TERRESTRIAL BIODIVERSITY COMPLIANCE STATEMENT (Revision 1)

for

THE PROPOSED ZULU ALPHA OBSERVATORY ON FARM MATJES RIVIER NO. 80/2, NEAR SUTHERLAND, NORTHERN CAPE PROVINCE.

PREPARED FOR:

ENVIROAFRICA

PREPARED BY:

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13 October 2025

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TITLE	Terrestrial biodiversity compliance statement for the proposed, Zulu Alpha Observatory on Farm Matjes Rivier no. 80/2, near Sutherland, Western Cape Province.
AUTHOR	P.J.J. Botes
REPORT VERSION	Initial Report (Version 1) (3 October 2025) Revision 1 – Commenting on the revised site layout maps (Figure 9 - updated, based on specialist input).

DETAILS OF THE AUTHOR

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EXECUTIVE SUMMARY

The proponent recently bought a small farm (1 300 ha) just north of Sutherland on which he would like to establish a small observatory in the form of three telescope houses in which prospected clients can place their own telescope equipment. These telescope house will be installed in phases (as the need expands). The houses and equipment will be constructed, installed and maintained by the proponent. After construction, the site will be operated remotely with rare owner visits, resulting in minimal human activity—likely less than during livestock farming. The farm (Portion 2 of the Farm Matjes Rivier no. 80) is very mountainous, located on the Roggeveld Escarpment and is still supports natural vegetation that was until recently still used for livestock grazing. The physical disturbance footprint of project will be very small (± 1 500 m^2 or 0.15 ha in total).

The site visit confirmed that the proposed will only impact on one vegetation type, namely Roggeveld Shale Renosterveld, a vegetation type that is not considered vulnerable or endangered (Figure 3). The proposed site will not impact on critical biodiversity areas or areas (NC CBA, 2024) identified for conservation by the SANParks National Protected Area Expansion Strategy (NPAES, 2025) (Refer to Heading 2.1.3 & 2.1.4 respectively), but it falls within the Hantam-Roggeveld Centre (HRC) of endemism (Figure 5).

Plant Species Sensitivity: The DFFE screening report for this project (Appendix 1) gives the relative plant species sensitivity as of Medium Sensitive, because of the potential that the project might impact on several sensitive plant species (Refer to Page 14 to 15 of the screening report). Most of these species refer to succulents of the Aizoaceae and Crassulaceae families, oatgrass species or bulbs from the Iridaceae or Amaryllidaceae families.

- None of these species were observed, but it might be possible that some of the smaller bulb species might be present. However, the development footprint will be so small that it is unlikely to have any significant impact on any of these species. Nonetheless, topsoil should be removed from areas to be cleared and re-used in disturbed areas in the immediate surroundings. (Refer to Heading 3.2.2 for more information).
- Search & Rescue of protected species should be implemented where any footprint impact on the green area as shown in Figure 8.

For this project, a plant species sensitivity of **Medium-Low to Low Sensitive** is considered more appropriate.

Animal Species Sensitivity: The DFFE Screening report (Appendix 1) identifies the Animal Species theme as Medium Sensitive because of the potential impacts on one sensitive bird (Ludwig's bustard), one sensitive insect (The James blue butterfly) and one sensitive mammal (the riverine rabbit).

- The study area falls within the geographical distribution range for some of the species, but because of the small footprint and low operational impact, it is considered unlikely that the development will have any significant impact on the survival of any of these species (Refer to Heading 3.3.1. for more information).

For this project an animal species sensitivity rating of **Low Sensitive** is considered appropriate.

Terrestrial Biodiversity Sensitivity: The DFFE Screening report (Appendix 1) identifies the Terrestrial Biodiversity theme as Very High Sensitive because of the potential impacts on the National Protected Area Expansion Strategy (NPAES). Based on the findings discussed under Heading **Error! Reference source not found.**, the proposed project is not likely to impact on the NPAES. In addition, the small size any impact will be almost negligible while the future landuse (low activity and no – interference) may even be beneficial in the long run for the protection of vegetation and other species (including fauna and avi-fauna).

For this terrain, a Terrestrial Biodiversity sensitivity of **Low Sensitive** is considered appropriate.

With mitigation it is considered highly unlikely that the development will contribute 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 plant species.
- Loss of ecosystem connectivity.

The site sensitivity map (Figure 8) shows the rockier areas in the northeastern corner of the site, where two of the three protected species were more frequent.

NB: Figure 9 – gives an updated layout based on specialist input. Both layout options are supported by the findings of this report.

WITH THE AVAILABLE INFORMATION IT IS RECOMMENDED THAT PROJECT BE APPROVED

It is likely that the proposed land-use will benefit conservation in the long run.

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 in order 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.

Mr. Botes is a registered Professional Botanical, Environmental and Ecological Scientists at SACNASP (South African Council for Natural Scientific Professions) as required in terms of Section 18(1)(a) of the Natural Scientific Professions Act, 2003, since 2005.

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:

3 October 2025

Date:

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ABBREVIATIONS

BAR	Basic Assessment Report
CBA	Critical biodiversity area
DFFE	Department of Fisheries, Forestry and Environment
EA	Environmental Authorization (=Record of Decision)
EAP	Environmental assessment practitioner
ECO	Environmental Control Officer
EIA	Environmental impact assessment
EMP	Environmental Management Plan or Program
EN	Endangered
ESA	Ecological support area
LT	Least Threatened
NEMA	National Environmental Management Act, 1998 (Act no. 107 of 1998)
NFA	National Forest Act, Act 84 of 1998
NPAES	National Protected Area Expansion Strategy
PV	Photovoltaic
SoCC	Species of Conservation Concern
TOPS	Threatened or Protected Species
VU	Vulnerable

1. INTRODUCTION

The proponent recently bought a small farm (1 300 ha) just north of Sutherland on which he would like to establish a small observatory in the form of three telescope houses in which prospected clients can place their own telescope equipment. These telescope house will be installed in phases (as the need expands). The houses and equipment will be constructed, installed and maintained by the proponent. Clients will access their equipment remotely (there is no need for the client to visit the telescope houses and human activity will be minimal, once construction is completed).

The farm (Portion 2 of the Farm Matjes Rivier no. 80) is very mountainous, located on the Roggeveld Escarpment and is still supports natural vegetation that was until recently still used for livestock grazing. The physical disturbance footprint of project will be very small (± 1 500 m^2 or 0.15 ha in total).

The proposed area in which the Observatory will be located is still covered by Roggeveld Shale Renosterveld (Figure 3), a vegetation type that is not considered vulnerable or endangered. The proposed site will not impact on critical biodiversity areas or areas (NC CBA, 2024) identified for conservation by the SANParks National Protected Area Expansion Strategy (NPAES, 2025) (Refer to Heading 2.1.3 & 2.1.4 respectively), but it falls within the Hantam-Roggeveld Centre (HRC) of endemism (Figure 5).

The site visit confirmed that the vegetation in the larger study area conforms to the Roggeveld Shale Renosterveld vegetation type in good condition, but it is important to note that the natural vegetation of the Roggeveld (and most of the Northern Cape) is just starting to recover after a <u>severe 7 – 10 year drought period</u>.

The DFFE screening report for the proposed site, compiled by EnviroAfrica (Appendix 1), identifies the following potential environmental sensitivities:

- The relative <u>Animal species</u> theme is considered of **<u>Medium Sensitivity</u>**;
- The relative <u>Plant species</u> theme is considered of **<u>Medium Sensitivity</u>**;
- The relative <u>Terrestrial Biodiversity</u> theme is considered of **<u>Very High Sensitivity</u>**.

1.1. <u>LEGISLATION GOVERNING THIS STUDY</u>

This is a specialist report, compiled in terms of:

- The National Environmental Management Act, Ac. 107 of 1998 (NEMA);
- The "Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes" in terms of Sections 24(5)(a) and (h) and 44 of the NEMA (GN No. 320 of 20 March 2020).

1.2. <u>TERMS OF REFERENCE</u>

Since the DFFE screening report identified the terrestrial biodiversity sensitivities as very-high a Terrestrial Biodiversity Assessment or Compliance Statement are required. PB Consult was appointed by EnviroAfrica to perform a site sensitivity verification and to submit a terrestrial biodiversity statement or assessment report.

The terms of reference for this appointment were to:

- Perform a site visit and evaluate the sensitivity of the site in terms of the Biodiversity Protocol for specialist assessment.
- Determine and record the position of any flora or fauna species of special significance (e.g., protected species, or rare or endangered species) that must be protected or should be avoided or that may require "search & rescue" intervention.
- Locate and record sensitive areas from a terrestrial biodiversity perspective that may be interpreted as obstacles to the proposed development.
- Submit a site sensitivity map in terms of the terrestrial biodiversity themes discussed in this report.
- Make recommendations on impact minimization where applicable

1.3. LOCATION & LAYOUT

The proposed observatory will be located on Portion 2 of the Farm Matjes Rivier No. 80 (Sutherland), just north of Sutherland in the Northern Cape Province. The farm is about 1 300 ha in size and located on the Roggeveld Escarpment (Figure 1). The larger area that was investigated (the study area) was about 7 ha within which the proposed three telescope houses and solar panels are to be located (Figure 2).

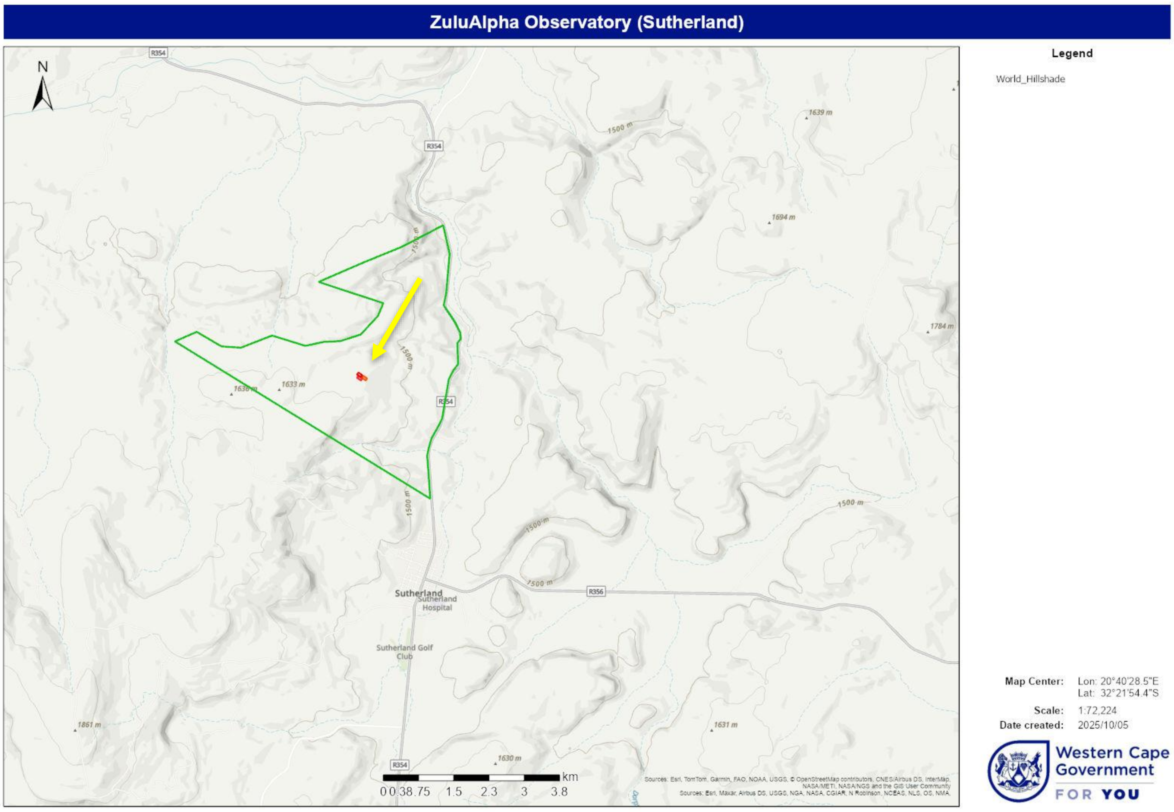


Figure 1: A map showing the location of the proposed observatory (Red) and the Farm Matjes Rivier 80/2 (Green) (CapeFarmMapper).

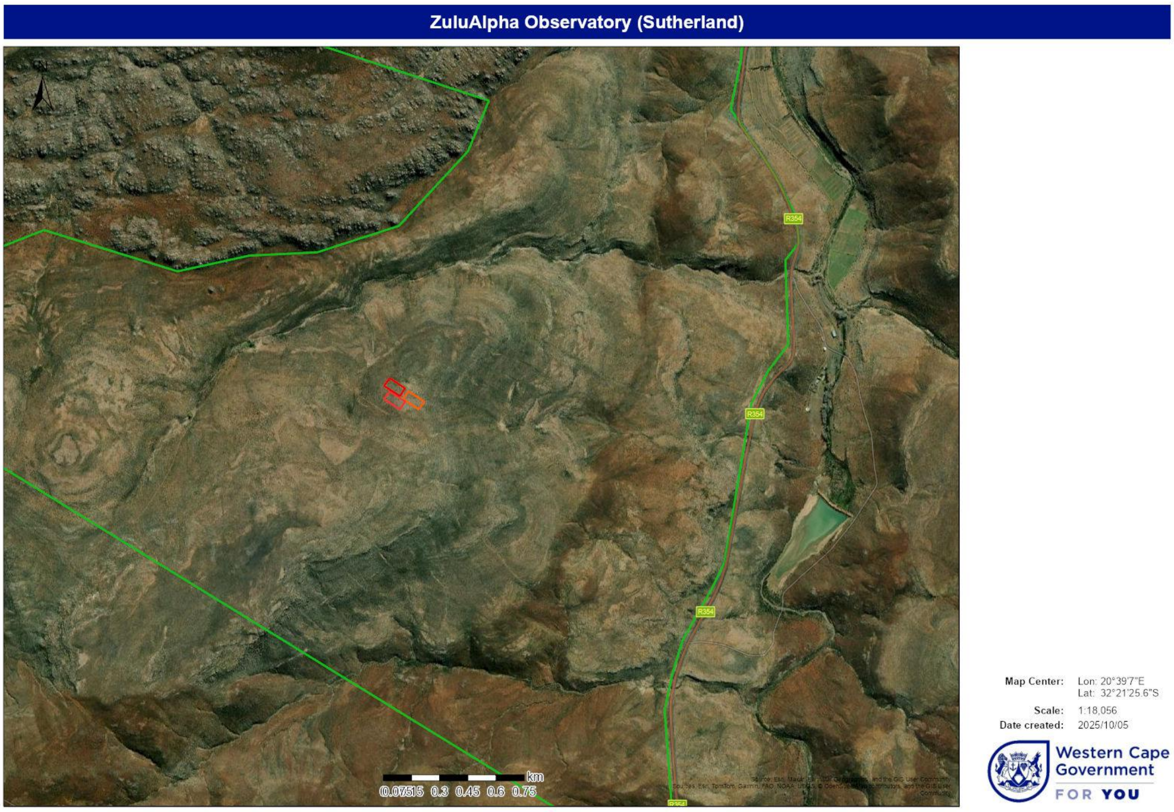
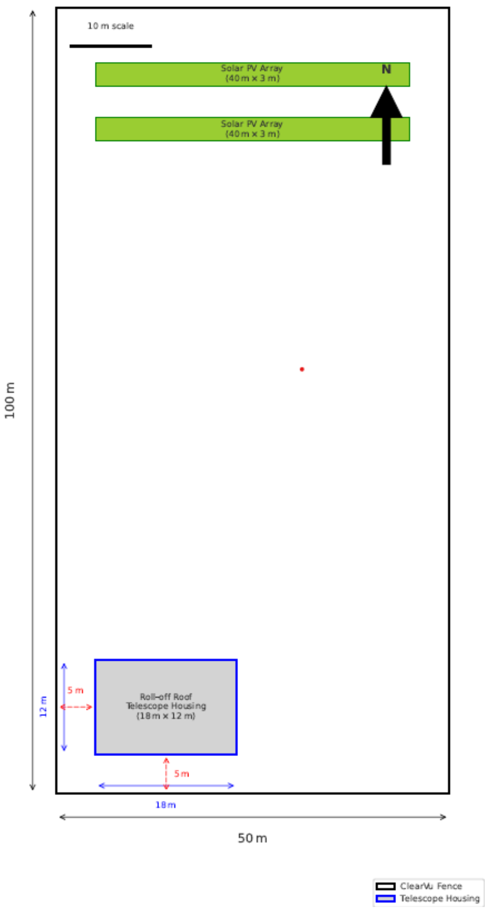


Figure 2: The location of the proposed observatory in relation to Farm Matjes Rivier 80/2 (CapeFarmMapper).

1.4. ACTIVITY DESCRIPTION

The owner of Farm Matjes Rivier 80/2 would like to establish a small observatory on the property (which was bought specifically for this reason. The observatory will consist of three telescope houses, each with its own small solar panel array (to run each facility). The houses and equipment will be constructed, installed and maintained by the proponent. Clients will access their equipment remotely (there is no need for the client to visit the telescope houses and human activity will be minimal, once construction is completed).



The development footprint will be very small and very localised and can be located next to an existing access road. Each Telescope Housing site will consist of a <u>small building</u> with a roll of roof (± 18 x 12 m in size) and two rows of solar panels (each ± 40 x 3 m in), which gives a physical disturbance footprint of less than 500 m^2 per site (1 500 m^2 or 0.15 ha in total).

2. 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 desktop analysis and site verification.

2.1. DESKTOP ANALYSIS

The DFFE screening report and spatial information from online databases such as CapeFarmMapper, SANBI BGIS and Google images were used to establish a baseline of expected terrestrial biodiversity site sensitivities. This included vegetation type and status, conservation priority areas (e.g., critical biodiversity areas) , obvious differences in landscape and landscape features (e.g., heuweltjies, rocky outcrops) or vegetation densities, which might indicate differences in plant community or species composition, current and historical landuse and variations in soil type. Flora & fauna species lists were prepared on which species of conservation concern (SoCC) were flagged (as reference for the site visit).

2.1.1. EXPECTED VEGETATION TYPE

According to the 2024 beta VEGMAP of South Africa (Figure 3), the property is expected to support **Roggeveld Shale Renosterveld** classified as of "Least Threatened" in terms of the "*Revised List of ecosystems that are threatened and in need of protection*" (GN 2747 of 18 November 2022).

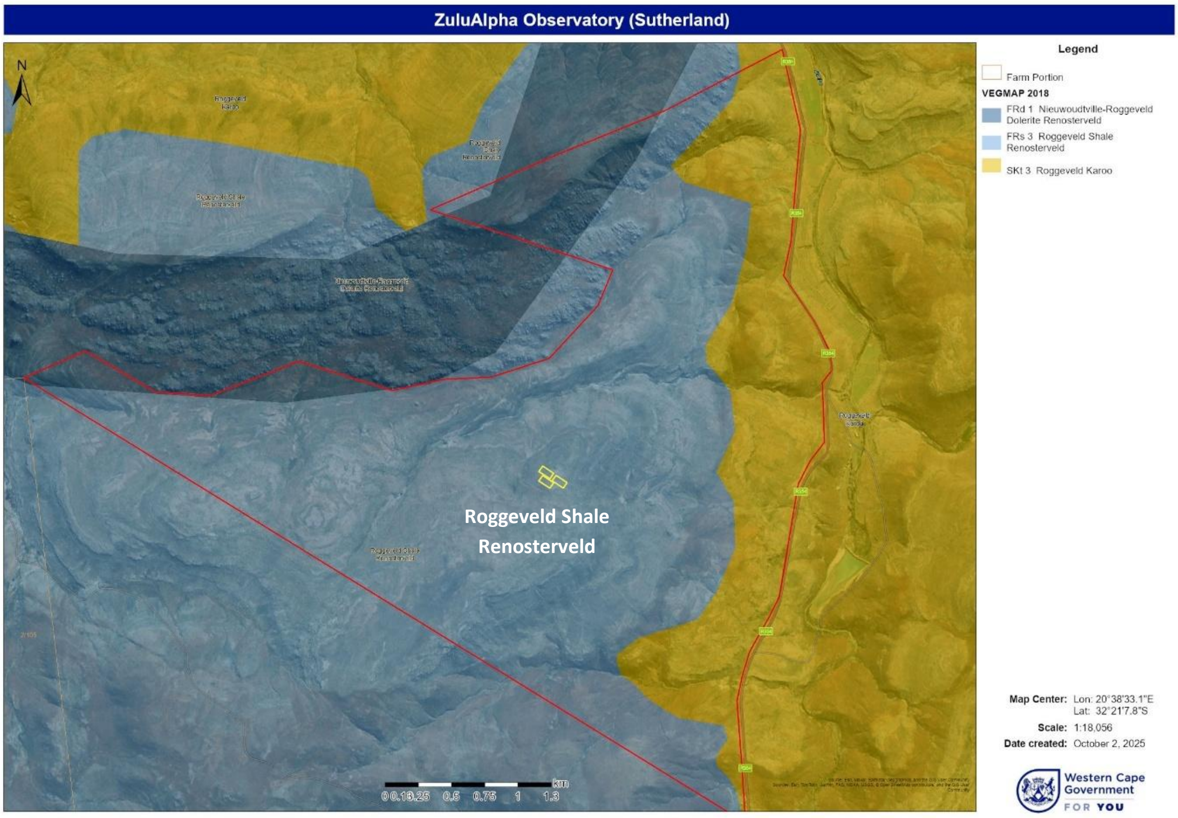


Figure 3: VEGMAP of South Africa (2024 beta), showing the expected vegetation area (CapeFarmMapper).

2.1.2. THE VEGETATION IN CONTEXT

The Roggeveld is situated in the winter rainfall area of the Northern and Western Cape Provinces of South Africa. Botanically the mountain renosterveld of the Roggeveld with its dominant renosterbos (*Dicerothamnus rhinocerotis*) relates closely and is included in the Fynbos Biome of the Cape Floristic Region (a biodiversity hotspot). The Roggeveld is part of the Hantam-Roggeveld Centre of Endemism (because the high occurrence of species confined to this geographical region), which has arguably the richest geophyte flora in the world. The Roggeveld receives a higher rainfall than the surrounding areas such as the Hantam and the Tanqua Karoo. Vegetation is dominated by a medium-low shrubland (without any trees) which generally produces a good floral display every year (with drought years being the exception). The Roggeveld is said to have derived its name from the wild rye (*Secale strictum* subsp. *africanum*), which was once plentiful in this region, but now only occurs naturally in small patches on a farm near Sutherland (probably due to grazing practices and potentially because of rust diseases). Altitude in the Roggeveld varies from 1 300 to 1 787 m above sea level. Rainfall varies from 300 – 500 mm per year, falling mainly in winter but summer thunderstorms do occur. Snowfall are frequent with a mean of six snow days per year. In Sutherland the warmest month of the year is January, with a mean maximum temperature 27.5^{o}C and the coldest month July with a mean minimum temperature of -1.7^{o}C. Most of the Roggeveld is covered in rocks of the Beaufort and Ecca Groups, with igneous rock intrusions of dolerite occurring throughout. Livestock (mainly sheep) farming is the primary land-use in the Roggeveld. In the past fire (patch burning) was used extensively by early pioneers as a means to try and improve grazing quality. In 1908, Rudolf Marloth already noted that this practice only resulted in the unpalatable renosterbos becoming increasingly dominant. In modern times, controlled burning is used very sparsely, but lightning and accidental fires still occur regularly (especially in summer when the vegetation is extremely dry and flammable) (Van der Merwe & Van Rooyen, 2024).

Mucina & Rutherford (2006) describe Roggeveld Shale Renosterveld as occurring on undulating, slightly sloping plateau landscape, with low hills and broad shallow valleys, supporting mainly moderately tall shrublands dominated by renosterbos, with a rich geophytic flora in the wetter and rocky habitats.

2.1.3. CRITICAL BIODIVERSITY AREAS

The 2024 Northern Cape Biodiversity Spatial Plan (NC BSP) updates, revises and replaces all previous conservation plans for the province (e.g., the 2016 NC CBA Map). The plan is driven by ecosystems (estuaries, rivers, vegetation types and wetlands) and aims to conserve a representative sample of all biodiversity patterns (species and their habitat) and the ecological and evolutionary processes that allow biodiversity to persist into perpetuity. To ensure this outcome, the NC BSP informs the NC PAES to establish a formal PA Network, but it also informs land-use planning and decision-making processes in all socio-economic sectors. Conserving 30% of South Africa by 2030 is an apex target for South Africa's response to the Global Biodiversity Framework and has been aligned to the White Paper on Biodiversity Conservation and Sustainable Use - Goal 1 (approved by Cabinet in April 2023). The NC BSP informs specifically the development and updating of the NC PAES to fulfil the 30% conservation target by 2030 (the 30x30 target). At present the Northern Cape PA Network covers only 5% of this target, with 25% still to be included by 2030 (Oosthuizen & Geldenhuys, 2024).

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.

- **<u>Critical biodiversity areas (CBA's)</u>** are areas of the landscape that need to be maintained Together with PAs, to ensure that a viable representative sample of all ecosystem types and species can persist. Must stay in largely natural ecological condition.
- **<u>Ecological support areas (ESA's)</u>** are areas that should be protected to that ensure the long-term ecological functioning of the landscape as a whole. The Objective should be to retain ecological processes, which often requires at least semi-natural ecological condition.

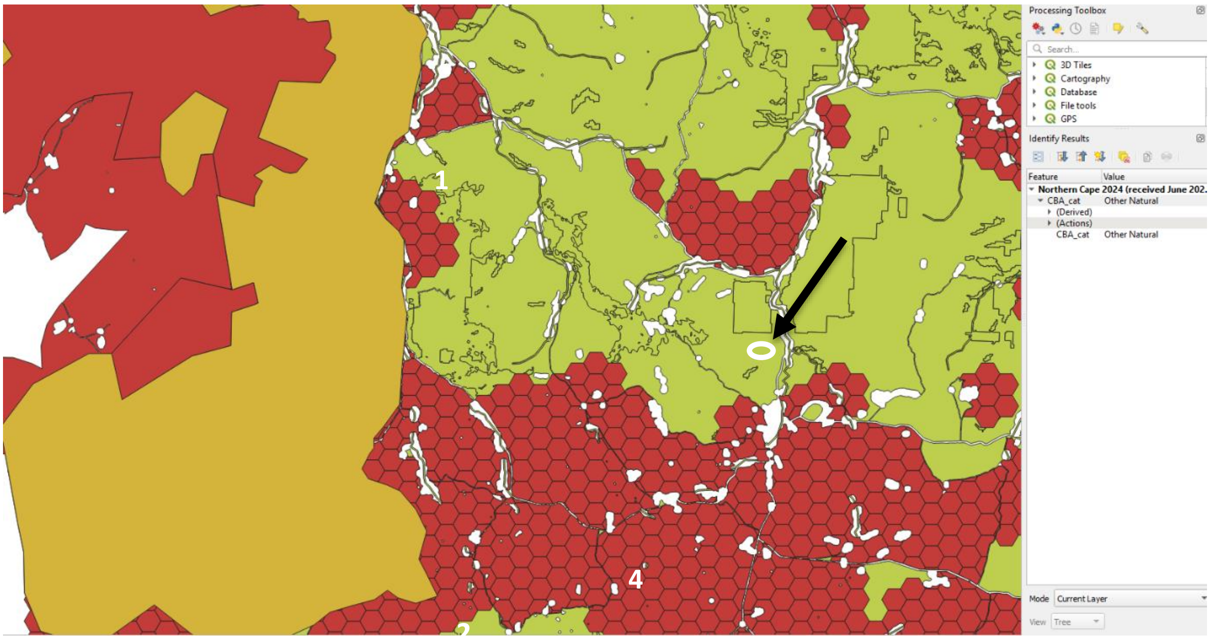


Figure 4: The SANParks PAES overlaid onto the NC CBA map (2024) showing the location of the 3 sites (white circle) (DFFE EGIS).

According to the 2024, NC BSP (Figure 4) the proposed development falls within an area demarcated as "Other Natural Areas" (light green in Figure 4) and will **not impact on any CBA or ESA**.

In Figure 4, critical biodiversity areas (CBAs) and ecological support areas (ESAs) are shown as red octagons. The solid red areas are CBAs that SANParks National Protected Areas Expansion Strategy (NPAES), while the mustard coloured areas, are NPAES areas.

2.1.4. <u>SANPARKS NPAES</u>

The goal of the National Protected Area Expansion Strategy (NPAES) is to achieve cost effective protected area expansion for improved ecosystem representation, ecological sustainability and resilience to climate change. It sets protected area targets, maps priority areas for protected area expansion, and makes recommendations on mechanisms to achieve this. South Africa's protected area network remains insufficient to conserve biodiversity and ecological processes effectively, or to play its full potential role in providing resilience to the impacts of climate change. This is because of the ad hoc way the protected area network has developed over time, protecting some ecosystems well and others hardly at all. This is particularly important in the context of South Africa's globally exceptional biodiversity richness on the one hand, and significant financial and human resource constraints on the other (Department of Environmental Affairs, 2016).

According to the latest GIS data (June 2025) for the SANParks PAES the development will **not impact on a NPAES focus area**. In fact, the larger farm will might add to conservation targets, because operating the observatory is likely to result in even less impact or movement than using it as a livestock farm.

2.1.5. HANTAM-ROGGEVELD CENTRE (HRC) OF ENDEMISM

The study area falls within the Hantam-Roggeveld Centre (HRC) of endemism (Figure 5), which is named after the Hantam and Roggeveld regions in the Western Karoo of the Northern Cape Province (Van Wyk & Smith, 2001). The HRC occupies the high-lying far south-western corner of the inland plateau of South Africa. It is bounded by the Bokkeveld Mountains in the west, the Renoster River in the east, the Bushmanland in the north and the Roggeveld Mountains in the south. The HRC has a high levels of endemism and the region is floristically more closely related to the Succulent Karoo and the Great Karoo than the Cape Floristic Region, although Cape floristic elements are clearly present (Van Wyk & Smith, 2001).

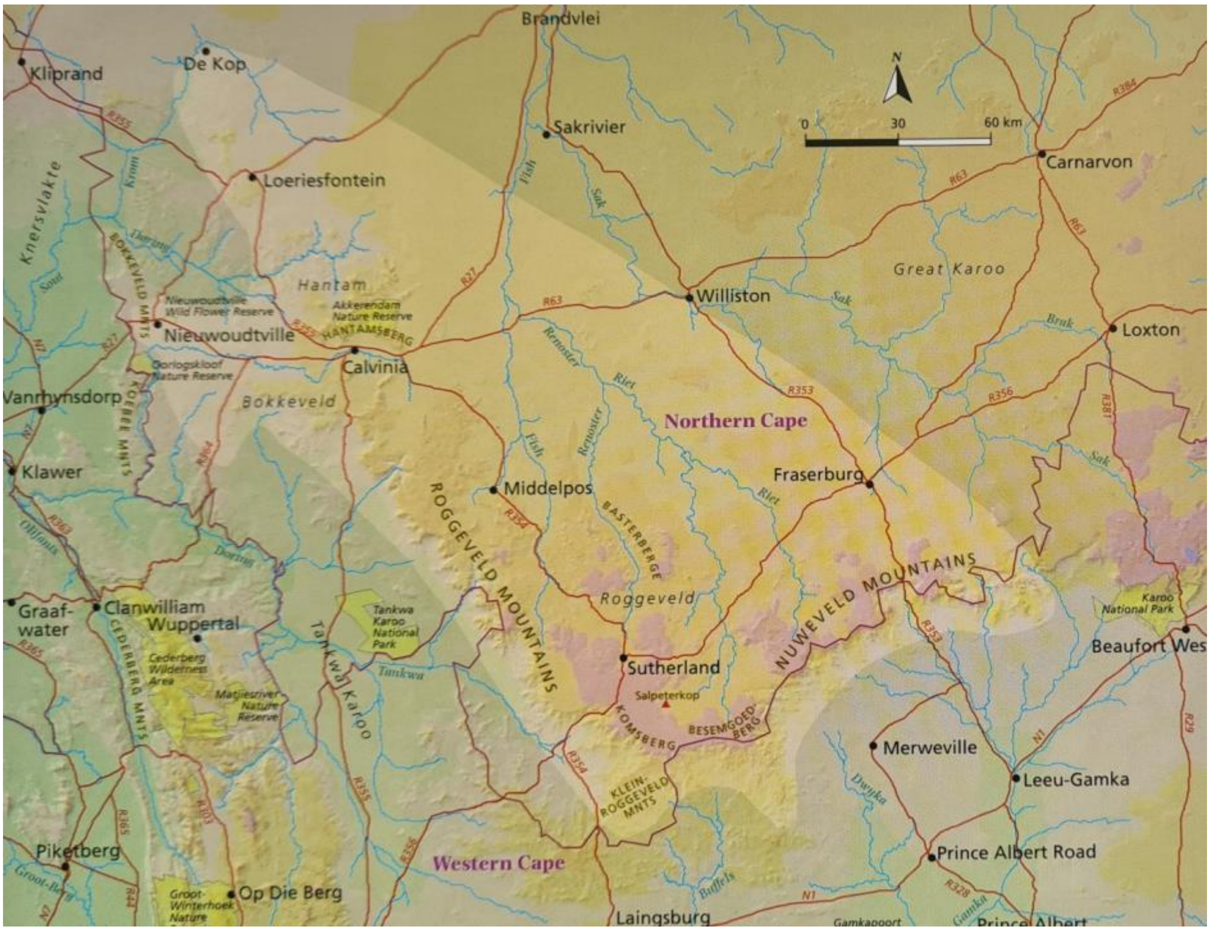


Figure 5: Hantam-Roggeveld Centre of endemism (highlighted), taken from Van Wyk & Smith (2001)

The vegetation is typically dominated by low-growing small leaved perennial bushes up to 0.5 m in height. Common species include *Pentzia incana, Galenia africana, Zygophyllum gilfillanii, Euphorbia* *mauritanica, Ruschia caroli* and several species of *Eriocephalus*, *Salsola* and *Pteronia*. Grasses are few, apart from *Ehrharta calycina* and *Merxmuellera stricta*. Succulents, although present, are not very prominent, except in the drier areas north and west of Calvinia (which had been mapped as Upland Succulent Karoo by Low & Rebelo, 1996, a rather diverse vegetation type). At higher altitudes and in moister areas (200 – 300 mm), located mainly on the slopes and plateaux of mountains associated with the Great Escarpment it merges into a rare type of Mountain Renosterveld (with strong Karoo affinities) endemic to the HRC (Van Wyk & Smith, 2001).

In contrast to other areas of the Succulent Karoo, succulence as measured by the proportion of species in the Mesembryanthemaceae is poorly developed in the HRC and no succulent genera are endemic to this centre of endemism (probably due to a less reliable or consistent rainfall pattern). However, the HRC is exceptionally high in geophytes and petaloid monocots, many of which are endemic to the region (Snijman & Perry, 1987, in Van Wyk & Smith, 2001).

2.1.6. LANDUSE

The 2022 DFFE Land Cover map (9-class) shows that the farm is expected to be support natural veld (Figure 6), which was confirmed by the site visit.

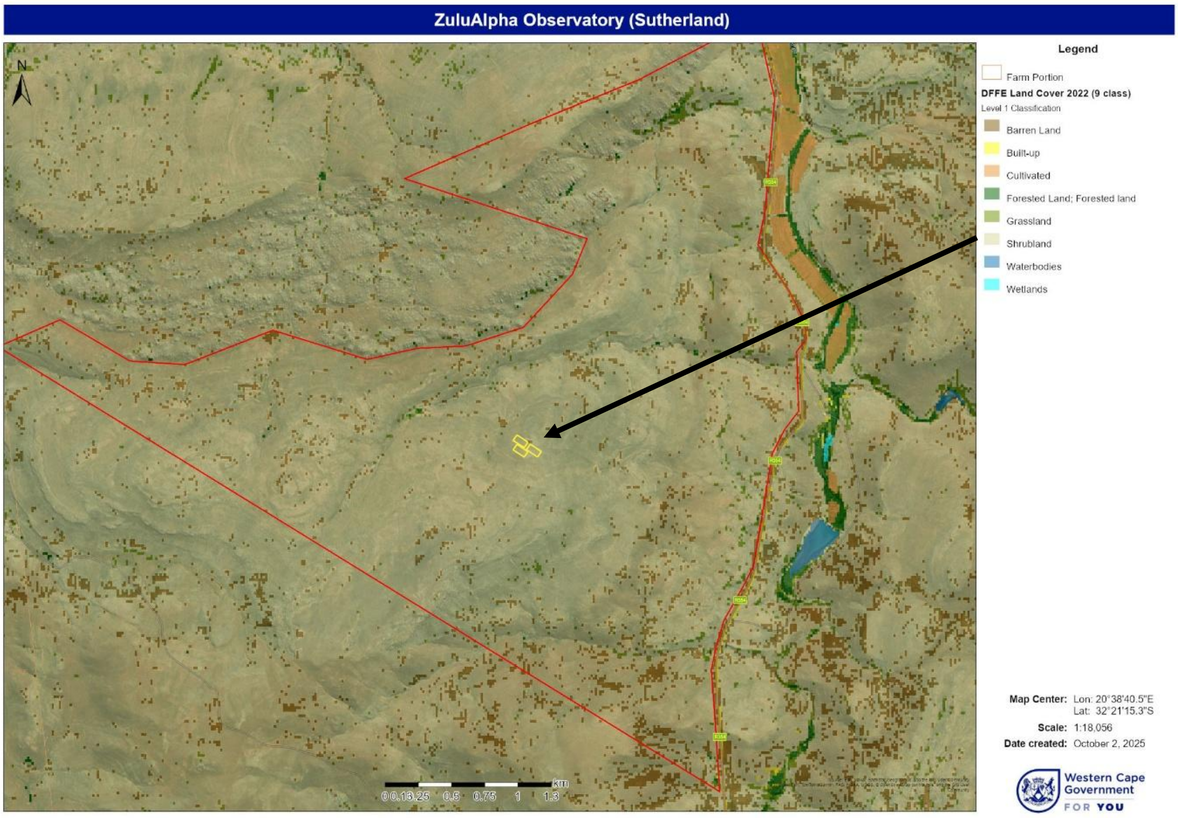


Figure 6: The DFFE Land Cover map 2022 (9-class) showing the farm boundary and study areas (CapeFarmMapper).

2.2. SITE VERIFICATION

Fieldwork for this project was carried out on the 27th of August 2025 over a 4-hour period, by walking and driving the site and examining the vegetation. A hand-held Garmin GPSMAP 62s was used to track the sampling route and for recording waypoints (Figure 7). Protected or other special plants and any terrestrial feature of significance was, marked by waypoints and/or on the study map, and photographed. During the survey notes, and photographic records were collected.

Figure 7: Google overview, showing the study area and the site verification routes used as well as the location of the *Olea* trees.

Where applicable, 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 visited. Efforts was also made to ensure that the plant species list was as complete as possible.

2.3. LIMITATIONS, ASSUMPTIONS AND UNCERTAINTIES

The findings are based on a one-day site visit (not long-term repetitive sampling), which means that it is likely that some species might have been missed. However, the timing of the site visit was reasonable in terms of flowering (specifically bulb species) and the fact that the Sutherland area received some good recent rains. Confidence in the findings is 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. SITE VERIFICATION RESULTS

3.1. VEGETATION ENCOUNTERED

The general location for the three sites were chosen because it is located on an almost level area, relatively high up on a plateau, with existing access (next to a farm track). The final locations of the sites to be advised based on the outcome of the specialist studies. The site visit confirmed that the vegetation in the larger study area conforms to the Roggeveld Shale Renosterveld vegetation type. **NB**: it is important to note that the natural vegetation of the Roggeveld (and most of the Northern Cape) is just starting to recover after a severe 7 – 10 year drought period.

The vegetation on the plateau (the larger study area) can be described as a low-growing and very uniform shrubland dominated by small leaved perennial shrubs up to 0.5 m in height. Vegetation cover was between 70 – 80%. Species diversity was relatively low, likely due to the recent drought period combined with livestock grazing (with the veld only now beginning to recover).

The shrub layer (Photo 1 to Photo 4) was mostly dominated by *Oedera glandulosa* (grysperdekaroo), *Pteronia glauca* (boegoekaroo), *Pteronia glomerata* (gombos), *Dicerothamnus rhinocerotis* (renosterbos), *Dimorphotheca cuneata* (bergbitou) and *Asparagus capensis*. *Euryops lateriflorus* (soetharpuis) and *Lycium cinereum* were observed to the west (outside the footprint area).

Photo 1: Typical vegetation encountered within the site.

Photo 2: Looking from southwest to northeast over the larger study area. Note the typical low shrub layer.

Photo 3: Looking from west to east over the middle of the larger study area. Note the low rock litter content.

Photo 4: The rocky area observed in the northeast part of the larger study area.

Between the shrubs, smaller plants such as *Bulbinella nutans, Manulea* cf. *fragrans* and geophytes such *Eriospermum* cf. *capense, Massonia depressa, Brunsvigia* cf. *bosmaniae* and *Oxalis annae* were occasionally observed. The only succulents observed, where *Cleretum* cf. *lyratifolium* (Photo 6) and the small, but striking, *Aloinopsis spathulata* (Photo 5) – both seemed to be restricted to the rockier northeastern part of the study area (Photo 4). Both are range restricted but locally common plants. In open or disturbed areas between the shrubs, smaller herbs such as *Felicia australis*, *Senecio arenarius* (hongerblom), *Cotula microglossa* and *Ursinia nana* were often common.

Photo 5: *Aloinopsis spathulata* observed in the rockier areas to the northeast of the site.

Photo 6: *Cleretum* cf. *lyratifolium*, occasionally observed in the rockier eastern part of the study area.

On the way down, but outside of the study area, *Colchicum burchellii* subsp*. burchellii, Lasiospermum pedunculare (gansgras)* and *Osteospermum sinuatum* were also observed.

No alien or invasive species were observed in the larger study area.

3.2. FLORA

Table 1 gives a list of the plant species encountered within the study area (and surroundings). It is important to note that the species list is only based on a one-day site visit. It is likely that some species (especially annuals and geophytes) might have been missed. However, the author is confident that a good understanding of the vegetation was achieved and confidence in the findings is high.

Table 1: List of plant species observed within the proposed development footprint.

NO.	SPECIES NAME	FAMILY	STATUS	LOCATION
1.	*Aloinopsis spathulata*	AIZOACEAE	LC NCNCA, Schedule 2 protected	A small succulent, relatively common in the rockier eastern parts of the site.
2.	*Amellus tridactylus*	ASTERACEAE	LC	A prostrate annual herb, common in disturbed or open areas.
3.	*Asparagus capensis*	ASPARAGACEAE	LC	Katdoring: a common species in the shrub layer.
4.	*Brunsvigia* cf. *bosmaniae* (only leaves visible)	AMARYLLIDACEAE	LC NCNCA, Schedule 2 protected	A bulb with up to 6 relatively large flat growing leaves. Occasionally in open areas.
5.	*Bulbinella nutans*	ASPHODELACEAE	LC	Waterkatstert: a geophytic herb occasional throughout.
6.	*Cleretum* cf. *lyratifolium*	AIZOACEAE	LC NCNCA, Schedule 2 protected	Sandfig: A range restricted, but fairly common small succulent plant scarcely observed.
7.	*Colchicum burchellii* subsp. *burchellii*	COLCHICACEAE	LC	A small geophyte, only observed outside the study area (towards the bottom of the mountain).

NO.	SPECIES NAME	FAMILY	STATUS	LOCATION
8.	*Cotula microglossa*	ASTERACEAE	LC	Small herb, encountered in open or disturbed areas.
9.	*Dicerothamnus rhinocerotis*	ASTERACEAE	LC	Renosterbos: a common species throughout.
10.	*Dimorphotheca cuneata*	ASTERACEAEA	LC	Bergbitou – striking plant with its large white flowers. Common.
11.	*Eriospermum* cf. *capense*	RUSCACEAE	LC	Small herb with a tuber. Common in general veld.
12.	*Euryops lateriflorus*	ASTERACEAE	LC	Soeharpuis - Large straggly shrub. Near farm dam to the west.
13.	*Felicia australis*	ASTERACEAE	LC	Small herb, encountered in open or disturbed areas.
14.	*Lasiospermum pedunculare*	ASTERACEAE	LC	Herb observed outside of the study area (at lower altitude).
15.	*Lycium cinereum*	SOLANACEAE	LC	Medium large shrub. Occasionally to the west (near farm dam).
16.	*Manulea* cf. *fragrans*	SCROPHULARIACEAE	LC	Very small herb, occasionally observed in open areas.
17.	*Massonia depressa*	HYACINTHACEAE	LC	Small plant with flat growing leaves. Occasional in general veld.
18.	*Oedera glandulosa*	ASTERACEAE	LC	Grysperdekaroo: medium sized shrub locally common.
19.	*Osteospermum sinuatum*	ASTERACEAE	LC	Klein Skaapbos. Only observed on road verge outside the study area..
20.	*Oxalis annae*	OXALIDACEAE	LC	Small bulb, locally common
21.	*Pteronia glauca*	ASTERACEAE	LC	Boegoekaro - medium small silver bush. Locally common.
22.	*Senecio arenarius*	ASTERACEAE	LC	Pershongerblom. Annual herb. Occasionally observed.
23.	*Ursinia nana*	ASTERACEAE	LC	Small herb, encountered in open or disturbed areas.

3.2.1. 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, a 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, 2024).

- No red-listed species was observed during the study.

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 endangered, endangered, vulnerable and protected species" (GN. R. 152 of 23 February 2007).

- No species protected in terms of NEM: BA 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).

- No species protected in terms of the NFA was observed.

NCNCA Protected plant species: The Northern Cape Nature Conservation Act 9 of 2009 (NCNCA) came into effect on the 12th of December 2011, and provides for the sustainable utilization of wild animals, aquatic biota, and plants. Schedule 1 and 2 of the act give extensive lists of specially protected and protected fauna and flora species in accordance with this act. NB. Please note that all indigenous plant species are protected in terms of Schedule 3 of this act (e.g., any work within a road reserve).

- Three (3) species protected in terms of the NCNCA was observed within the footprint (Refer to Table 2).

Table 2: Northern Cape protected plant species with impact minimisation recommendations.

NO.	SPECIES NAME	COMMENTS	RECOMMENDATIONS
1.	*Aloinopsis spathulata* **Schedule 2 protected.** **(All plants in this Family)**	Several individuals observed, seemingly restricted to the rockier northeastern part of the study area (Photo 4) This is a range restricted but locally common species with a red-list status of Least Concern.	**Search & rescue** It is recommended that all individuals within the footprint areas are transplanted to areas that will not be disturbed (within the same property). **A NCNCA Permit application must be obtained for the impacts on this species.**
2.	*Cleretum* cf. *lyratifolium* **Schedule 2 protected.** **(All plants in this Family)**	Occasionally observed and seemingly restricted to the rockier northeastern part of the study area (Photo 4) This is a range restricted but locally common species with a red-list status of Least Concern.	**No Search & rescue proposed.** Topsoil should be re-used for the rehabilitation of disturbed areas, which will allow for seed store protection). **A NCNCA Permit application must be obtained for the impacts on this species.**
3.	*Brunsvigia* cf. *bosmaniae* **Schedule 2 protected** **(All plants in this Family)**	The occasional bulb (leaves only) were observed. This is a widespread and common species with a red-list status of Least Concern	**Search & rescue** It is recommended that all bulbs of the Amaryllidaceae observed within the footprint areas are transplanted to areas that will not be disturbed (within the same property). **A NCNCA Permit application must be obtained for the impacts on this species.**

3.2.2. PLANT SPECIES SENSITIVITY THEME

The DFFE screening report for this project (Appendix 1) gives the relative plant species sensitivity as of Medium Sensitive, because of the potential that the project might impact on several sensitive plant species (Refer to Page 14 to 15 of the screening report). Most of these species refer to succulents of the Aizoaceae and Crassulaceae families, oatgrass species or bulbs from the Iridaceae or

Amaryllidaceae families.

- None of these species were observed, but it might be possible that some of the smaller bulb species might be present. However, the development footprint will be so small that it is unlikely to have any significant impact on any of these species. Nonetheless, topsoil should be removed from areas to be cleared and re-used in disturbed areas in the immediate surroundings.

For this project, a plant species sensitivity of **Medium-Low to Low Sensitive** is considered more appropriate.

3.3. FAUNA AND AVI-FAUNA

The animal life in the Roggeveld is largely adapted to its dry, Karoo landscape. The larger predators and herbivores typically found in other areas of South Africa, like lions, elephants, and buffalo, are not native to the Roggeveld. Species that are well-suited to the Karoo environment are species such as chacma baboons, springbok, Cape grysbok klipspringers, grysbok, grey rhebok, dassies and mongooses. The leopard and black-backed jackal (although severely prosecuted by livestock farmers) are some of the larger predator. It is also home to various reptile, amphibian and bird species.

The Roggeveld had been settled for some 250 years by European pastoralists and before that by the Khoi and San (Clark *et.al.,* 2011). The property on which the proposed observatories will be located was used for livestock farming (mainly sheep) over a long period of time. It was only recently acquired by the proponent (who has no interest in livestock farming). The development footprint will be very small and very localised. Human activity will be minimal (probably even less intensive than when it was used for livestock farming). The potential of this project to add or have any additional impact on the breeding or feeding patters of the existing fauna or avi-fauna is considered very low (unlikely). As a result, no fauna or avi-fauna screening was considered necessary, but observations were made during the site visit.

3.3.1. ANIMAL SPECIES THEME SENSITIVITY

The DFFE Screening report (Appendix 1) identifies the Animal Species theme as Medium Sensitive because of the potential impacts on one sensitive bird (Ludwig's bustard), one sensitive insect (The James blue butterfly) and one sensitive mammal (the riverine rabbit).

Neotis ludwigii: Ludwig's Bustard is a near endemic and classified as **endangered** because of a projected rapid population decline. It has a large range centred on the dry biomes of the Karoo and Namib in southern Africa. Today it occurs predominantly in the dry Karoo region of South Africa (Herold, 1988), but historically its distribution is believed to have extended to the eastern and north-eastern portions of the Grassland Biome (Brooke, 1984). It inhabits open lowland and upland plains with grass and light thornbush, sandy open shrub veld and semi-desert in the arid and semi-arid Namib and Karoo biomes (Shaw, 2015). According to, the SABAP2 data for this pentad (Pentad 3320_2035) the Ludwig's Bustard had not been observed in the Sutherland area – and because of the small development footprint it is considered highly unlikely that the project would have any significant impact on this species.

Lepidochrysops jamesi jamesi: The James Blue is a **rare** butterfly in the family Lycaenidae. Males have a pearlescent blue or blue-violet sheen on their upper wings, while the females are brown. The undersides of the wings are brownish with darker brown spots. It is a range-restricted endemic and a habitat specialist, found in only 15 known subpopulations on the Roggeveld Escarpment near Sutherland in the Northern Cape Province of South Africa. Fortunately, it does not face any significant threats at present. The taxon is globally considered as Least Concern but is nationally classified as Rare (being a Habitat Specialist) (Dobson & Selb, 2018). The study area falls within the geographical distribution range for this species, but because of the small footprint and low operational impact, it is considered unlikely that the development will have any significant impact on the survival of this species.

Bunolagus monticularis: The Riverine rabbit is a **critically endangered** with an alarmingly small species population size and no subpopulation have more than 50 mature individuals (Collins *et.al.*, 2016). It is endemic to the central Karoo region of South Africa and is associated with dense, discontinuous vegetation fringing the seasonal rivers. It is the only indigenous burrowing rabbit in Africa and is dependent on soft and deep alluvial soils along the river courses for constructing stable breeding stops. The proposed development is not located near any watercourse that may support the habitat requirements for this species. As a result, it is highly unlikely that the project will have any impact on this species.

For this project an animal species sensitivity rating of **Low Sensitive** is considered appropriate.

3.4. TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

The DFFE Screening report (Appendix 1) identifies the Terrestrial Biodiversity theme as Very High Sensitive because of the potential impacts on the National Protected Area Expansion Strategy (NPAES).

Based on the findings discussed under Heading **Error! Reference source not found.**, the proposed project is not likely to impact on the NPAES. In addition, the small size any impact will be almost negligible while the future landuse (low activity and no – interference) may even be beneficial in the long run for the protection of vegetation and other species (including fauna and avi-fauna).

For this project, a Terrestrial Biodiversity sensitivity of **Low Sensitive** is considered appropriate.

4. DISCUSSIONS

The site visit confirmed that the proposed will only impact on one vegetation type, namely Roggeveld Shale Renosterveld, a vegetation type that is not considered vulnerable or endangered. The footprint will not impact on any critical biodiversity areas as identified by the NC CBA map (2024) or on an NPAES focus areas according to the June 2025 update of the SANParks PAES map. However, the study area is located in the Hantam-Roggeveld Centre of endemism.

The development footprint will be very small (± 1 500 m^2 or 0.15 ha in total) and can be located next to an existing access road. Each Telescope Housing site will consist of a small building with a roll of roof (± 18 x 12 m in size) and two rows of solar panels (each ± 40 x 3 m in size). After construction, the site will be operated remotely with rare owner visits, resulting in minimal human activity—likely less than during livestock farming. The potential that the project will have any significant negative impact on species of conservation concern (including fauna & flora) is unlikely.

With mitigation it is considered highly unlikely that the development will contribute 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 plant species.
- Loss of ecosystem connectivity.

4.1. SITE SENSITIVITY MAP

The site sensitivity map (Figure 8) shows the rockier areas in the northeastern corner of the site, where two of the three protected species were more frequent.

- It suggests that this area is considered slightly more sensitive and search & rescue is recommended if this area is impacted.
- **NB** it is not a NO-GO area, just slightly more sensitive area because of the location of two sensitive plant species.

Figure 8: Sensitivity map: Google Earth Image showing the proposed footprint locations of the 3 Telescope sites in relation to the slightly more sensitive rocky area (green)**.**

5. RECOMMENDATIONS

The proposed locations for the three (3) telescope sites were approximate, and the landowner is very willing to adjust the final location on the recommendations of the specialist report.

From a terrestrial biodiversity viewpoint, the following recommendations should be considered:

1. A suitably qualified Environmental Control Officer (ECO) should be appointed to oversee the final placement and construction phase of the project.
2. The 3 telescope building sites should be located as close to the existing access road as possible, to minimize the impact of additional access roads (Refer to the updated layout plan - Figure 9, which addresses the findings of this study as well as recommendations from a freshwater perspective).
3. The area marked in geen in Figure 8, should be avoided, if possible.
4. Before construction, the topsoil should be removed from the areas that will be impacted by the construction of the telescope buildings.
5. Topsoil should be removed to a depth of 15 – 20 cm (which should include most of the smaller bulb species as well as its indigenous plant seed store). This topsoil should be used to rehabilitate disturbed areas in the immediate surroundings (the same vegetation type).
6. The solar panels should be placed on pedestals or frame structures, away from the ground. NB blanket clearing of these sites should be avoided if possible.

Figure 9: Updated layout plan (supported by the findings of this study)

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APPENDIX 1: DFFE SCREENING REPORT

APPENDIX 2: 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 Botanical, Environmental and Ecological Scientist 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.
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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

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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.

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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 Plaaitje Local Municipality, Northern Cape Province. Botanical assessment of the proposed footprint (with biodiversity inputs). 15 May 2019.

Botes, P. 2019(b): Verneujkpan 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 !Gariep 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.