low, but there is a small likelihood under normal circumstances.
Possible (3)	The likelihood of the impact occurring, under normal circumstances is 50/50, it may, or it may not occur.
Probable (4)	It is very likely that the impact will occur under normal circumstances.
Certain (5)	The proposed activity is of such a nature that it is certain that the impact will occur under normal circumstances.

Table 4: Categories used for evaluating duration.

DURATION	
Short (1)	Impact is temporary and easily reversible through natural process or with mitigation. Rehabilitation time is expected to be short (1-2 years).
Medium/short (2)	Impact is temporary and reversible through natural process or with mitigation. Rehabilitation time is expected to be relative short (2-5 years).
Medium (3)	Impact is medium-term and reversible with mitigation but will last for some time after construction and may require ongoing mitigation. Rehabilitation time is expected to be longer (5-15 years).
Long (4)	Impact is long-term and reversible but only with long term mitigation. It will last for a long time after construction and is likely to require ongoing mitigation. Rehabilitation time is expected to be longer (15-50 years).
Permanent (5)	The impact is expected to be permanent.

Table 5: Categories used for evaluating extent.

EXTENT	
Site (1)	Under normal circumstances the impact will be contained within the construction footprint.
Property (2)	Under normal circumstances the impact might extent outside of the construction site (e.g., within a 2 km radius), but will not affect surrounding properties.
Surrounding properties (3)	Under normal circumstances the impact might extent outside of the property boundaries and will affect surrounding landowners or –users, but still within the local area (e.g., within a 50 km radius).
Regional (4)	Under normal circumstances the impact might extent to the surrounding region (e.g., within a 200 km radius), and will impact on landowners in the larger region (not only surrounding the site).
Provincial (5)	Under normal circumstances the effects of the impact might extent to a large geographical area (>200 km radius).

Table 6: Categories used for evaluating severity.

SEVERITY	
Low (1)	It is expected that the impact will have little or no affect (barely perceptible) on the integrity of the surrounding environment. Rehabilitation not needed or easily achieved.
Medium/low (2)	It is expected that the impact will have a perceptible impact on the surrounding environment, but it will maintain its function, even if slightly modified (overall integrity not compromised). Rehabilitation easily achieved.
Medium (3)	It is expected that the impact will have an impact on the surrounding environment, but it will maintain its function, even if moderately modified (overall integrity not compromised). Rehabilitation easily achieved.
Medium/high (4)	It is expected that the impact will have a severe impact on the surrounding environment. Functioning may be severely impaired and may temporarily cease. Rehabilitation will be needed to restore system integrity.
High (5)	It is expected that the impact will have a very severe to permanent impact on the surrounding environment. Functioning irreversibly impaired. Rehabilitation often impossible or unfeasible due to cost.

3.4.3. SIGNIFICANCE CATEGORIES

The formal NEMA EIA application process was developed to assess the significance of impacts on the surrounding environment (including socio-economic factors), associated with any specific development proposal to allow the competent authority to make informed decisions. Specialist studies must advise the environmental assessment practitioner (EAP) on the significance of impacts in his field of specialty. To do this, the specialist must identify all potentially significant environmental impacts, predict the nature of the impact, and evaluate the significance of that impact should it occur.

Potential significant impacts are evaluated, using the method described above, to determine its potential significance. The potential significance is then described in terms of the categories given in Table 7. Mitigation options are evaluated, and comparison is then made (using the same method) of potential significance before mitigation and potential significance after mitigation (to advise the EAP).

Table 7: Categories used to describe significance rating (adjusted from DEAT, 2002)

SIGNIFICANCE	DESCRIPTION
Insignificant or Positive (4-22)	There is no impact, or the impact is insignificant in scale or magnitude because of low sensitivity to change or low intrinsic value of the site, or the impact may be positive.
Low (23-36)	An impact barely noticeable in scale or magnitude because of low sensitivity to change or low intrinsic value of the site or will be of very short-term or is unlikely to occur. Impact is unlikely to have any real effect and no or little mitigation is required.
Medium Low (37-45)	Impact is of a low order and therefore likely to have little real effect. Mitigation is easily achieved. Social, cultural, and economic activities can continue unchanged, or impacts may have medium to short term effects on the social and/or natural environment within site boundaries.

Medium (46-55)	Impact is real, but not substantial. Mitigation is both feasible and easily possible but may require modification of the project design or layout. Social, cultural, and economic activities of communities may be impacted, but can continue (albeit in a different form). These impacts will usually result in medium to long term effect on the social and/or natural environment, within site boundary.
Medium high (56-63)	Impact is real, substantial, and undesirable, but mitigation is feasible. Modification of the project design or layout may be required. Social, cultural, and economic activities may be impacted, but can continue (albeit in a different form). These impacts will usually result in medium to long-term effect on the social and/or natural environment, beyond site boundary within local area.
High (64-79)	An impact of high order. Mitigation is difficult, expensive, time-consuming or some combination of these. Social, cultural, and economic activities of communities are disrupted and may come to a halt. These impacts will usually result in long-term change to the social and/or natural environment, beyond site boundaries, regional or widespread.
Unacceptable (80-100)	An impact of the highest order possible. There is no possible mitigation that could offset the impact. Social, cultural, and economic activities of communities are disrupted to such an extent that these come to a halt. The impact will result in permanent change. Very often these impacts are un-mitigatable and usually result in very severe effects, beyond site boundaries, national or international.

4. DESKTOP ASSESSMENT

The results of the desktop analysis is discussed under this chapter.

4.1. BROAD-SCALE VEGETATION EXPECTED

According to the 2018 Vegetation map of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006-2018), the development footprint(s) on the Thorn & Feather property would have impacted on **Canca Limestone Fynbos** (Figure 6), while the access road to the river would have impacted on Non-terrestrial (Estuary Vegetation). Canca Limestone Fynbos are classified as “Least Threatened” in terms of the “Revised National list of ecosystems that are threatened and in need of protection” (GN. No. 2747 of 18 November 2022).

Canca Limestone Fynbos corresponds largely with Coastal Macchia (Acock’s, 1953), Limestone Fynbos (Moll & Bossi, 1983) and Limestone Fynbos (Low & Rebello’s, 1996).

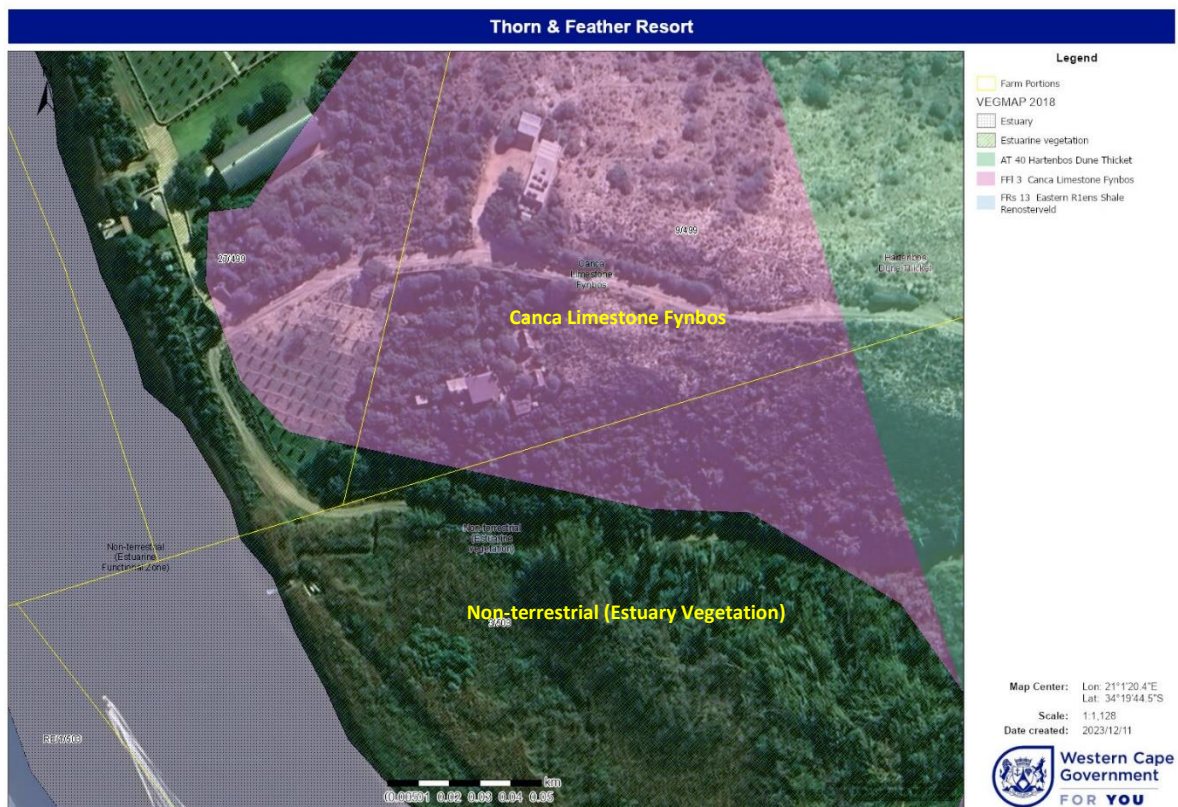


Figure 6: Vegetation map of South Africa (2018), showing the expected vegetation type (CapeFarmMapper)

Mucina & Rutherford (2006) describe Canca Limestone Fynbos as occurring on a series of hills with parallel crests, sand-filled plains and undulating hills. Neutral and acid sands support FF9 Albertinia Sand Fynbos, which dominates the valleys and is far more extensive than in the other limestone fynbos units. This landscape is dominated by the Canca se Leegte and Wankoe depressions, with most of the limestone fynbos on the hill tops and ridges. This vegetation has tall, emergent proteoids in a medium dense low shrubland—mainly asteraceous and proteoid fynbos, with restioid fynbos on skeletal soils.

Communities east of the Gouritz River lack the proteoid overstorey and are poorer in species, with *Erica* particularly rare. Rutaceae are dominant and succulents and geophytes are more abundant, grading into succulent thicket on the coast. Local diversity east of the Gouritz River depends on the extent of limestone patches, with smaller outcrops lacking characteristic species.

4.2. ECOLOGICAL DRIVERS & FUNCTIONING

The Cape Floral Kingdom (CFK) is located at the southern tip of Africa and has been described as one of the wonders of the world. It covers an area of only 87 892 km² and hosts approximately 9 000 plant species of which 70% are endemic (does not occur anywhere else in the world). So special is this vegetation that the CFK has been designated as one of the earth's six plant kingdoms, putting it on par with the Boreal Forest Kingdom which covers 50 million square kilometres (Cowling & Richardson 1995). It has also been listed as one of 25 internationally recognized biodiversity hotspots. The CFR is one of the richest parts of the world in terms of floristic diversity and the degree of endemism is among the highest in the world. The CFK is also an Endemic Bird Area and levels of endemism are exceptionally high in freshwater ecosystems – many Cape Rivers show almost complete turn-over in species assemblages from one system to the next (Cowling & Richardson 1995).

Limestone Fynbos is part of the CFK and occurs in a broad ribbon stretching from Gansbaai in the west to the Gouritz River in east, and area which has been recognized as a botanical entity – the Bredasdorp-Riversdale Centre of Endemism (Heydenrych, 1994). Today, Limestone Fynbos has been divided in three main vegetation units, namely De Hoop Limestone Fynbos, Canca Limestone Fynbos and Agulhas Limestone Fynbos. The limestone vegetation around Vermaaklikheid is part of the Canca Limestone Fynbos unit. It is important to note that patches of more neutral and even acid soils may occur within or on top of the limestone, which means that sand fynbos and dune fynbos may also be observed within this unit (increasing the species diversity) (Oberholzer, 2010).

Limestone Fynbos is unique in that they occur on alkaline soils of limestone outcrops (with pH values greater than 7.5), whereas most fynbos vegetation occurs on acidic soils (with pH levels between 4.5 and 6.5) derived from Table Mountain Sandstone. It is restricted mainly to soils of the Bredasdorp geological formation. The limestone outcrops are relatively young in geological time, but their formation was an important event for the evolution of new fynbos species. New habitats and soil conditions were created, and new species evolved on limestone-derived soils. These are now confined to this area, resulting in a unique and species diversity and endemism (Heydenrych, 1994).

One of the major threats to this vegetation type is alien invasive species (especially *Acacia cyclops*), which spreads aggressively within the limestone environment and has in a relatively short period of time invaded most of the Canca Limestone Fynbos in the vicinity of Vermaaklikheid.

4.3. CRITICAL BIODIVERSITY AREAS & ECOLOGICAL CORRIDORS

The 2017 Western Cape Biodiversity Spatial Plan (WCBSP) includes a map of biodiversity importance for the entire province, covering both the terrestrial and freshwater realms, as well as major coastal and estuarine habitats (Pool-Stanvliet, 2017). The WCBSP is the product of a systematic biodiversity plan that delineates, on a map, Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs),

which require safeguarding to ensure the continued existence and functioning of species and ecosystems, including the delivery of ecosystem services (CapeNature, 2017).

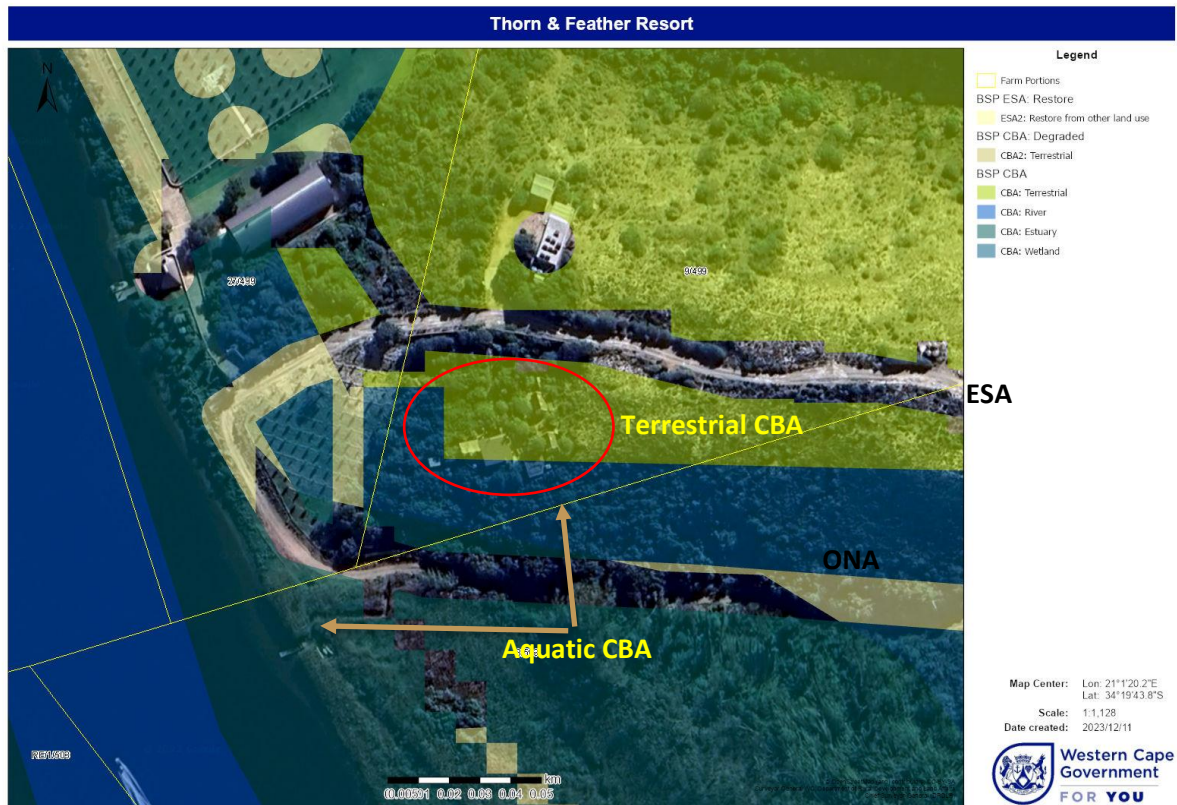


Figure 7: Western Cape Biodiversity Spatial Plan (2017) showing the study area and associated critical biodiversity areas.

Critical biodiversity areas (CBA's) are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services (SANBI 2007). The primary purpose of CBA's is to inform land-use planning to promote sustainable development and protection of important natural habitat and landscapes. CBA's can also be used to inform protected area expansion and development plans.

- **Critical biodiversity areas (CBA's)** are areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses.
- **Ecological support areas (ESA's)** are areas that are not essential for meeting biodiversity representation targets/thresholds, but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree of restriction on land use and resource use in these areas may be lower than that recommended for critical biodiversity areas.

According to 2017 Western Cape Biodiversity Spatial Plan (WCBSP) for the Hessequa Municipality, the development would have impacted on both terrestrial and aquatic critical biodiversity areas (CBA's) (CapeNature, 2017) (Figure 7).

4.4. WATERCOURSES AND WETLANDS

Not addresses in this report. A Freshwater Specialist report has been commissioned to evaluate the aquatic biodiversity theme.

4.5. LANDUSE AND COVER

The Remainder Portion 9 of Farm Vermaaklikheid No. 499 is zoned for Agriculture 1 but is now used as a holiday farm. The farm itself is not suitable for intensive agriculture (ploughing) because of the hard limestone crust, covering most of the property. In the past, it was probably only ever used for livestock grazing and as a holiday farm. The property is now owned by three shareholders (each with an undivided third share).

The character of the area is rural, but the area is fast becoming a tourist attraction. Being next to the Duivenhoks River the development fits in with the surrounding holiday farms offering tourist accommodation. The manner in which the accommodation was designed and the material that was used makes it visually unobtrusive and it has been designed to blend in with the natural environment (Source: *Consent use & Building Line Departures Application, dated 15 September 2022*).

The Thorn & Feather self-catering accommodation supply permanent work for at least two local families.

5. THE VEGETATION

According to the desktop information the development of the buildings were expected to have impacted on Canca Limestone Fynbos (Figure 6), while the access road to the river would have impacted on Non-terrestrial (Estuary Vegetation).

The buildings had been constructed on the lower almost south facing slope of the limestone plateau as it drops down towards the Duivenhoks River and is typical of valley-bottom Albany Thicket conforming to **Hartenbos Dune Thicket**. On these slope a deeper sandy soil (probably a more neutral soil) were found which supported a dense thicket vegetation dominated by evergreen, sclerophyllous trees, shrubs and vines (many of which have stem spines) and without a conspicuous grassy ground layer (the green area in Figure 8). Protected from fire and within the valley bottom the tree and tall shrub elements had over time grown into a dense thicket.

On farm Kleinefontein No. 503/3 where the footpath and small floating jetty was constructed the vegetation was a typical reedbed, which was subject to occasional flooding (the yellow area in Figure 8), forming part of the estuary wetland area.



Figure 8: A Google Image showing the infrastructure in relation to the thicket (green) and reedbed (yellow) vegetation.

5.1. EVALUATION OF THE THICKET VEGETATION

Unlike, at most the immediate neighbouring properties where these thicket pockets had been reduced to single trees, the forest patch at Thorn & Feather was still almost intact, and almost without any invasive species (apart from the occasional *Acacia cyclops* on the upper slopes). The tree component showed a close affinity with Hartenbos Dune Thicket and is dominated by *Olea exasperata* and

Buddleja saligna in combination with a number of other trees and shrubs such as *Brachylaena discolor*, *Cunonia capensis* (rooiels), *Cassine peragua*, *Gymnosporia heterophylla*, *Pterocelastrus tricuspidatus*, *Searsia longispina* and *Sideroxylon inerme* (Photo 3 to Photo 5).



Photo 3: Looking down from the limestone escarpment onto Feather & Thorn. Note the Thicket patch (marked by the yellow polygon) and the dense alien invasive stands (*Populus* species) on the edge of the reedbed along the river bank (to the left of picture).



Photo 4: Dense thicket stands growing next to the footpath leading down towards the Duivenhoks River.



Photo 5: Looking south from the stoep of the lounge area over the thicket stand onto the Duivenhoks River.

In between these trees and within the undergrowth smaller plants and climbers such as *Asparagus aethiopicus*, *Azima tetracantha*, *Cynanchum obtusifolium* (melktou), *Myrsine africana* (boxwood) and *Tetragonia fruticosa* was also common, with the climber *Cynanchum obtusifolium* sometimes forming a dense growth on the edges of the tree canopy.



Photo 6: Looking northeast onto the thicket stand from the road to the south of the facility.



Photo 7: Lower shrub/thicket next to the entrance road into the site. *Clutia alaternoides* in the foreground, with *Gnidia squarrosa* to the right and *Polygala myrtifolia* to the left.

Towards the upper slopes the soils are shallower and the vegetation changes to Canca Limestone Fynbos (Photo 8). In these areas, species such as *Berkheya coriacea*, *Clutia alaternoides*, *Gnidia squarrosa*, *Polygala myrtifolia* and *Searsia glauca* was observed (Photo 7), while on the more disturbed southern edge of the thickets (near the wetland area) species like *Anisodonteia scabrosa*, *Helichrysum patulum*, *Leonotis leonurus* and *Pelargonium capitatum* were also occasionally observed.



Photo 8: Looking down from the limestone hill onto the development. Note the Canca Limestone in the foreground, being replaced by denser thicket downhill.

5.2. EVALUATION OF THE REEDBED VEGETATION

Farm Vermaaklikheid 499/9 (Thorn & Feather) does not have direct access to the Duivenhoks River and used to gain access (together with local fisherman) slightly north of the new site (over Farm Vermaaklikheid 499/27) (Photo 9), and access point which is now denied by the landowner.

An agreement was reached with the owners of Farm Kleinefontein 503/3 to build a small footpath and a floating jetty on his property in order to reach the waterfront. The footpath runs through a dense stand of reeds dominated by *Phragmites australis* with the occasional *Cyperus papyrus* as well as a number of weedy species in the undergrowth.



Photo 9: The original river access used by the surrounding landowners and local fisherman.



Photo 10: The small access walkway through the reeds.



Photo 11: The small floating jetty on the edge of the Duivenhoks River.

A number of weedy species was associated with the disturbed edge (inland edge) of this reedbed next to the entrance road to Kleinefontein. In areas this edge was dominated by the alien invasive tree *Populus* species, with other weeds like *Cirsium vulgare*, *Gomphocarpus fruticosus*, *Ricinus communis* (kasterolieboom), and *Solanum linnaeanum* also commonly observed. The occasional indigenous Soetdoring (*Vachellia karroo*) was also encountered.

The reedbed itself are considered to be in relatively good condition, although the presence of the *Populus* trees (on the river bank) and weedy herbs detract from its value.

5.3. FLORA ENCOUNTERED

Table 8 gives a list of the plant species encountered. It is important to note that the purpose of the study was not to identify all species, but rather to get an understanding of the type of vegetation that had been impacted and evaluate the condition of this vegetation. No red-listed plants were observed, but one (1) NFA protected tree was encountered.

Table 8: List of plant species observed within the study area.

NO.	SPECIES NAME	FAMILY	STATUS	LOCATION
1.	<i>Acacia cyclops</i>	FABACEAE	CARA and NEMBA Listed Invader Species	Rooikrans: Occasionally observed and actively controlled.
2.	<i>Anisodonteia scabrosa</i>	MALVACEAE	LC	Disturbed thicket edges.
3.	<i>Asparagus aethiopicus</i>	ASPARAGACEAE	LC	In the thicket undergrowth.
4.	<i>Azima tetraacantha</i>	SALVADORACEAE	LC	In the thicket undergrowth.
5.	<i>Berkheya coriacea</i>	ASTERACEAE	LC	Occasional in limestone area
6.	<i>Brachylaena discolor</i>	ASTERACEAE	LC	Relatively common in thicket.
7.	<i>Buddleja saligna</i>	SCROPHULARIACEAE	LC	Dominant thicket species.
8.	<i>Cassine peragua</i>	CELASTRACEAE	LC	Occasional in thicket.
9.	<i>Cirsium vulgare</i>	ASTERACEAE	Alien invasive weed	Disturbed reedbed edges.
10.	<i>Clusia alaternoides</i>	EUPHORBIACEAE	LC	Occasional on thicket edges.
11.	<i>Cunonia capensis</i>	CUNONIACEAE	LC	Occasionally in thicket.
12.	<i>Cynanchum obtusifolium</i>	APOCYNACEAE	LC	Common climber in thicket.
13.	<i>Cyperus papyrus</i>	CYPERACEAE	LC	Reedbed area.
14.	<i>Gnidia squarrosa</i>	THYMELAEACEAE	LC	Along thicket edges.
15.	<i>Gomphocarpus fruticosus</i>	APOCYNACEAE	Weedy indigenous species.	Disturbed reedbed edges.
16.	<i>Gymnosporia heterophylla</i>	CELASTRACEAE	LC	Occasional in thicket
17.	<i>Helichrysum patulum</i>	ASTERACEAE	LC	Disturbed thicket edges.
18.	<i>Leonotis leonurus</i>	LAMIACEAE	LC	Disturbed thicket edges.
19.	<i>Myrsine africana</i>	MYRSINACEAE	LC	In the thicket undergrowth.
20.	<i>Olea exasperata</i>	OLEACEAE	LC	Dominant thicket species.
21.	<i>Pelargonium betulinum</i>	GERANEACEAE	LC	Rarely observed on limestone.
22.	<i>Pelargonium capitatum</i>	GERANIACEAE	LC	Disturbed thicket edges.
23.	<i>Phragmites australis</i>	POACEAE	LC	Dominant reedbed species.
24.	<i>Polygala myrtifolia</i>	POLYGALACEAE	LC	Occasional in limestone areas.
25.	<i>Populus</i> species	SALICACEAE	CARA and NEMBA Listed Invader Species	Disturbed reedbed edges.
26.	<i>Pterocelastrus tricuspidatus</i>	CELASTRACEAE	LC	Occasional in thicket

NO.	SPECIES NAME	FAMILY	STATUS	LOCATION
27.	<i>Ricinus communis</i>	EUPHORBIACEAE	Alien invasive weed	Disturbed reedbed edges.
28.	<i>Searsia glauca</i>	ANACARDACEAE	LC	Thicket and limestone areas.
29.	<i>Searsia longispina</i>	ANACARDACEAE	LC	Occasional too common in thicket
30.	<i>Sideroxylon inerme</i>	SAPOTACEAE	NFA protected tree. LC	Only in area surrounding the River Bend dwellings (Photo 13).
31.	<i>Solanum linnaeanum</i>	SOLANACEAE	Alien invasive weed	Disturbed reedbed edges.
32.	<i>Tetragonia fruticosa</i>	AIZOACEAE	LC	Thicket edges and undergrowth.
33.	<i>Vachellia karroo</i>	FABACEAE	LC	Reedbed edges.

5.4. THREATENED AND PROTECTED PLANT SPECIES

South Africa has become the first country to fully assess the status of its entire flora. Major threats to the South African flora are identified in terms of the number of plant taxa Red-Listed as threatened with extinction as a result of threats like, habitat loss (e.g. infrastructure development, urban expansion, crop cultivation and mines), invasive alien plant infestation (e.g. outcompeting indigenous plant species), habitat degradation (e.g. overgrazing, inappropriate fire management etc.), unsustainable harvesting, demographic factors, pollution, loss of pollinators or dispersers, climate change and natural disasters (e.g. such as droughts and floods). South Africa uses the internationally endorsed IUCN Red List Categories and Criteria in the Red List of South African plants. However, due to its strong focus on determining risk of extinction, the IUCN system does not highlight species that are at low risk of extinction but may nonetheless be of high conservation importance. As a result, SANBI uses an amended system of categories to highlight species that may be of low risk of extinction but are still of conservation concern (SANBI, 2015).

Red list of South African plant species: The Red List of South African Plants online provides up to date information on the national conservation status of South Africa's indigenous plants (SANBI, 2020).

- No red-listed plant species were observed.

NEM:BA protected plant species: The National Environmental Management: Biodiversity Act, Act 10 of 2004, provides for the protection of species through the "Lists of critically endangered, endangered, vulnerable and protected species" (GN. R. 152 of 23 February 2007).

- No NEM: BA protected species was observed.

NFA Protected plant species: The National Forests Act (NFA) of 1998 (Act 84 of 1998) provides for the protection of forests as well as specific tree species (as updated).

- One species protected in terms of the NFA was observed, namely *Sideroxylon inerme* (white milkwood).

5.5. PLANT SPECIES SENSITIVITY THEME

According to the DFFE Environmental Screening Tool report for this site (Appendix 2), the **plant species theme sensitivity is considered High Sensitive**, because of a number of sensitive plant species (listed on page 14 – 16 of the DFFE screening report) that might be encountered.

It is important to note that the species list assumed that the impacted vegetation will be Canca Limestone Fynbos (based on the SA Vegetation map, 2018) (Figure 6). However, as discussed under Heading 5 & 5.1, the development footprint (Figure 5) did not impact on Limestone vegetation. In addition, none of these listed sensitive species were observed (or are expected to have been impacted).

The only species of significance observed were a number of ***Sideroxylon inerme*** (white milkwood) trees which was part of the tree canopy of the thicket patch (Refer to Heading 5.5). According to the landowner, all the infrastructure was placed to avoid larger indigenous trees and especially the milkwood trees. All indications as well as the careful layout of these infrastructure seems to suggest that the landowner is very conservation conscious, and that great care was taken to minimize the impact on the natural vegetation.

Based on the findings of this study, the plant species sensitivity rating is considered to be **Low Sensitive**.

6. FAUNA AND AVI-FAUNA

The southern coast of the Western Cape offer some of the most beautiful scenic with large areas of natural veld remaining in the Vermaaklikheid area. Historically various large game species would have roamed the southern coastline including elephant, rhinoceros, lion and eland. Because of the low nutritional value of the Fynbos and Strandveld vegetation types, it is believed that most of these species would have been nomadic. By the 19th century most migratory species have been replaced by domestic stock with selective grazing habits confined within farm boundaries (Skead, 1982). Once farmers started fencing their properties into camps (following the Fencing Act of 1912), stock numbers were dramatically increased with dire consequences to plant and animal diversity (<https://vermaakliheid.co.za>).

In the remaining natural veld around Vermaaklikheid, antelope species like bushbuck, grey rhebuck and Cape grysbok can still be observed. Other animals include the honey badger, bat-eared fox, cape clawless otter, cape hare, cape porcupine, large spotted genet, water mongoose, caracal and the large grey mongoose. Reptiles include snakes like the puff adder, cape cobra and mole snake. Many of the smaller animals, snakes and even some of the antelope can still be observed from time to time, but they are not common anymore because of anthropogenic impacts and ever increasing human activity.

The main wildlife attraction in this region are birds of which more than a 100 species have been recorded by the local observers (<https://vermaakliheid.co.za>). According to the SABAP2 data set 172 bird species may be expected in pentad 3415_2100 overlapping the study area (Refer to Appendix 3), many of which are associated with the Duivenhoks River and associated wetland areas.

No fauna or avi-fauna screening was done as part of this study, but observations were made during the various site visits.

6.1. ANIMAL SPECIES THEME SENSITIVITY

According to the **DFFE National Web Based Environmental Screening Tool** the relative Animal species theme sensitivity is considered of **High Sensitivity** because of the potential impact on a number of sensitive species identified on Page 8 of the screening report and discussed in Table 9, below.

Apart from the species mentioned by the DFFE Screening Report, the SABAP2 list includes nine (7) species of conservation concern. However, most of these species are associated with open grasslands, wheatfields or shorter fynbos vegetation like the Blue Crane (*Grus paradisea*) (NT), Lanner Falcon (*Falco biarmicus*) (EN), Karoo Korhaan (*Eupodotis vigorsii*) (NT), Agulhas Long-billed Lark (*Certhilauda brevirostris*) (NT), while the Half-collared Kingfisher (*Alcedo semitorquata*) (NT) will be associated with the Duivenhoks River.

The only SoCC not listed in the screening tool that might have been impacted are the Knysna Warbler (*Bradypterus sylvaticus*) (VU) and the Knysna Woodpecker (*Campethera notata*) (VU), also discussed in the Table 9.

Table 9: Animal species theme according to the DFFE Sensitivity Scan results.

FEATURES	MOTIVATION
<p>Aves – High <i>Circus maurus</i> (Black Harrier) Endangered (EN)</p>	<p>Status: The Black harrier is an endangered bird and one of southern Africa’s rarest endemic raptors (Birdlife International, 2023).</p> <p>Habitat: It favours Renosterveld, short Fynbos and Karoo habitat, where it breeds in shallow nests on the ground. These birds are mostly <u>associated with larger, well-connected, and more pristine patches of veld</u> and is often <u>considered an indicator of well-preserved natural veld</u> (Curtis-Scott <i>et. al.</i>, 2020).</p> <p>According to SABAP 2, the Black Harrier is expected in the surrounding area. However, since the development impacted mainly on a thicket patch (not the preferred habitat for this bird) and because of the small size of the development footprint, it is unlikely that the development would have resulted in any significant impact on the breeding or feeding patterns of these birds.</p> <p>With regards to this project the sensitivity rating is considered Low Sensitive.</p>
<p>Aves – High <i>Neotis denhami</i> (Denham’s Bustard / Stanley’s Bustard) Vulnerable (VU)</p>	<p>Status: Stanley’s Bustard is considered vulnerable and estimated to be undergoing a moderately rapid population decline due to hunting and conversion of grassland for agriculture. It 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 (Taylor, 2015). In the Western Cape, Denham's Bustard can be locally numerous in mosaics of <u>cultivated pastures, agricultural croplands</u> and natural vegetation with clear seasonal differences in the use of each habitat type (Allan 2002).</p> <p>Habitat: The natural habitat for this species is open grassland, floodplains, and open fynbos (specifically after fire) (Taylor, 2015).</p> <p>It is likely that the Stanley’s Bustard might occur or feed in the recently burned limestone veld to the east of the study area (SABAP2, list this species in this Pentad), but since the development impacted mainly on a thicket patch (not the preferred habitat for this bird) and because of the small size of the development footprint, it is unlikely that the development would have resulted in any significant impact on the breeding or feeding patterns of these birds.</p> <p>With regards to this project the sensitivity rating is considered Low Sensitive.</p>
<p>Aves – High <i>Polemaetus bellicosus</i> (Martial eagle) Endangered (EN)</p>	<p>Status: The Martial Eagle is southern Africa’s largest eagle and is considered endangered, because of deliberate or accidental poisoning, habitat loss, and loss of available prey, collisions with power lines etc. The remaining population is believed to be 800 pairs in South Africa (Taylor, 2015). The Martial Eagle has an extensive range across much of sub-Saharan Africa but is <u>generally scarce to uncommon or rare</u>.</p> <p>Habitat: It inhabits open woodland, wooded savanna, bushy grassland, thornbush and, in southern Africa, more open country and even subdesert, from sea level to 3,000 m but mainly below 1,500 m (Ferguson-Lees & Christie 2001).</p> <p>Breeding: Evidence suggests that breeding pairs select strongly against</p>

FEATURES	MOTIVATION
	<p>human-disturbed habitats. They need large trees for nests and prefer protected areas as breeding spots.</p> <p>The Martial Eagle might occur in the surrounding area (SABAP2) and even hunt in the vicinity but is unlikely to breed in the study area, because of regular human activity (neighboring farm holdings along the this stretch of the Duivenhoks River). The proposed development is not expected to have had any significant additional impact on the breeding or feeding patterns of this species (especially because of its small size and careful layout design).</p> <p>With regards to this project the sensitivity rating should be Low Sensitive.</p>
<p>Aves - High <i>Circus ranivorus</i> (African Marsh Harrier) Endangered (EN)</p>	<p>Status: The African Marsh Harrier is considered endangered, because of a perceived rapid decrease in its regional population numbers (greater than 50% decline over a 24-year period) (Taylor, 2015). The species is easily identifiable and highly conspicuous when foraging. The primary threat faced by this species is loss and degradation of its sensitive wetland habitats, as result of drainage or damming for development and agriculture (Monadjem <i>et al.</i> 2003).</p> <p>Habitat: The Marsh Harrier is sparsely distributed across wetlands throughout central and east Africa, and southwards to southern Africa (Ferguson-Lees and Christie 2001). It is absent from areas with less than 300 mm of annual rainfall (Simmons 1997). It is absent from the drier parts of Northern Cape and inland areas parts of Western Cape.</p> <p>Diet: It has a varied diet which includes small mammals (70% of its diet), adult birds, fledglings, lizards, frogs, and large insects.</p> <p>Breeding: Nests are usually built in reedbeds, sometimes well above the water. Unlike many harriers, this species does not form communal roosts (normally roosts solitary) and is monogamous and remains on the breeding territory for most of the year (Brown <i>et. al.</i>, 1982).</p> <p>The African Marsh Harrier is listed for this area (SABAT 2). Given its wetland habitat- and reedbed nesting preferences, it is considered likely that might occur in this area. However, the impact on the reedbed was relatively small and localised. It is considered unlikely that the development would have impacted significantly on the breeding or feeding activities of this bird.</p> <p>With regards to this project the sensitivity rating is considered to be Low Sensitive.</p>
<p>Aves – Medium <i>Podica senegalensis</i> (African finfoot) Vulnerable (VU)</p>	<p>Status: The African Finfoot is an aquatic bird, classified as vulnerable and is believed to be undergoing a continual decline in the area, extent and quality of its habitat (possibly under-recorded). It occurs throughout central and western Africa, although it is absent from the drier North and East African regions. In southern Africa, it occurs from the eastern Caprivi in Namibia through most of Zimbabwe, where it is localised but widespread. It was recorded in scattered locations in Eastern Cape, with a concentration of records around East London. The westernmost record was from the vicinity of Mossel Bay in Western Cape.</p> <p>Habitat: The African Finfoot is highly localised due to its specialised habitat requirements and is nowhere common. It lives in rivers, streams and lakes and can be found in a range of habitats but needs good cover on the banks.</p>

FEATURES	MOTIVATION
	<p>Diet: The finfoot feeds on aquatic invertebrates, including both adults and larval mayflies, dragonflies, crustaceans, also snails, fish and amphibians. They are thought to be highly opportunistic and take some of their prey directly off the water's surface. They are adept out of water and will forage on the banks as well, unlike the grebes, which they resemble but are not related to (BirdLife International, 2016).</p> <p>The African Finfoot is elusive in nature and is not persecuted or targeted by hunters, and while scarce, it is very widespread. However, there is concern that it may become threatened, as wetlands are cleared, and watercourses altered and polluted. It is also thought to tolerate only minimal disturbance. According to the SABAP2 dataset it has not been observed in this pentad. Given that its most easterly distribution is fine as Mossel Bay it is considered highly unlikely that the development would have had any significant impact on this species.</p> <p>With regards to this project the sensitivity rating is considered to be Low Sensitive.</p>
<p>Aves – Medium <i>Stephanoaetus coronatus</i> (Crowned Eagle) Vulnerable (VU)</p>	<p>Status: The Crowned Eagle is classified as vulnerable (population size estimated to number less than 1 000 mature individuals) and the regional population is projected to undergo a continuous decline that may exceed 10% over the next three generations (Taylor, 2015). The species is widespread throughout sub-Saharan Africa where it occurs from the lowland forests of West Africa, across to Ethiopia, and southwards to South Africa (Ferguson-Lees and Christie 2001). In southern Africa, it is restricted to Zimbabwe, central Mozambique and eastern South Africa and Swaziland, where it is strongly associated with Lowveld and escarpment forests, including riparian forest along the Limpopo and Luvuvhu rivers. Incidental records from SABAP2 show birds ranging as far west as the Overberg, Western Cape. Globally, this species is threatened by persecution through trapping, shooting and nest destruction, competition for prey from humans, and habitat loss through deforestation (Ferguson-Lees and Christie 2001).</p> <p>Diet: Crowned Eagles have been known to predate on small stock animals, chickens, dogs and domestic cats (Daneel, 1979), bringing the species into conflict with humans and resulting in persecution by stock farmers (Brown, 1982). The loss of forest habitat has had a relatively small negative impact on the species because it has been able to adapt relatively well to nesting in alien plantations.</p> <p>According to SABAP2 this species has not been observed within pentad and it is considered unlikely that the small scale of the development (coupled with the small likelihood of the bird occurring in this area) could have led to any significant impact on its breeding or feeding habits.</p> <p>With regards to this project the sensitivity rating is considered to be Low Sensitive.</p>
<p>Aves - Medium <i>Hydroprogne caspia</i> (Caspian Tern)</p>	<p>Status: The Caspian tern is the largest tern in the world and has an extremely large range. It is considered vulnerable, but population trend appears to be increasing (Birdlife International, 2023).</p> <p>Habitat & Diet: The bird favours both freshwater and saltwater environments</p>

FEATURES	MOTIVATION
<p>Vulnerable (VU)</p>	<p>and feeds mostly on fish.</p> <p>According to SABAP2 this species had not been observed within this pentad, and it is also considered highly unlikely that the small scale of the development would have had any significant impact on the breeding and feeding patterns of this species.</p> <p>With regards to this project the sensitivity rating is considered to be Low Sensitive.</p>
<p>Aves - Medium <i>Afrotis afra</i> (Southern Black Korhaan) Vulnerable (VU)</p>	<p>Status: The southern black korhaan is endemic to southwestern South Africa and is also suspected of undergoing rapid population decline owing to habitat fragmentation (it is listed as vulnerable).</p> <p>Habitat: It prefers semi-arid habitats such as grasslands, shrublands and savannas.</p> <p>Diet: It feeds mainly on insects, such as termites, grasshoppers, and beetles, but it also eats small reptiles and plant products such as seeds, foraging on the ground and picking up food items with its bill. In the Western Cape it is uncommon to common in the remnants of renosterveld and Strandveld.</p> <p>It is possible that the Korhaan might occur or feed fynbos veld to the east of the study area (although not observed in this pentad, according to the SABAP2 data set). The development impacted mainly on a thicket patch (not the preferred habitat for this bird) and because of the small size of the development footprint, it is unlikely that the development would have resulted in any significant impact on the breeding or feeding patterns of these birds.</p> <p>With regards to this project the sensitivity rating is considered to be Low Sensitive.</p>
<p>Insecta – Medium <i>Aloeides thyra orientis</i> (The Red Copper) Endangered (EN)</p>	<p>Status: The Red copper is an endangered butterfly in the family Lycaenidae. It is a range restricted taxon, endemic to the southern coastal regions of the Western Cape Province (South Africa). There are only six known locations (including four for which taxonomic uncertainty exists). It is believed to occur from Witsand to Gouritsmond in the west, to Brenton Peninsula near Knysna in the east. There is a continuing decline in, area, extent and quality of its habitat. The Brenton Peninsula location is a case in point, where a formerly widespread and large single subpopulation has become fragmented through the building of roads, houses, infrastructure, agricultural activities and the spread of alien vegetation, into 5 smaller subpopulations where demographic or genetic interchange has now been compromised (Edge, <i>et. all.</i>, 2018).</p> <p>Habitat: It is found in coastal fynbos on flat sandy ground (either naturally occurring or from anthropogenic disturbances such as footpaths or unsurfaced track) between 40 m to 240 m above sea level. Property development in these coastal habitats is an ever present threat and has already caused the loss of several subpopulations in the Knysna and Stilbaai areas. The reduction in frequency of fires near human habitation is also believed to have a detrimental effect on this species by leading to shading out of the habitat. The build-up in fuel-load can also lead to very severe fires, which have the potential to wipe out subpopulations (for example, the high intensity fires which took place in June 2017 around Knysna) (Edge, <i>et. all.</i>,</p>

FEATURES	MOTIVATION
	<p>2018).</p> <p>Host plants: The larvae feed on <i>Aspalathus acuminata</i>, <i>A. laricifolia</i> and <i>A. cymbiformis</i>. The larvae are attended to by <i>Lepisiota capensis</i> ants (Woodhall, 2005 – Source: Wikipedia).</p> <p>Vermaaklikheid falls within the geographical distribution range for this species. However, the impacted area, is part of a dense thicket, while the preferred habitat and its hosts plants are associated with lower open sandy coastal vegetation. There is a potential that this species might occur within the adjacent fynbos areas, but it is unlikely to have been impacted by the development footprint.</p> <p>With regards to this project the sensitivity rating is considered to be Low Sensitive.</p>
<p>Insecta - Medium <i>Chrysoritis brooksi tearei</i> (Brooks Opal) Endangered (EN)</p>	<p>Status: Brook’s Opal is an endangered butterfly of the family Lycaenidae. It is also a range restricted taxon, endemic to the southern coastal regions of the Western Cape Province (South Africa) from Bredasdorp in the west to Stilbaai in the east. There are six widely separated locations (17-72 km apart with no possibility of gene flow between them or recolonisation following local extinction. The entire population is therefore severely fragmented. These subpopulations are threatened with habitat degradation from invasive alien plants and livestock overgrazing (Edge <i>et. al</i> 2018).</p> <p>Habitat: This species is found on sandy, low hills, sparsely covered by shrubs (Edge <i>et. al</i> 2018).</p> <p>Host plants: Larvae feed on <i>Thesium</i> and <i>Zygophyllum</i> species. They are associated with <i>Crematogaster peringueyi</i> ants (Woodhall, 2005).</p> <p>The study area falls within the geographical distribution range for this species, but the habitat impacted is not support the preferred species or habitat for this butterfly species. As a result, it is considered highly unlikely that the development would have impacted on this species.</p> <p>With regards to this project the sensitivity rating is considered to be Low Sensitive.</p>
<p>Insecta – Medium <i>Lepidochrysops littoralis</i> (Coastal blue butterfly) Endangered (EN)</p>	<p>Status: The Coastal Blue is an endangered butterfly in the family Lycaenidae. It is endemic to the Western Cape Province (South Africa) occurring from the De Hoop Nature Reserve in the west to a few kilometres west of Mossel Bay in the east. Ten locations are known, separated by distances between 10 and 35 km, often across land transformed by agricultural activities, coastal developments, industrial complexes, housing estates, plantations and alien infestations. Even 10 km is probably beyond the dispersal range of this taxon (2-5 km average) so all of these locations represent isolated, closed subpopulations, some of which are non-viable. The population is therefore severely fragmented (Edge <i>et. al</i> 2018).</p> <p>Habitat: This species is found on rocky limestone ridges or sand dunes in coastal fynbos. Usually found quite close to the seashore, as at Still Bay (Edge <i>et. al</i> 2018), where males congregate on the tops of ridges and sand dunes. Here they circle rapidly, occasionally settling on low bushes or the ground. Females are well dispersed and are therefore less commonly encountered (Pringle <i>et al.</i>, 1994, in).</p>

FEATURES	MOTIVATION
	<p>Host plants: Eggs are laid on the flower buds or the base of the flowers of the hostplants and are associated with formicine ants.</p> <p>The study area falls within the geographical distribution range for this species, but the habitat impacted is not support the preferred species or habitat for this butterfly species (and is not near to the coast). As a result, it is considered highly unlikely that the development would have impacted on this species.</p> <p>With regards to this project the sensitivity rating is considered to be Low Sensitive.</p>
<p>Invertebrate – Medium <i>Aneuryphymus montanus</i> Yellow-winged Agile Grasshopper Vulnerable (VU)</p>	<p>Status: The Yellow-winged Agile Grasshopper is a vulnerable endemic to the Cape region of South Africa. The continuing decline in the quality of habitat have resulted in a continuing decline in the number of mature individuals inferred. It is only known from six localities in the Cape region of South Africa (Hochkirch <i>et. al.</i>, 2018).</p> <p>Habitat: The species is associated with fynbos vegetation, where it has been collected "amongst partly burnt stands of evergreen sclerophyllous plants in rocky foothills" (Brown, 1960 in Hochkirch <i>et.al.</i>, 2018). It prefers south-facing cool slopes (Kinvig, 2005 in Hochkirch <i>et.al.</i>, 2018).</p> <p>The study area is located on an almost south-facing (cooler) slope of a limestone hill. However, the study area does not support the preferred habitat for this species. The species may occur (although unlikely) on the limestone fynbos to the east, but it is considered unlikely that the development would have had any significant impact on the survival of this species.</p> <p>With regards to the is project the sensitivity rating should be low sensitive.</p>
<p>Aves – Vulnerable <i>Bradypterus sylvaticus</i> (Knysna warbler) Vulnerable (VU)</p>	<p>Status: The Knysna Warbler is classified as regionally Vulnerable due to its small, severely fragmented range and small population. In addition, all sub-populations contain less than 1 000 mature individuals and there is a perceived continuing decline in population size, range size, and area, extent and quality of habitat. Habitat loss is perceived as the main cause for decline in numbers (Taylor <i>et al.</i>, 2015).</p> <p>Distribution: The Knysna Warbler is a South African endemic with a highly restricted and fragmented distribution, being found in four zones in the littoral of Eastern and Western Cape provinces. The northernmost zone covers the stretch of coastal vegetation between Mbombazi Nature Reserve, south of Margate in KwaZulu-Natal, to Dwesa-Cwebe Nature Reserve in Eastern Cape. The next sub-population occurs between Tsitsikamma and Sedgfield (Berruti, 1997, in Taylor <i>et al.</i>, 2015), with a third sub-population persisting on the southern slopes of the Langeberg Mountains, near Swellendam (Berruti, 2000, in Taylor <i>et al.</i>, 2015). A fourth sub-population occurs on the eastern slopes of Table Mountain on the Cape Peninsula (Pryke <i>et al.</i> 2011, in Taylor <i>et al.</i>, 2015). The Knysna Warbler is extremely secretive, and its presence is normally revealed only during the breeding season when it sings. Contact calls, uttered by both sexes, are diagnostic but indistinctive. It is certain that this, coupled with the inaccessibility of most of its habitat, has led to it being under-recorded in both atlas projects.</p> <p>Habitat: The habitat of the Knysna warbler is low, dense tangled</p>

FEATURES	MOTIVATION
	<p>undergrowth, usually along watercourses, on the edge of temperate forests or in thickets. It has adapted to non-native bramble thickets and can colonise suburban riparian woodland if there is a vegetation undergrowth. Interestingly Visser and Hockey (2002, in Taylor <i>et al.</i>, 2015) found that this species fares better in transformed urban landscapes than in adjacent protected areas, but this may have been due to unsuitable management practices within the protected area.</p> <p>According to SABP2 data, the Knysna warbler <u>had been observed in this pentad</u> and might be encountered within the thickets associated with the development. However, the development itself was done in such a way as to limit the impact on the natural vegetation. As a result, the potential impact on the breeding and feeding habitat of this species is expected to be limited and localised. With regards to this development the potential impact is considered of Low Sensitivity.</p>
<p>Aves – Near Threatened <i>Camphetera notata</i> (Knysna woodpecker) Near Threatened (NT)</p>	<p>Status: The global population of the endemic Knysna Woodpecker is thought to be undergoing a decline in numbers although the rate of decline is unknown (globally assessed as Near Threatened). The decline is expected to be concomitant with habitat loss occurring within its Eastern Cape stronghold (Peacock, 2015).</p> <p>Distribution: Endemic to South Africa where it occurs along the coastal plain of the Western Cape and Eastern Cape provinces, and marginally in southern KwaZulu-Natal. Recent atlas data suggest the species occurs further west towards Caledon.</p> <p>Habitat: It generally prefers thornveld, euphorbia thickets, riparian woodland, coastal White milkwood (<i>Sideroxylon inerme</i>) thickets and montane forests, rarely venturing into tall protea thickets and alien tree plantations (Hockley <i>et al.</i>, 2005).</p> <p>Diet: Mainly eats ants and termites, as well as their eggs and pupae, foraging at all levels of the tree canopy. It typically works its way along branches, pecking, gleaning and probing in search of prey (Hockley <i>et al.</i>, 2005).</p> <p>Breeding: Breeding takes place in August–November (mainly October) and the pairs are widely spaced. The nest hole is excavated in a dead tree trunk or branch. It has a clutch size of 2–4 eggs, which it incubates for 13–21 days, followed by a fledgling period of 4–6 days.</p> <p>According to SABP2 data, the Knysna woodpecker <u>had been observed in this pentad</u> and might be encountered within the thickets associated with the development. However, the development itself was done in such a way as to limit the impact on the natural vegetation. As a result, the potential impact on the breeding and feeding habitat of this species is expected to be limited and localised. With regards to this development the potential impact is considered of Low Sensitivity.</p>

7. TERRESTRIAL BIODIVERSITY DISCUSSIONS

7.1. EXTENT OF THE IMPACT

According to the measurements given in Figure 5 the unlawful building development (swimming pool area, kitchen/lounge area, bathroom area and the one bedroom) resulted in a disturbance footprint of about 257 m². The size of the remaining thicket area at the foothills of the limestone escarpment in at this point (including the thicket area on Farm Kleinefontein No. 503/3) is estimated to be about 9 647 m² in extent (the green area in Figure 9) (this relates an about 3% impact on the thicket patch).

Historical google images shows that up until about 2017, this thicket patch (south of the entrance road, had stretched northwards up to the entrance road (purple area in Figure 9). The additional area (located on Farm Vermaaklikheid 499/27, the neighbouring property) would have added another almost 2 200 m² to overall size of the thicket patch south of the entrance road. Unfortunately, this area was cleared around 2020 and then planted to orchards (olive trees), reducing the ORIGINAL thicket patch (south of the entrance road) by about 18% (a much more destructive result in terms of the thicket vegetation, than that caused by the Thorn & Feather accommodation).



Figure 9: Historical Google image (2017) showing the original extent of the thicket patch next to the river (south of the entrance road). The purple area, showing the additional area cleared for orchards and the green area the remaining extent of the thicket area.

In extent the impact associated with the development within the thicket vegetation is about 257 m² or about 3% of the remaining thicket patch in direct impact. Because of the way in which the layout was designed (to minimize the impact on the natural veld) and the sensitive way in which it was placed (to include the indigenous thicket as part of the layout), not only the direct impact on the natural vegetation, but also the cumulative impacts was significantly reduced (in relations to any normal dwelling or holiday development). It was clear that a great deal of thought went into the design and

that construction was done with great care – all of which shows a keen objective to minimise the disturbance footprint and integrating the structures into the thicket patch.

Similarly, the impact on within the reedbed area was reduced to a small footpath and a small opening next to the jetty (for storing canoe's). All of these features can be described as temporary in that it will be easy to remove or will be reclaimed by the reedbed if let unattended. The jetty itself is a floating platform anchored to wooden poles with a small wooden deck to allow access to the jetty. Again, the design and way it was constructed, shows a keen interest towards minimizing the impact on the environment.

7.2. **BIODIVERSITY STATUS EVALUATION**

Vegetation: According to the 2018 SA Vegetation map, the development was expected to impact on Canca Limestone Fynbos (Least Threatened) (Refer to Heading 4.1). The site visit showed that the impacted area was located within a thicket patch which is part of the Albany Thicket biome namely **Hartenbos Dune Thicket** (Valley-bottom) (Refer to Heading 5).

Flora: The DFFE screening tool identified the plant species theme as high, but this was under the assumption that the development impacted on Canca Limestone Fynbos. None of the sensitive species listed was observed or are expected to have been impacted. The only significant plant observed were the presence of a number of milkwood trees (*Sideroxylon inerme*) (refer to Heading 5.5). According to the landowner, care was taken not to disturbed any of these trees.

Fauna: The DFFE screening tool also identified the animal species theme as high, because of the potential impact on a number of avi-fauna and vertebrate species (refer to Heading 6.1). An evaluation of these species showed that it is not expected that the development would have had any significant impact on any of these species (refer to Table 9).

Conservation priority areas: According to 2017 Western Cape Biodiversity Spatial Plan (WCBS) for the Hessequa Municipality, the development impacted on both terrestrial and aquatic critical biodiversity areas (CBA's) (refer to Heading 4.3 & Figure 7). The extent of the footprint area was actually very small and great care was taken to locate the site in harmony with the surrounding natural vegetation and to minimise the impact on the natural veld. The owner is also busy replanting indigenous trees and shrubs back into the thicket area to enhance the feeling of a natural "forest" surroundings. Although not all of the species replanted are natural thicket species, the efforts are remarkable.

Connectivity: Because of the small scale of the development and the way in which it was designed and built, the impact on connectivity is unlikely to have any significant impact on the ecology of the site. Larger antelopes (e.g. bushbuck) might avoid this area when it is occupied but overall, the impact on connectivity is considered to be low.

7.3. INDIRECT IMPACTS

Indirect impacts occur away from the 'action source' i.e., away from the development site. The impact assessed here is specifically how the proposed development would have an indirect impact on vegetation, flora, mammals, birds, reptiles, and invertebrates away from the development site.

Again, the manner in which the accommodation was designed and the material that was used clearly shows a keen desire to minimize the impact on the environment and to maintain the ecological function of the site. In addition, the landowner is busy with a significant alien clearing program (at his own costs) on the larger farm and is also busy replanting indigenous trees and shrubs back into the thicket area to enhance the feeling of a natural "forest". Because of the above and because of the small size of the development footprint, the indirect impact is considered to be **Low Significant**.

7.4. CUMULATIVE IMPACTS

Refer to Table 10. In this impact assessment method, cumulative impacts are calculated by using the worst scenarios for each aspect as input into the cumulative impact calculation.

7.5. THE "NO-GO" ALTERNATIVE

Not applicable, this is a S24G rectification report.

8. TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

The following table aims to rate the significance of the environmental impacts associated with the development (including the cumulative impacts).

Table 10: Significance rating of the terrestrial biodiversity impacts associated with the development.

Impact assessment							
Aspect	CV	Lik	Dur	Ext	Sev	Significance	Short discussion
Landuse and cover: Potential impact on socio-economic activities.	4	1	4	1	1	28	The farm is Zoned for agriculture, but with a high ecotourism potential. The development compliments surrounding land use and resulted in job creation.
Vegetation status: Loss of vulnerable or endangered vegetation and associated habitat.	4	4	4	1	1	40	The vegetation within is considered of high botanical significance (being within a CBA), but the footprint was very small.
Conservation priority: Potential impact on protected areas, CBA's, ESA's or Centre's of Endemism.	4	4	4	1	1	40	The development impacted on both terrestrial and aquatic critical biodiversity areas, but the footprint area was very small.
Connectivity: Potential loss of ecological migration corridors.	4	2	4	1	1	32	Because of the small size the impact on connectivity is considered low to very low.
Protected & endangered plant species: Potential impact on threatened or protected plant species.	3	2	4	1	1	24	The only significant plant observed were the presence of a number of milkwood trees (<i>Sideroxylon inerme</i>).
Fauna & Avi-fauna Potential impact on mammals, reptiles, amphibians & birds.	3	2	4	1	1	24	It is not expected that the development would have had any significant impact on any of the identified sensitive species.
Cumulative impacts: Cumulative impact associated with proposed activity.	4	4	4	1	1	40	The transformation of about 257 square metre of thicket within a CBA1 (Refer to Heading 7.1)

According to the **DFFE Environmental Screening Report** the relative Terrestrial Biodiversity theme sensitivity is considered of **Very High Sensitivity** because it overlaps critical biodiversity areas.

The Terrestrial biodiversity assessment (Table 10) aims to take all the discussion in this report into account, including the fact that the vegetation is not vulnerable or endangered as well as all the other reasons discussed throughout this document.

According, Table 10, the main impacts associated with development was:

- The small and localised impact on vegetation;
- The small and localised impact on conservation priority areas.

Because of the small size and the way in which the development was done even the cumulative impact is considered to be **Medium/Low**. No fatal flaws or any other obstacles were found with respect to

the flora, vegetation, fauna, and terrestrial biodiversity.

It is considered highly unlikely that the development had contributed significantly to any of the following:

- Significant loss of vegetation type and associated habitat.
- Loss of ecological processes (e.g., migration patterns, pollinators, river function etc.) due to construction and operational activities.
- Loss of local biodiversity and threatened species.
- Loss of ecosystem connectivity.

The findings of this assessment suggests that the relative **terrestrial biodiversity theme sensitivity** should be **Medium/Low Sensitive** (not Very High Sensitive as suggested in the DFFE screening report).

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APPENDIX 1: REQUIREMENTS FOR SPECIALIST REPORTS

Minimum Content Requirements for Botanical and Terrestrial Biodiversity Specialist Reports as per Protocol for the Specialist Assessment of Environmental Impacts on Terrestrial Biodiversity (GN 320 of 20 March 2020).

Protocol Ref	Botanical and Terrestrial Biodiversity Specialist Assessment Report Content	Section / Page
3.1.1.	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Page I & v - vi
3.1.2.	a signed statement of independence by the specialist;	Page vi
3.1.3.	a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Heading 3.2
3.1.4.	a description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Heading 3.1, 3.2 & 3.3.
3.1.5.	a description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Heading 3.3
3.1.6.	a location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Heading Error! Reference source not found.
3.1.7.	additional environmental impacts expected from the proposed development;	Heading 7
3.1.8.	any direct, indirect and cumulative impacts of the proposed development;	Heading 7
3.1.9.	the degree to which impacts and risks can be mitigated;	Table 12 & Heading 8
3.1.10.	the degree to which the impacts and risks can be reversed;	Heading 7
3.1.11.	the degree to which the impacts and risks can cause loss of irreplaceable resources;	Heading 8
3.1.12.	proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Heading 8
3.1.13.	a motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate;	NA
3.1.14.	a substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and	Page iii
3.1.15.	any conditions to which this statement is subjected.	N/A

APPENDIX 2: DFFE SCREENING REPORT

APPENDIX 3: SABAP2 BIRD SPECIES LIST (PENTAD 3415_2100)

The SABAP2 species list for Pentad 3415_2100. Regional and Global red list categories are according to the 2019 BirdLife South Africa list. Red listed species are marked in yellow.

Common group	Common species	Genus	Species	Regional	Global
	Bokmakierie	<i>Telophorus</i>	<i>zeylonus</i>		
	Neddicky	<i>Cisticola</i>	<i>fulvicapilla</i>		
Apalis	Bar-throated	<i>Apalis</i>	<i>thoracica</i>		
Barbet	Acacia Pied	<i>Tricholaema</i>	<i>leucomelas</i>		
Batis	Cape	<i>Batis</i>	<i>capensis</i>		
Bee-eater	European	<i>Merops</i>	<i>apiaster</i>		
Bishop	Southern Red	<i>Euplectes</i>	<i>orix</i>		
Bishop	Yellow	<i>Euplectes</i>	<i>capensis</i>		
Boubou	Southern	<i>Laniarius</i>	<i>ferrugineus</i>		
Brownbul	Terrestrial	<i>Phyllastrephus</i>	<i>terrestris</i>		
Bulbul	Cape	<i>Pycnonotus</i>	<i>capensis</i>		
Bunting	Cape	<i>Emberiza</i>	<i>capensis</i>		
Bunting	Lark-like	<i>Emberiza</i>	<i>impetuani</i>		
Bushshrike	Olive	<i>Chlorophoneus</i>	<i>olivaceus</i>		
Bustard	Denham's	<i>Neotis</i>	<i>denhami</i>	VU	NT
Buzzard	Common	<i>Buteo</i>	<i>buteo</i>		
Buzzard	Forest	<i>Buteo</i>	<i>trizonatus</i>	LC	NT
Buzzard	Jackal	<i>Buteo</i>	<i>rufofuscus</i>		
Canary	Brimstone	<i>Crithagra</i>	<i>sulphurata</i>		
Canary	Cape	<i>Serinus</i>	<i>canicollis</i>		
Canary	Protea	<i>Crithagra</i>	<i>leucoptera</i>		
Canary	White-throated	<i>Crithagra</i>	<i>albogularis</i>		
Canary	Yellow	<i>Crithagra</i>	<i>flaviventris</i>		
Chat	Familiar	<i>Oenanthe</i>	<i>familiaris</i>		
Cisticola	Grey-backed	<i>Cisticola</i>	<i>subruficapilla</i>		
Cisticola	Levaillant's	<i>Cisticola</i>	<i>tinniens</i>		
Cisticola	Zitting	<i>Cisticola</i>	<i>juncidis</i>		
Cormorant	Reed	<i>Microcarbo</i>	<i>africanus</i>		
Cormorant	White-breasted	<i>Phalacrocorax</i>	<i>lucidus</i>		
Coucal	Burchell's	<i>Centropus</i>	<i>burchellii</i>		
Crake	Black	<i>Zapornia</i>	<i>flavirostra</i>		
Crane	Blue	<i>Grus</i>	<i>paradisea</i>	NT	VU
Crombec	Long-billed	<i>Sylvietta</i>	<i>rufescens</i>		
Crow	Cape	<i>Corvus</i>	<i>capensis</i>		
Crow	Pied	<i>Corvus</i>	<i>albus</i>		
Cuckoo	Diederik	<i>Chrysococcyx</i>	<i>caprius</i>		
Cuckoo	Klaas's	<i>Chrysococcyx</i>	<i>klaas</i>		
Cuckoo	Red-chested	<i>Cuculus</i>	<i>solitarius</i>		
Darter	African	<i>Anhinga</i>	<i>rufa</i>		
Dove	Cape Turtle	<i>Streptopelia</i>	<i>capicola</i>		
Dove	Laughing	<i>Spilopelia</i>	<i>senegalensis</i>		
Dove	Namaqua	<i>Oena</i>	<i>capensis</i>		
Dove	Red-eyed	<i>Streptopelia</i>	<i>semitorquata</i>		
Dove	Tambourine	<i>Turtur</i>	<i>tympanistris</i>		
Drongo	Fork-tailed	<i>Dicrurus</i>	<i>adsimilis</i>		

Common group	Common species	Genus	Species	Regional	Global
Duck	African Black	<i>Anas</i>	<i>sparsa</i>		
Duck	Yellow-billed	<i>Anas</i>	<i>undulata</i>		
Eagle	African Fish	<i>Haliaeetus</i>	<i>vocifer</i>		
Eagle	Booted	<i>Hieraaetus</i>	<i>pennatus</i>		
Eagle	Martial	<i>Polemaetus</i>	<i>bellicosus</i>	EN	VU
Eagle-Owl	Spotted	<i>Bubo</i>	<i>africanus</i>		
Egret	Little	<i>Egretta</i>	<i>garzetta</i>		
Egret	Western Cattle	<i>Bubulcus</i>	<i>ibis</i>		
Falcon	Lanner	<i>Falco</i>	<i>biarmicus</i>	EN	VU
Fiscal	Southern	<i>Lanius</i>	<i>collaris</i>		
Flufftail	Buff-spotted	<i>Sarothrura</i>	<i>elegans</i>		
Flycatcher	African Dusky	<i>Muscicapa</i>	<i>adusta</i>		
Flycatcher	African Paradise	<i>Terpsiphone</i>	<i>viridis</i>		
Flycatcher	Fiscal	<i>Melaenornis</i>	<i>silens</i>		
Francolin	Grey-winged	<i>Scleroptila</i>	<i>afra</i>		
Goose	Egyptian	<i>Alopochen</i>	<i>aegyptiaca</i>		
Goose	Spur-winged	<i>Plectropterus</i>	<i>gambensis</i>		
Goshawk	African	<i>Accipiter</i>	<i>tachiro</i>		
Goshawk	Pale Chanting	<i>Melierax</i>	<i>canorus</i>		
Grassbird	Cape	<i>Sphenoeacus</i>	<i>afra</i>		
Grebe	Little	<i>Tachybaptus</i>	<i>ruficollis</i>		
Greenbul	Sombre	<i>Andropadus</i>	<i>importunus</i>		
Greenshank	Common	<i>Tringa</i>	<i>nebularia</i>		
Guineafowl	Helmeted	<i>Numida</i>	<i>meleagris</i>		
Gull	Kelp	<i>Larus</i>	<i>dominicanus</i>		
Harrier	African Marsh	<i>Circus</i>	<i>ranivorus</i>	EN	LC
Harrier	Black	<i>Circus</i>	<i>maurus</i>	EN	EN
Heron	Black-crowned Night	<i>Nycticorax</i>	<i>nycticorax</i>		
Heron	Black-headed	<i>Ardea</i>	<i>melanocephala</i>		
Heron	Grey	<i>Ardea</i>	<i>cinerea</i>		
Honeybird	Brown-backed	<i>Prodotiscus</i>	<i>regulus</i>		
Honeyguide	Greater	<i>Indicator</i>	<i>indicator</i>		
Honeyguide	Lesser	<i>Indicator</i>	<i>minor</i>		
Hoopoe	African	<i>Upupa</i>	<i>africana</i>		
Ibis	African Sacred	<i>Threskiornis</i>	<i>aethiopicus</i>		
Ibis	Hadada	<i>Bostrychia</i>	<i>hagedash</i>		
Kestrel	Rock	<i>Falco</i>	<i>rupicolus</i>		
Kingfisher	Brown-hooded	<i>Halcyon</i>	<i>albiventris</i>		
Kingfisher	Giant	<i>Megaceryle</i>	<i>maxima</i>		
Kingfisher	Half-collared	<i>Alcedo</i>	<i>semitorquata</i>	NT	LC
Kingfisher	Malachite	<i>Corythornis</i>	<i>cristatus</i>		
Kingfisher	Pied	<i>Ceryle</i>	<i>rudis</i>		
Kite	Black-winged	<i>Elanus</i>	<i>caeruleus</i>		
Kite	Yellow-billed	<i>Milvus</i>	<i>aegyptius</i>		
Korhaan	Karoo	<i>Eupodotis</i>	<i>vigorsii</i>	NT	LC
Lapwing	Blacksmith	<i>Vanellus</i>	<i>armatus</i>		
Lapwing	Crowned	<i>Vanellus</i>	<i>coronatus</i>		
Lark	Agulhas Long-billed	<i>Certhilauda</i>	<i>brevirostris</i>	NT	NT
Lark	Cape Clapper	<i>Mirafra</i>	<i>apiata</i>		
Lark	Large-billed	<i>Galerida</i>	<i>magnirostris</i>		

Common group	Common species	Genus	Species	Regional	Global
Lark	Red-capped	<i>Calandrella</i>	<i>cinerea</i>		
Longclaw	Cape	<i>Macronyx</i>	<i>capensis</i>		
Martin	Brown-throated	<i>Riparia</i>	<i>paludicola</i>		
Martin	Common House	<i>Delichon</i>	<i>urbicum</i>		
Martin	Rock	<i>Ptyonoprogne</i>	<i>fuligula</i>		
Moorhen	Common	<i>Gallinula</i>	<i>chloropus</i>		
Mousebird	Red-faced	<i>Urocolius</i>	<i>indicus</i>		
Mousebird	Speckled	<i>Colius</i>	<i>striatus</i>		
Mousebird	White-backed	<i>Colius</i>	<i>colius</i>		
Nightjar	Fiery-necked	<i>Caprimulgus</i>	<i>pectoralis</i>		
Ostrich	Common	<i>Struthio</i>	<i>camelus</i>		
Owl	Western Barn	<i>Tyto</i>	<i>alba</i>		
Peafowl	Indian	<i>Pavo</i>	<i>cristatus</i>		
Pigeon	African Olive	<i>Columba</i>	<i>arquatrix</i>		
Pigeon	Speckled	<i>Columba</i>	<i>guinea</i>		
Pipit	African	<i>Anthus</i>	<i>cinnamomeus</i>		
Pipit	Nicholson's	<i>Anthus</i>	<i>nicholsoni</i>		
Pipit	Plain-backed	<i>Anthus</i>	<i>leucophrys</i>		
Plover	Kittlitz's	<i>Charadrius</i>	<i>pecuarius</i>		
Plover	Three-banded	<i>Charadrius</i>	<i>tricoloris</i>		
Prinia	Karoo	<i>Prinia</i>	<i>maculosa</i>		
Quail	Common	<i>Coturnix</i>	<i>coturnix</i>		
Quelea	Red-billed	<i>Quelea</i>	<i>quelea</i>		
Raven	White-necked	<i>Corvus</i>	<i>albicollis</i>		
Robin-Chat	Cape	<i>Cossypha</i>	<i>caffra</i>		
Sandpiper	Common	<i>Actitis</i>	<i>hypoleucos</i>		
Saw-wing	Black (Southern Africa)	<i>Psalidoprocne</i>	<i>pristoptera holomelas</i>		
Scrub Robin	Karoo	<i>Cercotrichas</i>	<i>coryphoeus</i>		
Seedeater	Streaky-headed	<i>Crithagra</i>	<i>gularis</i>		
Shelduck	South African	<i>Tadorna</i>	<i>cana</i>		
Sparrow	Cape	<i>Passer</i>	<i>melanurus</i>		
Sparrow	House	<i>Passer</i>	<i>domesticus</i>		
Sparrow	Southern Grey-headed	<i>Passer</i>	<i>diffusus</i>		
Sparrowhawk	Black	<i>Accipiter</i>	<i>melanoleucus</i>		
Spoonbill	African	<i>Platalea</i>	<i>alba</i>		
Spurfowl	Cape	<i>Pternistis</i>	<i>capensis</i>		
Starling	Common	<i>Sturnus</i>	<i>vulgaris</i>		
Starling	Pied	<i>Lamprotornis</i>	<i>bicolor</i>		
Starling	Red-winged	<i>Onychognathus</i>	<i>morio</i>		
Stonechat	African	<i>Saxicola</i>	<i>torquatus</i>		
Stork	White	<i>Ciconia</i>	<i>ciconia</i>		
Sugarbird	Cape	<i>Promerops</i>	<i>cafer</i>		
Sunbird	Amethyst	<i>Chalcomitra</i>	<i>amethystina</i>		
Sunbird	Greater Double-collared	<i>Cinnyris</i>	<i>afer</i>		
Sunbird	Malachite	<i>Nectarinia</i>	<i>famosa</i>		
Sunbird	Orange-breasted	<i>Anthobaphes</i>	<i>violacea</i>		
Sunbird	Southern Double-collared	<i>Cinnyris</i>	<i>chalybeus</i>		
Swallow	Barn	<i>Hirundo</i>	<i>rustica</i>		
Swallow	Greater Striped	<i>Cecropis</i>	<i>cucullata</i>		

Common group	Common species	Genus	Species	Regional	Global
Swallow	Pearl-breasted	<i>Hirundo</i>	<i>dimidiata</i>		
Swallow	White-throated	<i>Hirundo</i>	<i>albigularis</i>		
Swift	African Black	<i>Apus</i>	<i>barbatus</i>		
Swift	African Palm	<i>Cypsiurus</i>	<i>parvus</i>		
Swift	Alpine	<i>Tachymarptis</i>	<i>melba</i>		
Swift	Horus	<i>Apus</i>	<i>horus</i>		
Swift	Little	<i>Apus</i>	<i>affinis</i>		
Swift	White-rumped	<i>Apus</i>	<i>caffer</i>		
Tchagra	Southern	<i>Tchagra</i>	<i>tchagra</i>		
Teal	Cape	<i>Anas</i>	<i>capensis</i>		
Thick-knee	Spotted	<i>Burhinus</i>	<i>capensis</i>		
Thick-knee	Water	<i>Burhinus</i>	<i>vermiculatus</i>		
Thrush	Olive	<i>Turdus</i>	<i>olivaceus</i>		
Wagtail	Cape	<i>Motacilla</i>	<i>capensis</i>		
Warbler	African Reed (Old, Use Common Reed Warbler)	<i>Acrocephalus</i>	<i>baeticatus</i>		
Warbler	Knysna	<i>Bradypterus</i>	<i>sylvaticus</i>	VU	VU
Warbler	Lesser Swamp	<i>Acrocephalus</i>	<i>gracilirostris</i>		
Warbler	Little Rush	<i>Bradypterus</i>	<i>baboecala</i>		
Waxbill	Common	<i>Estrilda</i>	<i>astrild</i>		
Weaver	Cape	<i>Ploceus</i>	<i>capensis</i>		
Weaver	Southern Masked	<i>Ploceus</i>	<i>velatus</i>		
Wheatear	Capped	<i>Oenanthe</i>	<i>pileata</i>		
Whimbrel	Eurasian	<i>Numenius</i>	<i>phaeopus</i>		
White-eye	Cape	<i>Zosterops</i>	<i>virens</i>		
Whydah	Pin-tailed	<i>Vidua</i>	<i>macroura</i>		
Woodpecker	Cardinal	<i>Dendropicos</i>	<i>fuscescens</i>		
Woodpecker	Knysna	<i>Campethera</i>	<i>notata</i>	VU	NT
Woodpecker	Olive	<i>Dendropicos</i>	<i>griseocephalus</i>		

APPENDIX 4: CURRICULUM VITAE – P.J.J. BOTES

Curriculum Vitae: Peet JJ Botes

Address: 22 Buitekant Street, Bredasdorp, 7280; **Cell:** 082 921 5949

Nationality:	South African
ID No.:	670329 5028 081
Language:	Afrikaans / English
Profession:	Environmental Consultant & Auditing
Specializations:	Botanical & Biodiversity Impact Assessments Environmental Compliance Audits Environmental Impact Assessment Environmental Management Systems
Qualifications:	BSc (Botany & Zoology), with Nature Conservation III & IV as extra subjects; Dept. of Natural Sciences, Stellenbosch University 1989. Hons. BSc (Plant Ecology), Stellenbosch University, 1989 More than 20 years of experience in the Environmental Management Field (Since 1997 to present).
Professional affiliation:	Registered Professional <u>Botanical, Environmental and Ecological Scientist</u> at SACNASP (South African Council for Natural Scientific Professions) since 2005.
SACNAP Reg. No.:	400184/05

BRIEF RESUME OF RELEVANT EXPERIENCE

1997-2005: Employed by the Overberg Test Range (a Division of Denel), responsible for managing the environmental department of OTB, developing and implementing an ISO14001 environmental management system, ensuring environmental compliance, performing environmental risk assessments with regards to missile tests and planning the management of the 26 000 ha of natural veld, working closely with CapeNature (De Hoop Nature Reserve).

2005-2010: Joined Enviroscientific, as an independent environmental consultant specializing in wastewater management, botanical and biodiversity assessments, developing environmental management plans and strategies, environmental control work as well as doing environmental compliance audits and was also responsible for helping develop the biodiversity part of the Farming for the Future audit system implemented by Woolworths. During his time with Enviroscientific he performed more than 400 biodiversity and environmental legal compliance audits.

2010-2017: Joined EnviroAfrica, as an independent Environmental Assessment Practitioner and Biodiversity Specialist, responsible for Environmental Impact Assessments, Biodiversity & Botanical specialist reports and Environmental Compliance Audits. During this time Mr Botes compiled more than 70 specialist Biodiversity & Botanical impact assessment reports ranging from agricultural-, infrastructure pipelines- and solar developments.

2017-Present: Establish a small independent consultancy (PB Consult) specialising in Environmental Audits, Biodiversity and Botanical specialist studies as well as Environmental Impact Assessment.

LIST OF MOST RELEVANT BOTANICAL & BIODIVERSITY STUDIES

- Botes, P. 2007: Botanical assessment. Schaapkraal, Erf 644, Mitchell's Plain. A preliminary assessment of the vegetation in terms of the Fynbos Forum: Ecosystem guidelines. 13 November 2007.
- Botes, P. 2008: Botanical assessment. Schaapkraal Erf 1129, Cape Town. A preliminary assessment of the vegetation using the Fynbos Forum Terms of Reference: Ecosystem guidelines for environmental Assessment in the Northern Cape. 20 July 2008.
- Botes, P. 2010(a): Botanical assessment. Proposed subdivision of Erf 902, 34 Eskom Street, Napier. A Botanical scan and an assessment of the natural vegetation of the site to assess to what degree the site contributes towards conservation targets for the ecosystem. 15 September 2010.
- Botes, P. 2010(b): Botanical assessment. Proposed Loeriesfontein low cost housing project. A preliminary Botanical Assessment of the natural veld with regards to the proposed low cost housing project in/adjacent to Loeriesfontein, taking into consideration the National Spatial Biodiversity Assessment of South Africa. 10 August 2010.
- Botes, P. 2010(c): Botanical assessment: Proposed Sparrenberg dam, on Sparrenberg Farm, Ceres. . A Botanical scan and an assessment of the natural vegetation of the site. 15 September 2010.
- Botes, P. 2011: Botanical scan. Proposed Cathbert development on the Farm Wolfe Kloof, Paarl (Revised). A botanical scan of Portion 2 of the Farm Wolfe Kloof No. 966 (Cathbert) with regards to the proposed Cathbert Development, taking into consideration the National Spatial Biodiversity Assessment of South Africa. 28 September 2011.
- Botes, P. 2012(a): Proposed Danielskuil Keren Energy Holdings Solar Facility on Erf 753, Danielskuil. A Biodiversity Assessment (with botanical input) taking into consideration the findings of the National Spatial Biodiversity Assessment of South Africa. 17 March 2012.
- Botes, P. 2012(b): Proposed Disselfontein Keren Energy Holdings Solar Facility on Farm Disselfontein no. 77, Hopetown. A Biodiversity Assessment (with botanical input) taking into consideration the findings of the National Spatial Biodiversity Assessment of South Africa. 28 March 2012.
- Botes, P. 2012(c): Proposed Kakamas Keren Energy Holdings Solar Facility on Remainder of the Farm 666, Kakamas. A Biodiversity Assessment (with botanical input) taking into consideration the findings of the National Spatial Biodiversity Assessment of South Africa. 13 March 2012.
- Botes, P. 2012(d): Proposed Keimoes Keren Energy Holdings Solar Facility at Keimoes. A Biodiversity Assessment (with botanical input) taking into consideration the findings of the National Spatial Biodiversity Assessment of South Africa. 9 March 2012.
- Botes, P. 2012(e): Proposed Leeu-Gamka Keren Energy Holdings Solar Facility on Portion 40 of the Farm Kruidfontein no. 33, Prince Albert. A Biodiversity Assessment (with botanical input) taking into consideration the findings of the National Spatial Biodiversity Assessment of South Africa. 27 March 2012.
- Botes, P. 2012(f): Proposed Mount Roper Keren Energy Holdings Solar Facility on Farm 321, Kuruman. A Biodiversity Assessment (with botanical input) taking into consideration the findings of the National Spatial Biodiversity Assessment of South Africa. 28 March 2012.
- Botes, P. 2012(g): Proposed Whitebank Keren Energy Holdings Solar Facility on Farm no. 379, Kuruman. A Biodiversity Assessment (with botanical input) taking into consideration the findings of the National Spatial Biodiversity Assessment of South Africa. 27 March 2012.

- Botes, P. 2012(h): Proposed Vanrhynsdorp Keren Energy Holdings Solar Facility on Farm Duinen Farm no. 258, Vanrhynsdorp. A Biodiversity Assessment (with botanical input) taking into consideration the findings of the National Spatial Biodiversity Assessment of South Africa. 13 April 2012.
- Botes, P. 2012(i): Askham (Kameelduin) proposed low cost housing, Mier Municipality Residential Project, Northern Cape. A preliminary Biodiversity & Botanical scan in order to identify significant environmental features (and to identify the need for additional studies if required). 1 November 2012.
- Botes, P. 2013(a): Groot Mier proposed low cost housing, Mier Municipality Residential Project, Northern Cape. A preliminary Biodiversity & Botanical scan in order to identify significant environmental features (and to identify the need for additional studies if required). January 2013.
- Botes, P. 2013(b): Loubos proposed low cost housing, Mier Municipality Residential Project, Northern Cape. A preliminary Biodiversity & Botanical scan in order to identify significant environmental features (and to identify the need for additional studies if required). January 2013.
- Botes, P. 2013(c): Noenieput proposed low cost housing, Mier Municipality Residential Project, Northern Cape. A preliminary Biodiversity & Botanical scan in order to identify significant environmental features (and to identify the need for additional studies if required). January 2013.
- Botes, P. 2013(d): Paballelo proposed low cost housing, Mier Municipality Residential Project, Northern Cape. A preliminary Biodiversity & Botanical scan in order to identify significant environmental features (and to identify the need for additional studies if required). January 2013.
- Botes, P. 2013(e): Welkom proposed low cost housing, Mier Municipality Residential Project, Northern Cape. A preliminary Biodiversity & Botanical scan in order to identify significant environmental features (and to identify the need for additional studies if required). January 2013.
- Botes, P. 2013(f): Zyperfontein Dam Biodiversity & Botanical Scan. Proposed construction of a new irrigation dam on Portions 1, 3, 5 & 6 of the Farm Zyperfontein No. 66, Vanrhynsdorp (Northern Cape) and a scan of the proposed associated agricultural enlargement. September 2013.
- Botes, P. 2013(g): Onseepkans Canal: Repair and upgrade of the Onseepkans Water Supply and Flood Protection Infrastructure, Northern Cape. A Biodiversity & Botanical scan in order to identify significant environmental features (and to identify the need for additional studies if required). August 2013.
- Botes, P. 2013(h): Biodiversity scoping assessment with regards to a Jetty Construction on Erf 327, Malagas (Matjiespoort). 24 October 2013.
- Botes, P. 2013(i): Jacobsbaai pump station and rising main (Saldanha Bay Municipality). A Botanical Scan of the area that will be impacted by the proposed Jacobsbaai pump station and rising main. 30 October 2013.
- Botes, P. 2014(a): Brandvlei Bulk Water Supply: Proposed construction of a 51 km new bulk water supply pipeline (replacing the existing pipeline) from Romanskolk Reservoir to the Brandvlei Reservoir, Brandvlei (Northern Cape Province). A preliminary Biodiversity & Botanical scan in order to identify significant environmental features (and to identify the need for additional studies if required). 24 February 2014.
- Botes, P. & McDonald Dr. D. 2014: Loeriesfontein Bulk Water Supply: Proposed construction of a new bulk water supply pipeline and associated infrastructure from the farm Rheeboksfontein to Loeriesfontein Reservoir, Loeriesfontein. Botanical scan of the proposed route to determine the possible impact on vegetation and plant species. 30 May 2014.
- Botes, P. 2014(b): Kalahari-East Water Supply Scheme Extension: Phase 1. Proposed extension of the Kalahari-East Water Supply Scheme and associated infrastructure to the Mier Municipality, ZF Mgcawu District Municipality, Mier Local Municipality (Northern Cape Province). Biodiversity & Botanical scan of the proposed route to determine the possible impact on biodiversity with emphasis on vegetation and plant species. 1 July 2014.
- Botes, P. 2014(c): The proposed Freudenberg Farm Homestead, Farm no. 419/0, Tulbagh (Wolseley Area). A Botanical scan of possible remaining natural veld on the property. 26 August 2014.
- Botes, P. 2014(d): Postmasburg WWTW: Proposed relocation of the Postmasburg wastewater treatment works and associated infrastructure, ZF Mgcawu District Municipality, Tsantsabane Local Municipality (Northern Cape Province). Biodiversity and botanical scan of the proposed pipeline route and WWTW site. 30 October 2014.
- Botes, P. 2015(a): Jacobsbaai pump station and rising main (Saldanha Bay Municipality) (Revision). A Botanical Scan of the area that will be impacted by the proposed Jacobsbaai pump station and rising main. 21 January 2015.
- Botes, P. 2015(b): Steenkampspan proving ground. Proposed establishment of a high speed proving (& associated infrastructure) on the farm Steenkampspan (No. 419/6), Upington, ZF Mgcawu (Siyanda) District

- Municipality, Northern Cape Province. Biodiversity and Botanical Scan of the proposed footprint. 20 February 2015.
- Botes, P. 2015(c): Proposed Bredasdorp Feedlot, Portion 10 of Farm 159, Bredasdorp, Cape Agulhas Municipality, Northern Cape Province. A Botanical scan of the area that will be impacted. 28 July 2015.
- Botes, P. 2016(a): OWK Raisin processing facility, Upington, Erf 151, Kenhardt, Northern Cape Province. A Botanical scan of the proposed footprint. 26 May 2016.
- Botes, P. 2016(b): Onseepkans Agricultural development. The proposed development of ±250 ha of new agricultural land at Onseepkans, Northern Cape Province. Biodiversity and Botanical Scan. January 2016.
- Botes, P. 2016(c): Henkries Mega-Agripark development. The proposed development of ±150 ha of high potential agricultural land at Henkries, Northern Cape Province. Biodiversity and Botanical Scan of the proposed footprint. 28 February 2016.
- Botes, P. 2016(d): Proposed Namaqualand Regional Water Supply Scheme high priority bulk water supply infrastructure upgrades from Okiep to Concordia and Corolusberg. Biodiversity Assessment of the proposed footprint. March 2016.
- Botes, P. 2017: The proposed new Namaqua N7 Truck Stop on Portion 62 of the Farm Biesjesfontein No. 218, Springbok, Northern Cape Province. Botanical scan of the proposed footprint. 10 July 2017.
- Botes, P. 2018(a): Kamiesberg Bulk Water Supply – Ground water desalination, borehole- and reservoir development, Kamiesberg, Northern Cape Province. Botanical scan of the proposed footprint. 20 February 2018
- Botes, P. 2018(b): Rooifontein Bulk Water Supply – Ground water desalination, borehole- and reservoir development, Rooifontein, Northern Cape Province. Botanical scan of the proposed footprint. 23 February 2018
- Botes, P. 2018(c): Paulshoek Bulk Water Supply – Ground water desalination, borehole- and reservoir development, Paulshoek, Northern Cape Province. Botanical scan of the proposed footprint. 27 March 2018.
- Botes, P. 2018(d): Kakamas Wastewater Treatment Works Upgrade – Construction of a new WWTW and rising main, Khai !Garib Local Municipality, Northern Cape Province. Botanical assessment of the proposed footprint. 1 August 2018.
- Botes, P. 2018(e): Kakamas Bulk Water Supply – New bulk water supply line for Kakamas, Lutzburg & Cillie, Khai !Garib Local Municipality, Northern Cape Province. Botanical assessment of the proposed footprint. 4 August 2018.
- Botes, P. 2018(f): Wagenboom Weir & Pipeline – Construction of a new pipeline and weir with the Snel River, Breede River Local Municipality, Northern Cape Province. Botanical assessment of the proposed footprint. 7 August 2018.
- Botes, P. 2018(g): Steynville (Hopetown) outfall sewer pipeline – Proposed development of a new sewer outfall pipeline, Hopetown, Northern Cape Province. Botanical assessment of the proposed footprint. 8 October 2018.
- Botes, P. 2018(h): Tripple D farm agricultural development – Development of a further 60 ha of vineyards, Erf 1178, Kakamas, Northern Cape Province. Botanical assessment of the proposed footprint. 8 October 2018.
- Botes, P. 2018(i): Steynville (Hopetown) outfall sewer pipeline – Proposed development of a new sewer outfall pipeline, Hopetown, Northern Cape Province. Botanical assessment of the proposed footprint. 8 October 2018.
- Botes, P. 2019(a): Lethabo Park Extension – Proposed extension of Lethabo Park (Housing Development) on the remainder of the Farm Roodepan No. 70, Erf 17725 and Erf 15089, Roodepan Kimberley. Sol Plaaitye Local Municipality, Northern Cape Province. Botanical assessment of the proposed footprint (with biodiversity inputs). 15 May 2019.
- Botes, P. 2019(b): Verneukpan Trust agricultural development – The proposed development of an additional ±250 ha of agricultural land on Farms 1763, 2372 & 2363, Kakamas, Northern Cape Province. 27 June 2019.
- Botes, P. 2020(a): Gamakor & Noodkamp Low cost housing – Botanical Assessment of the proposed formalization of the Gamakor and Noodkamp housing development on the remainder and portion 128 of the Farm Kousas No. 459 and Ervin 1470, 1474 and 1480, Gordonia road, Keimoes. Kai !Gariiep Local Municipality, Northern Cape Province. 6 February 2020.
- Botes, P. 2020(b): Feldspar Prospecting & Mining, Farm Rozynen Bosch 104, Kakamas. Botanical assessment of the proposed prospecting and mining activities on Portion 5 of The Farm Rozynen Bosch No. 104, Kakamas, Khai !Garib Local Municipality, Northern Cape Province. 12 February 2020.

- Botes, P. 2020(c): Boegoeberg housing project – Botanical assessment of the proposed formalization and development of 550 new erven on the remainders of farms 142 & 144 and Plot 1890, Boegoeberg settlement, !Kheis Local Municipality, Northern Cape Province. 1 July 2020.
- Botes, P. 2020(d): Komaggas Bulk Water supply upgrade – Botanical assessment of the proposed upgrade of the existing Buffelsrivier to Komaggas BWS system, Rem. of Farm 200, Nama Khoi Local Municipality, Northern Cape Province. 8 July 2020.
- Botes, P. 2020(e): Grootdrink housing project – Botanical assessment of the proposed formalization and development of 370 new erven on Erf 131, Grootdrink and Plot 2627, Boegoeberg Settlement, next to Grootdrink, !Kheis Local Municipality, Northern Cape Province. 14 July 2020.
- Botes, P. 2020(f): Opwag housing project – Botanical assessment of the proposed formalization and development of 730 new erven on Plot 2642, Boegoeberg Settlement and Farm Boegoeberg Settlement NO.48/16, Opwag, !Kheis Local Municipality, Northern Cape Province. 16 July 2020.
- Botes, P. 2020(g): Wegdraai housing project – Botanical assessment of the Proposed formalization and development of 360 new erven on Erven 1, 45 & 47, Wegdraai, !Kheis Local Municipality, Northern Cape Province. 17 July 2020.
- Botes, P. 2020(h): Topline (Saalskop) housing project – Botanical assessment of the pproposed formalization and development of 248 new erven on Erven 1, 16, 87, Saalskop & Plot 2777, Boegoeberg Settlement, Topline, !Kheis Local Municipality, Northern Cape Province. 18 July 2020.
- Botes, P. 2020(i): Gariep housing project – Botanical assessment of the proposed formalization and development of 135 new erven on Plot 113, Gariep Settlement, !Kheis Local Municipality, Northern Cape Province. 20 July 2020.