

TERRESTRIAL BIODIVERSITY STATEMENT

for

**THE PROPOSED ENLARGEMENT OF THE HELPMEKAAR DAM ON PORTION 5
OF THE FARM RIETRIVIER 202, IN THE KOUEBOKKEVELD NEAR CERES,
WITZENBERG LOCAL MUNICIPALITY, WESTERN CAPE PROVINCE**



PREPARED FOR:

ENVIROAFRICA

PREPARED BY:

PJJ BOTES (PRI. SCI. NAT.)

30 July 2026

DOCUMENT ISSUE STATUS

TITLE	Terrestrial biodiversity assessment for the proposed enlargement of the Helpmekaar dam on Portion 5 of the Farm Rietrivier 202, in the Kouebokkeveld near Ceres, Witzenberg local municipality, Western Cape Province.
AUTHOR	P.J.J. Botes
REPORT VERSION	Initial report.

DETAILS OF THE AUTHOR

COMPANY NAME	PB Consult Sole Proprietor
SPECIALIST	Peet J.J. Botes
SACNASP REG. NO.	400184/05 <i>(Registered Professional Botanical, Environmental and Ecological Scientists with SACNASP as required in terms of Section 18(1)(a) of the Natural Scientific Professions Act, 2003, since 2005).</i>
PHYSICAL ADDRESS	22 Buitekant Street, Bredasdorp, 7280
CELL PHONE	+27 (82) 921 5949
EMAIL	peet@pbconsult.co.za

EXECUTIVE SUMMARY

The proposed development entails the **enlargement** of the existing **Helpmekaar Dam** on Portion 5 of Farm Rietrivier 202 in the Kouebokkeveld. The project forms part of Sterkwater Farming's long-term water resource development strategy to improve irrigation water security by expanding existing storage infrastructure.

The enlarged dam will have an earth-fill embankment approximately **14 m high** and **320 m long**, with an open-channel spillway and outlet works. The project also includes an approximately **1.7 km connecting pipeline** between the enlarged Helpmekaar Dam and a proposed **Buffer Dam**, improving operational flexibility within the irrigation system.

VEGETATION TYPE & STATUS The proposed project overlaps areas that may still support **Kouebokkeveld Alluvium Fynbos, Kouebokkeveld Shale Fynbos** and Winterhoek Sandstone Fynbos (Figure 4). The first two vegetation types are both **Critically Endangered** ecosystems (GN 2747 of 18 November 2022). Winterhoek Sandstone Fynbos is not threatened.

WATERCOURSES & WETLANDS A freshwater specialist had been appointed to evaluate potential impacts on aquatic systems (Refer to Watson Africa, 2025).

VEGETATION AND FLORA The DFFE screening report (Appendix 1) gives the relative plant species sensitivity as Medium Sensitive, because of potential impact on sensitive plant species associated with the various Fynbos types within the proposed footprint area.

- Although none of the sensitive plant species were observed, it is likely that at least some of these species will occur (because of the timing and veld age, many of the herbs, bulbs or forb may not have been visible).
- The enlargement of the Helpmekaar dam will mainly impact on wetland and seepage wetland areas (Refer to Heading 3.1.1). The **impact** on **Kouebokkeveld Alluvium Fynbos** will relatively **small** (between 0.6 – 1 ha) and localized.
- The connecting pipeline route will follow an existing road/firebreak and with careful placement the impact (even the temporary impact) on **Kouebokkeveld Shale Fynbos** can be negated or will be temporary at worst.
- Ground truthing indicates that Alluvium Fynbos in this valley extends slightly beyond that mapped by the South African Vegetation map (VegMap 2024, beta), particularly in the southwestern part of the valley (Figure 10).
- The site visit also confirmed that the southeastern block of the Langrug Ridge supports Kouebokkeveld Shale Fynbos in good condition and should therefore be **included as CBA 1** (red area in Figure 10).

The enlargement of the Helpmekaar Dam is likely to affect a small area (<1 ha) of natural veld that still supports Kouebokkeveld Alluvium Fynbos. No additional impact on Kouebokkeveld Shale Fynbos is expected. Although sensitive plant species may occur, the project is unlikely to cause significant impacts on ecosystem-functioning or irreversible loss of species if mitigation is implemented (Heading 3.4).

The plant species theme rating of **Medium Sensitive (without mitigation)** is supported, but may be reduced to **Medium-Low or Low Sensitivity** with mitigation.

FAUNA & AVI-FAUNA

The DFFE Screening Report (Appendix 1) gives the Animal Species Theme Sensitivity is Medium Sensitive because of the potential impacts on two sensitive birds and one sensitive invertebrate (Heading 3.5 and Table 2 for a more detail).

Avi-fauna: Of the two bird species, the **Black Harrier** is **endangered** (and one of South Africa's rarest endemic raptors), while the **Southern Black Korhaan** is **vulnerable**. The project will mainly affect existing wetland and seepage areas, with temporary pipeline-related disturbance in agricultural fields. The new buffer dam will permanently affect

agricultural land. The project is unlikely to increase habitat fragmentation or significantly affect breeding or foraging habitat for either species, and is therefore not expected to cause any significant additional impact.

Invertebrate: *Brinckiella aptera* is a flightless katydid listed as a **vulnerable** endemic of South Africa's winter-rainfall region. Although the development footprint falls within the broader distribution range of this species and potential host plants were recorded, the project will mainly affect wetlands, seepage areas and agricultural fields. It is therefore unlikely to significantly affect habitat or host plants of this species, and no significant additional impact is expected.

The project is unlikely to increase habitat fragmentation or significantly affect habitat for any of the above species. An animal species theme sensitivity rating of **Low Sensitivity** is therefore considered appropriate.

TERRESTRIAL BIODIVERSITY

The DDFE Screening Report (Appendix 1) gives the Terrestrial Biodiversity Theme Sensitivity as **VERY HIGH SENSITIVE**. The Western Cape Biodiversity Spatial Plan (WCBSP, 2023) maps all remaining natural veld of the two critically endangered ecosystems (Kouebokkeveld Alluvium Fynbos, Kouebokkeveld Shale Fynbos) as critical biodiversity area (CBA 1), while some of the Winterhoek Sandstone Fynbos (least threatened) has been marked as aquatic ecological support areas (ESA 1) (Figure 5). The reasons for the sensitivity rating are discussed below.

- **Impacts on ESA 2: N/a** – the nearest ESA2 is about 400 m to the south at the foothills of the Bokkeveld Mountains on the neighboring farm (Heading 3.6.1).
- **Impacts on ESA 1:** The rise in dam level will impact a small area still supporting Sandstone Fynbos, mapped as an aquatic ESA 1. The impact on vegetation (terrestrial habitat) will be minimal and should not result in any significant habitat loss (within the ESA 2) or loss of ecosystem functioning (Heading 3.6.2).
- **Impacts on CBA 1:** The purpose of the CBA 1 areas is to protect critically endangered vegetation types. The Helpmekaar dam enlargement will mainly impact on wetland and seepage wetland areas. The **impact on Kouebokkeveld Alluvium Fynbos** will be relatively **small** (between 0.6 – 1 ha) and localized. **Kouebokkeveld Shale Fynbos** should not be impacted, or the impact, at worst, can be temporary (Heading 3.6.3).
- **Impact on Strategic Water Source Areas (SWSA):** the enlargement of the dam should aid water security in the Groot Winterhoek SWSA and should not alter ecosystem functioning (it being an existing dam which any overflow into the downstream Langrug Dam) (Refer to Heading 3.6.4).
- **Impact on critically endangered ecosystems:** Refer to Heading 3.6.3 or the CBA 1 discussions above.

Based on the findings of this report it is considered unlikely that the proposed project 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.

For this project, a terrestrial biodiversity theme sensitivity rating of **Medium to Medium-Low Sensitivity** is considered appropriate, mainly because the impact on Kouebokkeveld Alluvium Fynbos will be small and localized.

WITH THE AVAILABLE INFORMATION, IT IS RECOMMENDED THAT THE PROJECT BE APPROVED, SUBJECT TO THE MITIGATION MEASURES SET OUT IN THIS 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 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:

30 July 2026

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 study.....	2
1.2. Terms of reference	2
1.3. Location & Layout	2
1.4. Climate	4
1.5. Topography	4
1.6. Activity description.....	5
2. DESKTOP ANALYSIS	6
2.1. Approach & methodology	6
2.2. Broadscale vegetation types expected	6
2.3. The vegetation in context	7
2.4. Western Cape Biodiversity Spatial Plan	8
2.5. Landuse	9
2.6. Site verification.....	9
2.7. Limitations, assumptions and uncertainties	10
3. SITE VERIFICATION RESULTS.....	11
3.1. Helpmekaar dam expansion	12
3.1.1. Kouebokkeveld Alluvium Fynbos	14
3.2. Connecting Pipeline	16
3.3. New Buffer Dam	17
3.4. Flora encountered	18
3.4.1. Threatened and protected plant species	19
3.4.2. Plant species sensitivity theme	20
3.5. Fauna and avi-fauna	20
3.5.1. Mammals.....	21
3.5.2. Reptiles	21
3.5.3. Amphibians.....	21
3.5.4. Avi-fauna.....	21
3.5.5. Animal species theme sensitivity	22
3.6. Terrestrial biodiversity.....	25
3.6.1. Impacts on ESA 2 (restore from other land use)	25
3.6.2. Impacts on ESA 1	25
3.6.3. Impact on CBA 1.....	26
3.6.4. Impact on SWSA's	27
3.6.5. Impact on critically endangered ecosystems	27

3.6.6. Terrestrial Biodiversity theme sensitivity	27
4. DISCUSSION & CONCLUSIONS	28
4.1. Vegetation and flora	28
4.2. Fauna and Avi-fauna	29
4.3. Terrestrial Biodiversity.....	29
4.4. Site sensitivity.....	30
5. RECOMMENDATIONS.....	32
5.1. General recommendations:	33
6. REFERENCES.....	34
APPENDIX 1: DFFE SCREENING REPORT	36
APPENDIX 2: CURRICULUM VITAE – P.J.J. BOTES.....	37

LIST OF FIGURES

Figure 1: A map showing the location of the farm in relation to Ceres and Op-die-Berg (CapeFarmMapper)	3
Figure 2: Satellite Imagery showing the location of the proposed Helpmekaar dam (light blue), the connection pipeline (pink) and the proposed Buffer dam (orange)	3
Figure 3: Average temperatures and precipitation for Op-die-Berg, near the Farm Rietrivier 202 (Source: Meteoblue).	4
Figure 4: VegMap of South Africa (2024 beta), showing the expected vegetation within Erf 15024.	6
Figure 5: The WCBSP (2023) showing the development footprint and the associated CBA's (CapeFarmMapper).	8
Figure 6: The DFFE Land Cover 2022 (9 class) showing the expected land cover associated with the project.	9
Figure 7: Google Image, showing the proposed development footprint and the site verification routes (yellow) used.....	10
Figure 8: Google Image showing the existing Helpmekaar dam (red) the expected footprint of the dam enlargement (magenta, blue), the route of the connecting pipeline (dark blue) and the location of the Buffer Dam (orange). Note the large scale intensively cultivated areas upstream of the Helpmekaar Dam (runoff from this agricultural area seems to have impacted/alterd the vegetation in the floodplain area of the Helpmekaar dam).	11
Figure 9: A Google Image showing the estimated area still supporting Alluvium Fynbos (green) and the potential areas that might be impacted by the dam enlargement (demarcated by the light blue line).	15
Figure 10: A map showing the potential extent of remaining Kouebokkeveld Alluvium Fynbos (green polygon) within the valley floor, overlaid onto the SA VegMap 2024, beta.	26
Figure 11: Sensitivity map: Google Earth Image showing the enlarged Helpmekaar Dam (light blue) the connecting pipeline (dark blue) the Buffer Dam (orange) and remaining sensitive vegetation Alluvium Fynbos (green) and Shale Fynbos (purple & red). The red area should be considered for inclusion as a CBA 1 in WCBSP.....	31

LIST OF PHOTOS

Photo 1: Looking from upstream (south to north) over the valley towards the Helpmekaar dam (just visible towards the back). Note the seepage wetland (<i>Typha capensis</i> – indicating permanent water, with <i>Cliffortia strobilifera</i> on the edges).	12
Photo 2: Looking upstream from the midpoint of the area that will be impacted by the dam enlargement. The wetland area dominated by <i>Typha capensis</i> is clearly visible in the valley bottom.	13
Photo 3: Looking from east to west over the valley bottom (at about the midpoint of the area that will be impacted by the dam enlargement). Note the riparian fringe vegetation dominated by <i>Cliffortia strobilifera</i> (vleibos), <i>Elegia</i> and other wetland species.	13
Photo 4: Looking towards the existing dam, over a portion of the wetland vegetation that will be inundated by the proposed dam. Note the water heath (<i>Erica curviflora</i>) individuals in the foreground.	13
Photo 5: Looking upstream (from the same location as Photo 4). The seepage wetland vegetation can be seen behind the <i>Erica curviflora</i> in the foreground.	14
Photo 6: Alluvium Fynbos dominated by <i>Protea repens</i> , encountered on the western edge of the area that will be inundated by the dam enlargement.	14
Photo 7: Alluvium Fynbos in the southwestern corner of the valley, closer to the mountain – away from the wetland area. Note the denser shrub layer.	15
Photo 8: Kouebokkeveld Shale Fynbos on the Langrug Ridge. Note the dense <i>Protea repens</i> stands – the age of which is estimated to be more than 30 years.	16
Photo 9: <i>Leucadendron rubrum</i> individual observed on Langrug Ridge.	16
Photo 10: The road/firebreak down the western side of the ridge (the dam wall just visible to the bottom of the road). In this area the location of the pipeline will have to be within the road, to minimise the impact on the Shale Fynbos.	17
Photo 11: The road/firebreak to up the eastern side of the ridge.	17
Photo 12: A photo of the agricultural fields east of the Langrug Ridge (the blue line indicating the proposed route for the pipeline).	17
Photo 13: Looking from the bottom of the depression (where the new dam will be constructed) up (south) onto the area that will be covered by the dam.	18
Photo 14: Looking over the proposed Buffer Dam site from west to east. Note the degraded status of the veld (agricultural land).	18
Photo 15: A photo showing the area where the dam enlargement will impact on the ESA 1.	25

ABBREVIATIONS

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
EA	Environmental Authorization (Record of Decision)
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)
PAES	Protected Areas Expansion Strategy
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
WCBSP	Western Cape Biodiversity Spatial Plan
SWSA	Strategic Water Source Areas
NFA	National Forest Act (Act 84 of 1998)
SANBI	South African National Biodiversity Institute
SoCC	Species of Conservation Concern
TOPS	Threatened or Protected Species (in terms of NEMBA)
VU	Vulnerable

1. INTRODUCTION

The proposed development entails the enlargement of the existing **Helpmekaar Dam** (also known as Langrug-Boonste No. 1 Dam) situated on Portion 5 of Farm Rietrivier 202 in the Koue Bokkeveld, approximately 50 km north of Ceres. The project forms part of Sterkwater Farming's long-term water resource development strategy and is intended to increase irrigation water security through the expansion of existing water storage infrastructure.

The engineering proposal comprises the in-stream enlargement of the existing earthfill dam, increasing its storage capacity from approximately **390 000 m³** to **800 000 m³**, thereby providing an additional **410 000 m³** of storage. A Water Use Licence Application for the abstraction and storage of additional winter runoff from the upper tributaries of the Leeu River will be submitted. The increased storage capacity will enable the conversion of approximately **45 ha of annual cash crops to permanent fruit orchards**, improving the long-term sustainability and economic viability of the farming enterprise.

The proposed enlarged dam will consist of a zoned earthfill embankment approximately **14 m high** and **320 m long**, incorporating an open-channel spillway and outlet works. Construction material will primarily be sourced from within the future dam basin. In addition, the broader project includes the installation of an approximately **1.7 km pipeline** to transfer water between the enlarged Helpmekaar Dam and a proposed **buffer dam**, thereby improving operational flexibility of the irrigation system.

The preliminary engineering assessment identified the enlargement of the existing Helpmekaar Dam as the preferred alternative due to its substantially greater storage efficiency, reduced earthworks requirements and lower impact on existing productive agricultural land compared to the construction of a new dam (Bester, 2024).

The existing Helpmekaar Dam has footprint of about 10.4 ha. The proposed dam enlargement will result in a footprint enlargement of approximately 7.6 ha (total footprint about 18 ha). The dam enlargement and the connecting pipeline will result in impacts on remaining indigenous vegetation.

According to the vegetation map of South Africa (VegMap 2024, beta) the enlargement and pipeline may impact on Kouebokkeveld Alluvium Fynbos, Kouebokkeveld Shale Fynbos and Winterhoek Sandstone Fynbos (Figure 4). The first two ecosystems are both classified as **Critically Endangered** (Winterhoek Sandstone Fynbos is not threatened), in terms of the revised national list of ecosystems that are threatened and in need of protection (GN 2747 of 18 November 2022).

The Western Cape Biodiversity Spatial Plan (WC BSP, 2023) maps any remaining Kouebokkeveld Alluvium Fynbos and Kouebokkeveld Shale Fynbos as critical biodiversity areas (CBA1) (Figure 5).

A freshwater specialist had been appointed to evaluate river and wetland areas that may be impacted (Watsan Africa, 2025).

The site visit confirmed the presence of remaining natural veld, including additional areas of Kouebokkeveld Shale Fynbos on the Langrug Ridge that is not currently mapped as a CBA (Refer to Figure 10). The proposed pipeline can be placed within an existing road (crossing over the Langrug Ridge) after which it will follow internal farm tracks between agricultural fields to the east of the Langrug Ridge. The proposed new buffer dam will overlap (placed within) an existing agricultural land (dry-land commercial crops).

The DFFE screening report for the proposed site, compiled by EnviroAfrica during January 2025 (Appendix 1), identifies the following potential environmental sensitivities:

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

1.1. LEGISLATION GOVERNING THIS STUDY

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 (Government Notice No. 320 of 20 March 2020).

1.2. TERMS OF REFERENCE

Since the Terrestrial Biodiversity sensitivity have been identified as very high a Terrestrial Biodiversity Assessment or Compliance Statement were required. PB Consult was appointed by EnviroAfrica to perform a site sensitivity verification and a terrestrial biodiversity 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 should be avoided or that may require “search & rescue” intervention.
- Locate and record sensitive areas from a terrestrial biodiversity perspective within the proposed development footprint that may be interpreted as obstacles to the proposed development.
- Map a sensitive areas and make recommendations on optimal placement (in terms of minimum environmental impact).
- Make recommendations on impact minimization where applicable

1.3. LOCATION & LAYOUT

The proposed **Helpmekaar Dam enlargement**, the **connecting pipeline** and the proposed **new buffer dam** will all be located on Portion 5 of Farm Rietrivier No 202 in the Koue Bokkeveld, just north of Op-die-Berg and approximately 50 km north of Ceres. It falls within the Witzenberg Local Municipality of the Western Cape Province (Figure 1).

The existing Helpmekaar Dam has footprint of about 10.4 ha. The proposed dam enlargement will result in a footprint enlargement of approximately 7.6 ha (total footprint about 18 ha).

The proposed dam enlargement, connecting pipeline and new buffer dam will all be in the southwestern part of the Rietrivier farm at the foot of the Kouebokkeveld Mountains (Figure 2).

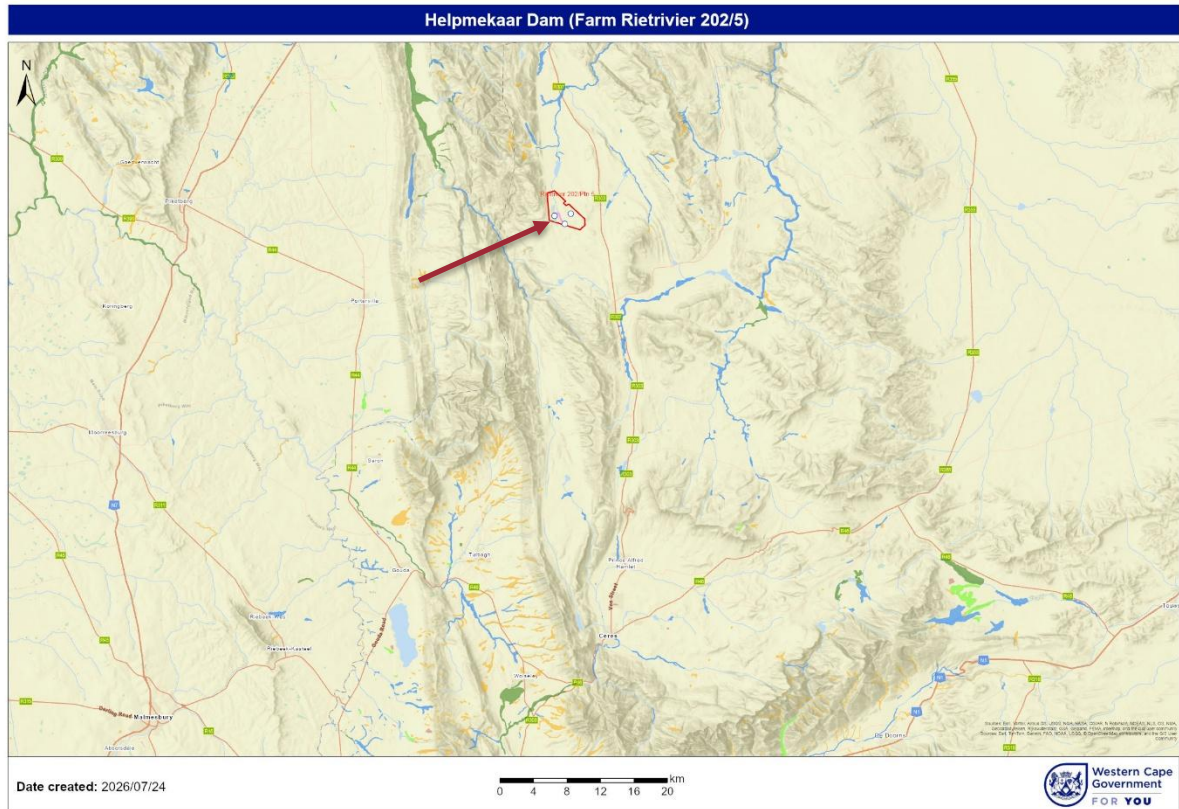


Figure 1: A map showing the location of the farm in relation to Ceres and Op-die-Berg (CapeFarmMapper)

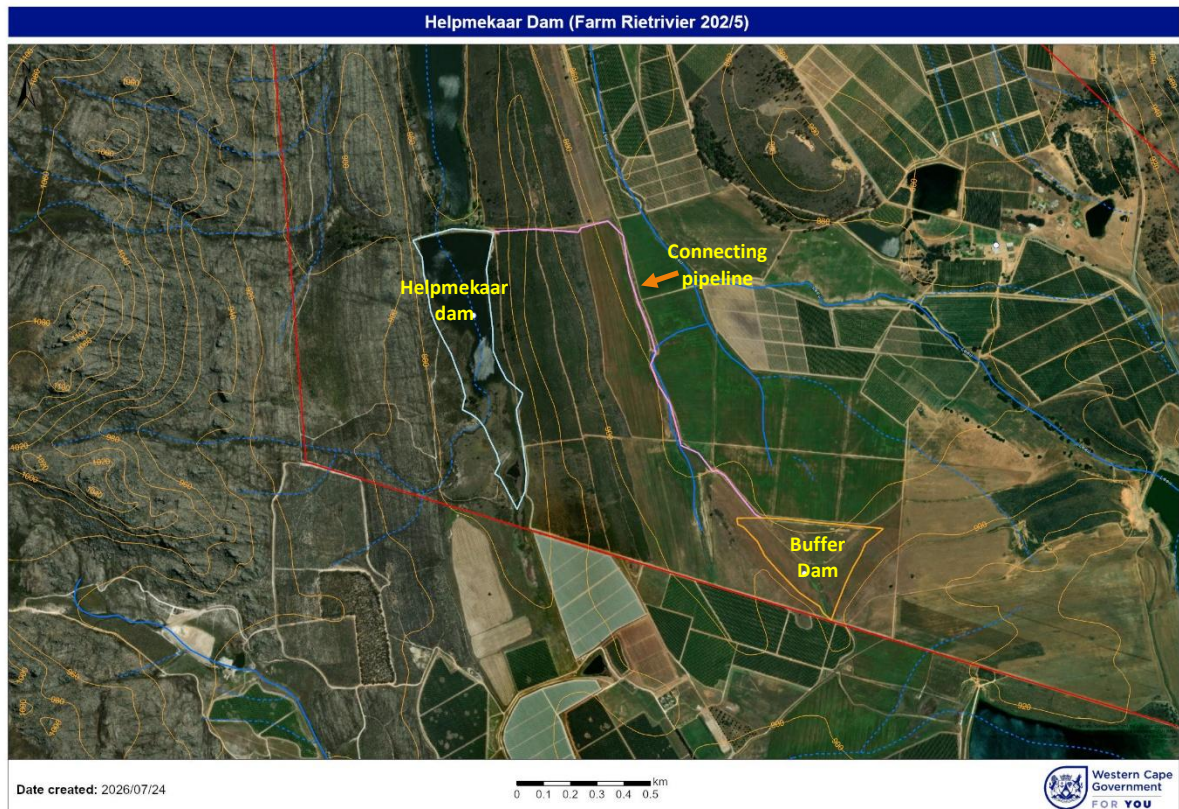


Figure 2: Satellite Imagery showing the location of the proposed Helpmekaar dam (light blue), the connection pipeline (pink) and the proposed Buffer dam (orange)

1.4. CLIMATE

The farm is situated near Op-die-Berg in the Koue Bokkeveld, a high-altitude inland plateau characterised by a Mediterranean-type climate with cool, wet winters and warm to hot, dry summers. Most of the annual rainfall occurs between May and September because of cold fronts associated with the winter rainfall region of the Western Cape. Mean annual rainfall generally ranges between 400 and 500 mm, although rainfall increases on the surrounding mountain slopes due to orographic effects.

The high elevation of the Koue Bokkeveld results in significantly cooler temperatures than the adjacent Ceres Valley. Winter temperatures frequently fall below freezing, with frost occurring regularly and occasional snowfall on the surrounding mountain peaks. Summers are generally warm during the day, but relatively cool nights are common due to the altitude. Evaporation rates exceed rainfall, making irrigation essential for intensive agriculture in the region. The climate is well suited to the cultivation of deciduous fruit, which forms the dominant agricultural land use in the area. Figure 3 gives the average temperatures and precipitation for the town of Op-die-Berg, which is just south of farm Rietrivier (source: https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/op-die-berg-south-africa_3363273).

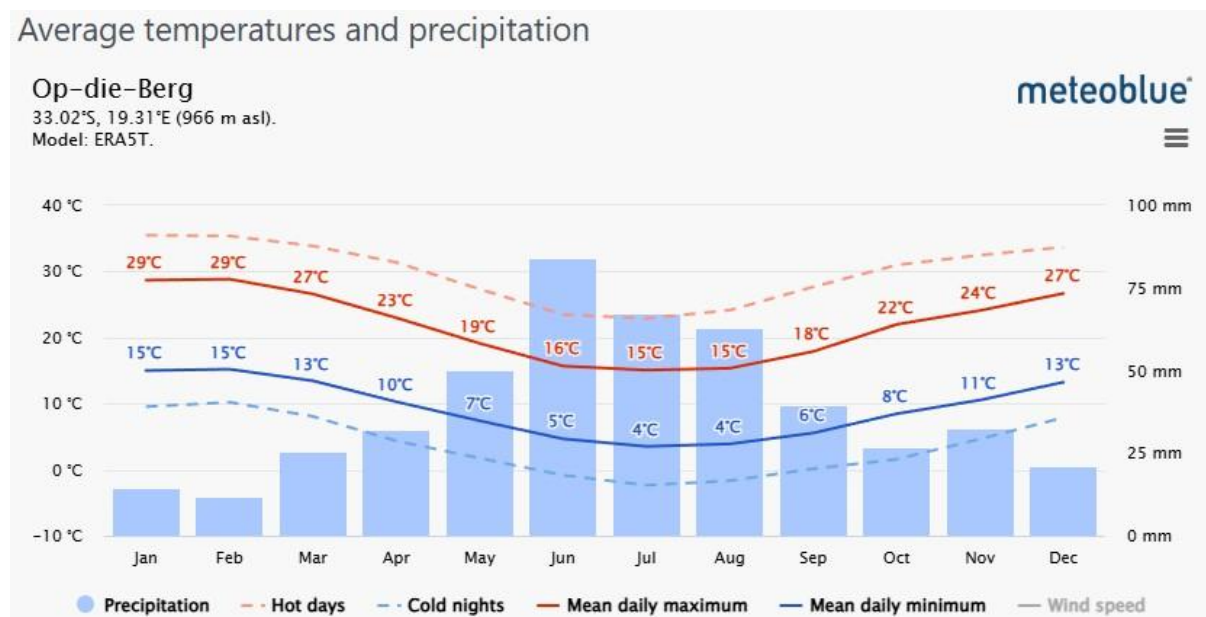


Figure 3: Average temperatures and precipitation for Op-die-Berg, near the Farm Rietrivier 202 (Source: Meteoblue).

1.5. TOPOGRAPHY

The Helpmekaar dam (Langrug-Boonste No. 1 Dam) is located in a narrow north-south valley between a low ridge (elevation of about 920 m) at the foothills of the Kouebokkeveld Mountains to the west and the Langrug Ridge to the east (elevation of about 913 m). The valley floor is at an elevation of about 860 m above mean sea level. The connection pipeline will run over the Langrug ridge eastwards into the old Slangboskloof and then south (through dry-land agricultural fields towards the location of the proposed buffer dam. The buffer dam will be in a natural basin overlapping existing agricultural land. The sides of the basin are at an elevation of about 894m and the floor is at about 880 m.

1.6. ACTIVITY DESCRIPTION

The proposed project involves the enlargement of the existing Helpmekaar Dam (also known as Langrug-Boonste No. 1 Dam), located on Portion 5 of Farm Rietrivier 202 in the Koue Bokkeveld near Ceres. The existing in-stream earthfill dam will be enlarged to **increase its storage capacity** from approximately **390 000 m³ to 800 000 m³** through the raising and extension of the existing embankment.

The project also includes associated outlet works, a spillway, and the installation of an approximately **1.7 km pipeline** to connect the enlarged dam with a proposed downstream **buffer dam** as part of the farm's irrigation network.

The additional storage will be supplied by the abstraction of up to 410 000 m³ of surplus winter runoff from the upper tributaries of the Leeu River under a Water Use Licence Application.

The increased water availability will enable the conversion of approximately 45 ha of annual cash crops to permanent fruit orchards, thereby improving irrigation security and supporting the long-term sustainability and economic viability of the farming operation.

2. DESKTOP ANALYSIS

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.

2.1. APPROACH & METHODOLOGY

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 CapeFarmMapper, SANBI BGIS 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 was used as a reference during the physical site visit. Plant species lists were prepared, and species of special significance were flagged.

2.2. BROADSCALE VEGETATION TYPES EXPECTED

According to the Vegetation map of South Africa, Lesotho and Swaziland – version 2024 (VegMap 2024, beta) the enlargement and pipeline may impact on **Kouebokkeveld Alluvium Fynbos**, **Kouebokkeveld Shale Fynbos** and Winterhoek Sandstone Fynbos (Figure 4).

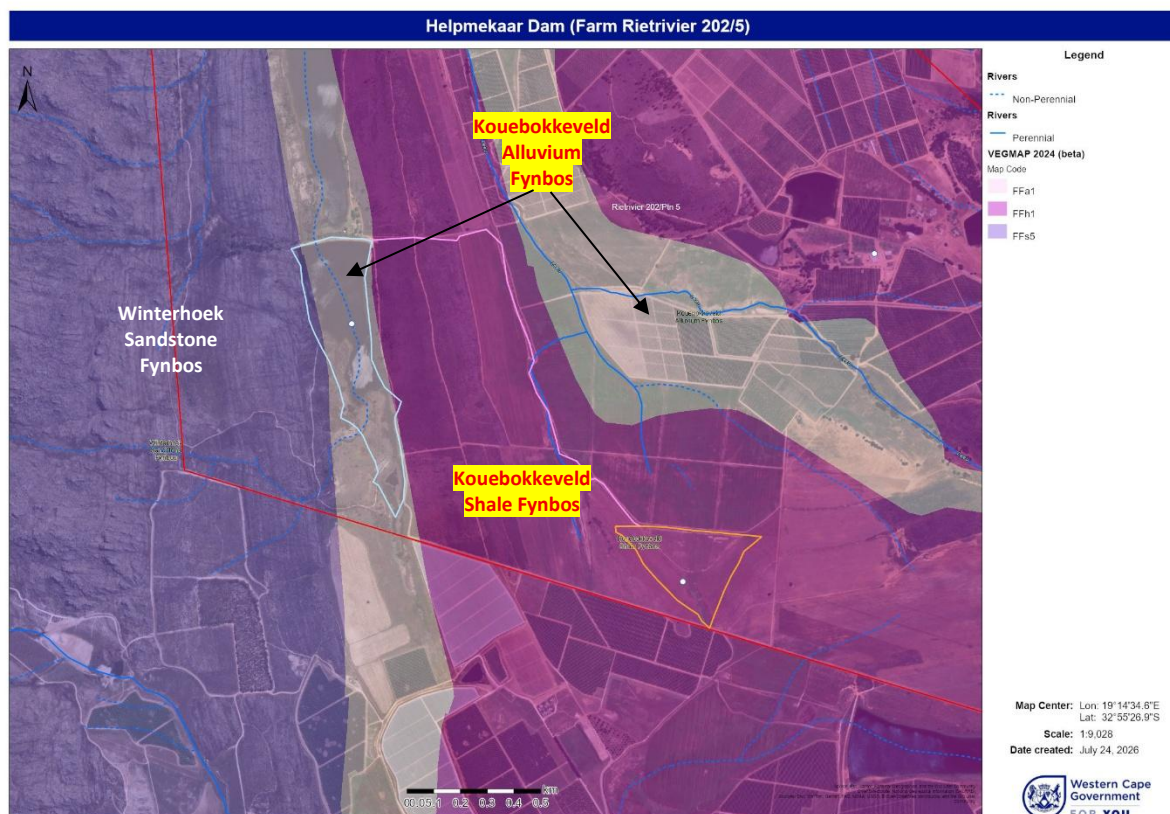


Figure 4: VegMap of South Africa (2024 beta), showing the expected vegetation within Erf 15024.

The first two ecosystems are both **Critically Endangered** in terms of the revised national list of ecosystems that are threatened and in need of protection (GN 2747 of 18 November 2022). Winterhoek Sandstone Fynbos is not threatened. The status of all three vegetation types remains the same in the recently updated, 2025 National Biodiversity Assessment (Monyeki & Skowno, 2026).

2.3. THE VEGETATION IN CONTEXT

The project area falls within the Fynbos Biome, part of the Cape Floristic Region, a globally recognised biodiversity hotspot and UNESCO World Heritage Site. The Fynbos Biome is renowned for its exceptionally high plant diversity and endemism, supporting more than 9,000 plant species, of which nearly 70% are endemic to the region. Fynbos vegetation is typically characterised by evergreen, fine-leaved shrubs dominated by members of the Proteaceae, Ericaceae and Restionaceae families, together with a rich diversity of geophytes and annual flowering plants. It is adapted to nutrient-poor soils, a Mediterranean-type climate with winter rainfall, and periodic fire, which is essential for the regeneration and long-term persistence of many fynbos species. The Koue Bokkeveld supports several distinct fynbos vegetation types that vary according to geology, soil type, altitude and topography, contributing to the high ecological diversity of the region.

Kouebokkeveld Alluvium Fynbos is a “Critically Endangered” vegetation type of the Fynbos Biome that is largely restricted to the alluvial terraces and valley floors of the Koue Bokkeveld and upper Olifants River catchment in the Western Cape. It occurs on deep, well-drained sandy to loamy alluvial soils deposited along river systems and drainage lines. The vegetation is characterised by a moderately tall shrub layer dominated by proteas, ericas and restios, with a diverse understorey of geophytes and annual herbs. Owing to the relatively fertile soils and favourable topography, much of this vegetation has been transformed by agriculture, particularly for deciduous fruit production and cultivated pastures, leaving only small, fragmented remnants. The remaining patches are of high conservation importance as they support numerous endemic plant species and contribute to the ecological functioning of river corridors and associated alluvial ecosystems (Rebelo *et al.*, 2006).

Kouebokkeveld Shale Fynbos is also a “Critically Endangered” vegetation type of the Fynbos Biome that occurs on the shale-derived soils of the Bokkeveld Group in the Koue Bokkeveld and surrounding uplands of the Western Cape. It is typically found on gently undulating plains and lower mountain slopes, where it is characterised by a moderately dense shrub layer dominated by proteoid, ericoid and restioid species, together with a rich diversity of geophytes and annual flowering plants. Compared to sandstone fynbos, the more fertile shale-derived soils support a higher diversity of shrubs and forbs. Large portions of this vegetation type have been transformed for dryland agriculture and deciduous fruit production, resulting in habitat fragmentation. The remaining natural remnants are important for conserving the region's exceptional plant diversity and maintaining ecological connectivity within the Koue Bokkeveld landscape (Rebelo *et al.*, 2006).

Winterhoek Sandstone Fynbos is a “Least Threatened” mountain fynbos vegetation type associated with the Table Mountain Group sandstones of the Winterhoek and surrounding mountain ranges in the Western Cape. It occurs predominantly on nutrient-poor, acidic sandstone soils on steep mountain slopes, plateaus and high-altitude ridges. The vegetation is characterised by a dense, species-rich shrub layer dominated by proteas, ericas and restios, together with a diverse assemblage of geophytes and other endemic fynbos species. Due to its rugged topography and generally limited agricultural potential, much of this vegetation type remains relatively intact. Fire is a natural ecological process

that plays an essential role in maintaining species diversity and ecosystem functioning within this vegetation type. (Rebelo *et al.*, 2006).

2.4. WESTERN CAPE BIODIVERSITY SPATIAL PLAN

The 2023 Western Cape Biodiversity Spatial Plan (WCBSP), adopted on December 13, 2024, under the Western Cape Biodiversity Act (No. 6 of 2021), replaces the 2017 BSP. The BSP aims to guide land-use planning and decision-making. It addresses terrestrial and freshwater areas, as well as significant coastal and estuarine habitats. It maps Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) that need protection to ensure the survival and functionality of species and ecosystems, including the provision of ecosystem services (CapeNature, 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.

- **Critical biodiversity areas (CBA's)** 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.
- **Ecological support areas (ESA's)** are areas that should be protected to that ensure the long-term ecological functioning of the landscape. The Objective should be to retain ecological processes, which often requires at least semi-natural ecological condition.



Figure 5: The WCBSP (2023) showing the development footprint and the associated CBA's (CapeFarmMapper).

The Western Cape Biodiversity Spatial Plan (WCBSP, 2023) maps all remaining natural veld of the two critically endangered ecosystems (Kouebokkeveld Alluvium Fynbos, Kouebokkeveld Shale Fynbos) as critical biodiversity area (CBA 1), while some of the Winterhoek Sandstone Fynbos has been marked as ecological support areas (ESA 1) (Figure 5).

2.5. LANDUSE

The Western Cape Department of Agriculture Crop Census (2023, Winter) and the 2022 DFFE Land Cover (9-class) map (Figure 6) suggests the Helpmekaar dam, is likely to impact on remaining natural shrubland and forest (which is likely to be alien infested areas). The pipeline route over the Langrug Ridge and to a lesser extent the pipeline east of Langrug and the buffer dam may also impact on remaining natural veld (shrubland).

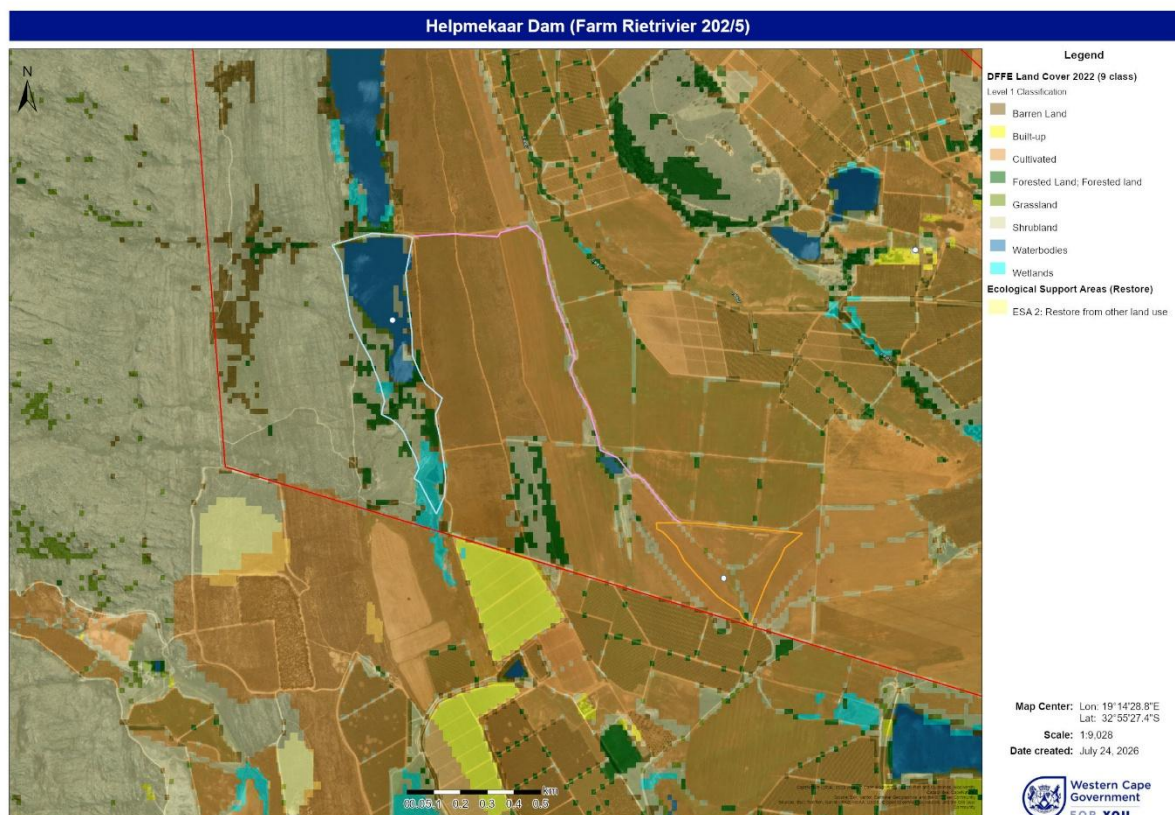


Figure 6: The DFFE Land Cover 2022 (9 class) showing the expected land cover associated with the project.

2.6. SITE VERIFICATION

An initial planning site visit was done during October 2022, but the site survey for this study was conducted on the 27th of February 2026, over an 8-hour period, by walking and driving the site while evaluating the vegetation and species encountered. Protected or other special plants and any terrestrial feature of significance was, marked by waypoints and/or on the study map, and photographed (Figure 7). 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 visited.

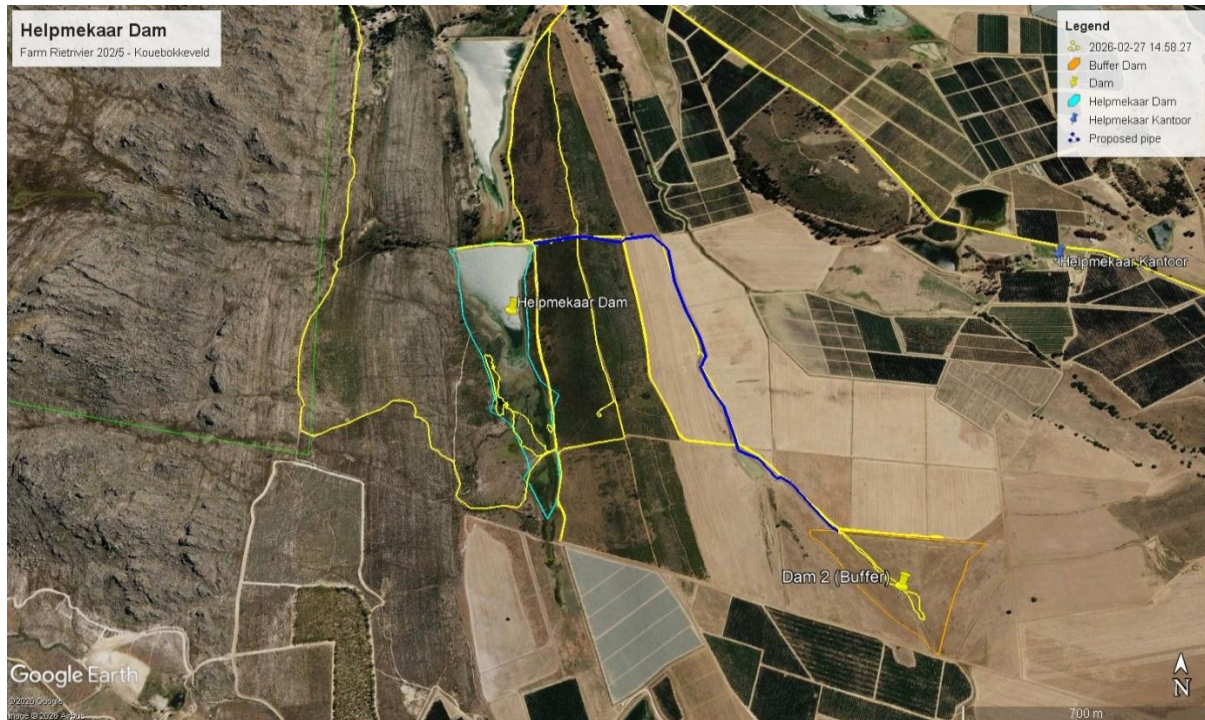


Figure 7: Google Image, showing the proposed development footprint and the site verification routes (yellow) used.

2.7. LIMITATIONS, ASSUMPTIONS AND UNCERTAINTIES

The fieldwork for this project was carried out during February 2026, which is not the optimal flowering season in this winter rainfall area. There is thus a potential for seasonal constraints on the accuracy of the botanical findings, but almost all the shrubs were identifiable, and many species were still in flower or fruit. It was possible to evaluate the conditions of the veld and vegetation type.

However, the findings are based on a one-day site visit (not long-term repetitive sampling), which means that species might have been missed, but the vegetation at the Helpmekaar dam was mostly wetland associated species, while the vegetation of Langrug Ridge was very old and very dense stagnant veld dominated by *Protea repens* (the veld is expected to more than 30 years old).

The areas **east of Langrug** were all under cultivation (dry-land commercial crops) with no remaining natural veld (not even the areas marked as CBA's in Figure 5, or the areas marked as still containing shrubland in the land cover map, Figure 6). In terms of botanical significance, the proposed pipeline route east of Langrug Ridge and the location for the Buffer Dam has been transformed.

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

Portion 5 of the Farm Rietrivier 202 is about 1 161.94 ha (CapeFarmMapper) in size. The proposed development will include the following infrastructure:

HELPMEKAAR DAM EXPANSION:

The existing **Helpmekaar Dam** (also known as Langrug-Boonste No. 1 Dam) has a footprint of about 10.4 ha when full.

- The proposed enlargement will result in an inundated footprint of about 18 ha when full (an **enlargement in footprint of about 7.6 ha**).
- According to the VegMap (2024, beta) this enlargement is expected to impact **Kouebokkeveld Alluvium Fynbos**, a **critically endangered** ecosystem (Figure 4) - mapped as a **CBA1** (Figure 5).



Figure 8: Google Image showing the existing Helpmekaar dam (red) the expected footprint of the dam enlargement (magenta, blue), the route of the connecting pipeline (dark blue) and the location of the Buffer Dam (orange). Note the large scale intensively cultivated areas upstream of the Helpmekaar Dam (runoff from this agricultural area seems to have impacted/alterd the vegetation in the floodplain area of the Helpmekaar dam).

CONNECTING PIPELINE:

The Helpmekaar dam will be connected to a Buffer dam by a **new connecting pipeline** of approximately **1.7 km** in length.

- The pipeline will cross the Langrug Ridge along an existing road (firebreak) after which it will follow internal farm roads next to commercial dry-land pastures towards the Buffer dam.
- The Langrug Ridge is expected to support **Kouebokkeveld Shale Fynbos** (also a **critically endangered** ecosystem) (Figure 4) - mapped as a **CBA1** (Figure 5).
- The pipeline route area east of Langrug Ridge might impact on remaining natural veld in small areas mapped as remaining shrubland in the Land Cover map (Figure 6) and subsequently mapped as a **CBA1** (Figure 5).

THE BUFFER DAM

The new Buffer Dam will have a footprint of about 9.83 Ha and will be located within an existing cultivated area (dry-land commercial crops).

- This area used to support **Kouebokkeveld Shale Fynbos (critically endangered)** (Figure 4) and might still support small areas of remaining natural veld, mapped as remaining shrubland in the Land Cover map (Figure 6) and subsequently mapped as a **CBA1** (Figure 5).

3.1. HELPMEKAAR DAM EXPANSION

The site visits confirmed that most of the valley bottom upstream of the Helpmekaar dam (including almost all of the 7 – 8 ha that will become inundated by the dam enlargement) supports wetland or fynbos riparian vegetation (not alluvial vegetation as expected). The vegetation in this upstream valley bottom has been subject various land-use practices that might have converted this veld from alluvial vegetation into a floodplain wetland (e.g., nutrient rich water and sediment from the upstream agricultural areas, damming of the lower valley, cattle grazing and an altered fire regime).

The Freshwater Report (Watson Africa, 2025) postulate that before agriculture, runoff from the three drainage lines to the west (of the Helpmekaar dam), down the mountains and into the valley bottom would have been (and still are) extremely fast, because of the steep slopes and rather straight drainage lines. This water would have run into channelled valley bottom wetlands with densely vegetated riparian zones (as is typical in this area). Alluvial vegetation would then have established in the floodplain areas next to the channelled valley bottom wetlands. Today the valley bottom upstream of the Helpmekaar dam is under intensive cultivation, which together with damming the downstream part of the valley (the Helpmekaar dam) have changed the landscape into a wide seepage wetland due to nutrient rich runoff and sedimentation from these agricultural areas (blocked by the dam). Such changes in soil and wetness gradient would have resulted in a change in plant community and plant species composition.

The vegetation encountered in the valley bottom upstream of the dam seems to support this theory as it was almost exclusively wetland and riparian plant- species and communities. Only the slightly higher western part of the valley bottom, mostly west of the proposed inundation area, still supported a grassy fynbos with an overstory of old (>30 years) patches of *Protea repens* - senescent veld that has not burned recently.



Photo 1: Looking from upstream (south to north) over the valley towards the Helpmekaar dam (just visible towards the back). Note the seepage wetland (*Typha capensis* – indicating permanent water, with *Cliffortia strobilifera* on the edges).



Photo 2: Looking upstream from the midpoint of the area that will be impacted by the dam enlargement. The wetland area dominated by *Typha capensis* is clearly visible in the valley bottom.

The yellow arrow shows *Protea repens* dominated veld to the west of the wetland area.



Photo 3: Looking from east to west over the valley bottom (at about the midpoint of the area that will be impacted by the dam enlargement). Note the riparian fringe vegetation dominated by *Cliffortia strobilifera* (vleibos), *Elegia* and other wetland species.



Photo 4: Looking towards the existing dam, over a portion of the wetland vegetation that will be inundated by the proposed dam. Note the water heath (*Erica curviflora*) individuals in the foreground.

The yellow arrow shows *Protea repens* dominated veld to the west of the dam.

Runoff water from the transformed agricultural areas of the upstream neighbouring farm enters the Rietrivier farm property (Refer to the yellow arrow in Figure 8) from the south into the valley bottom. In this area it seems to run into a slight depression, resulting in almost permanent standing water, which is marked by dense stands of *Typha capensis* (papkui) (Photo 1 & Photo 2).

The fringes of this wetland as well as that of the seepage areas slightly further downstream was usually dominated by *Cliffortia strobilifera* (vleibos) with species like *Elegia capensis*, *Elegia tectorum* (Cape thatching reed), *Erica curviflora* (water heath), *Helichrysum* cf. *crispum* (kooigoed) and occasionally

Morella serrata (berg-wasbessie) and *Xysmalobium undulatum* (milkwort), scattered in between (Photo 3 and Photo 4).



Photo 5: Looking upstream (from the same location as Photo 4). The seepage wetland vegetation can be seen behind the *Erica curviflora* in the foreground.

The edge of a pine tree patch is just visible to the right of picture.

The seepage wetland consisted of a mix of sedges, grasses and restios, including *Cenchrus macrourus* (River grass) (d) and *Ficinia* species with species like *Isolepis cf. cernua*, *Juncus acutus* (steekbiesie), *Restio dispar*, *Cyperus* species and *Helichrysum foetidum* (brandblaar) (Photo 5). Scattered Pine- (*Pinus* species) and Wattle trees (*Acacia baileyana*) were observed in the valley and adjacent veld.

3.1.1. KOUEBOKKEVELD ALLUVIUM FYNBOS

Although most of the lower parts of the valley bottom support wetland vegetation, remnant grassy **Kouebokkeveld Alluvium Fynbos** was encountered in the western (Photo 6) and southwestern part (Photo 7) of the valley floor (Refer to Figure 9 for a rough delineation of remaining Alluvium Fynbos). The areas still supporting Alluvium Fynbos were almost always marked by an overstory of *Protea repens* individuals that varied from sparse to dense stands. The veld was clearly very old (almost senescent) and is subject to livestock (cattle) grazing. Based on the age of the *Protea repens* individuals it had not burned in the last 20 – 30 years (Photo 6 & **Error! Reference source not found.**).



Photo 6: Alluvium Fynbos dominated by *Protea repens*, encountered on the western edge of the area that will be inundated by the dam enlargement.

Long term exclusion of fire and selective grazing by livestock, seems to have impacted species composition. The veld seems to have lost its asteraceous and most of its proteoid components. Apart from *Protea repens*, no other *Protea* or *Leucadendron* species were observed, and the shrub layer had been reduced to sparse layer of hardy species such as *Seriphium plumosum* (=Stoebe), *Dicrothamnus rhinocerotis* (renosterbos), *Cliffortia ruscifolia* (climbers' friend), *Metalasia densa* (mostly near the

seepage areas) and *Helichrysum helianthemifolium*. *Erica* cf. *rubens* was occasionally observed along watercourses.



Photo 7: Alluvium Fynbos in the southwestern corner of the valley, closer to the mountain – away from the wetland area. Note the denser shrub layer.

The veld in the southwestern corner of the valley (away from the wetland) supported Kouebokkeveld Alluvium Fynbos in better condition, with a denser shrub layer (more intact vegetation) but the asteraceous and proteoid component was still mostly absent (Photo 7).

NB: This area will not be impacted.



Figure 9: A Google Image showing the estimated area still supporting Alluvium Fynbos (green) and the potential areas that might be impacted by the dam enlargement (demarcated by the light blue line).

A rough estimate (using Google Imagery) suggests that **about 12 ha of this grassy fynbos remains** in the western and southwestern parts of the valley (green in Figure 9) of which **about 0.6 - 1 ha might be impacted** by the dam enlargement (floodplain).

3.2. CONNECTING PIPELINE

From the Helpmekaar dam water will be pumped via a connecting pipeline of about **1.7 km** over the Langrug Ridge to a new Buffer dam southeast of the main dam. Of importance is the fact that the Langrug Ridge still supports **Kouebokkeveld Shale Fynbos** in good condition (Photo 8). The veld on the ridge was generally very old (likely more than 30 years of age), becoming stagnant, and in urgent need of fire. The veld is dominated by dense stands of *Protea repens*, with larger shrubs in the small open areas (e.g. *Cliffortia ruscifolia*, *Seriphium plumosum*, *Phylica pubescens*). *Leucadendron rubrum* was occasionally observed. This vegetation is of high significance (critically endangered).

Alarming alien invasive plant species such as Pine trees (*Pinus* species) and *Acacia baileyana* (Bailey's Wattle) can be observed scattered throughout this vegetation. Although some efforts have been made to clear some of these trees it should be a priority to remove them as soon as possible, before they become problematic and costly to remove.



Photo 8: Kouebokkeveld Shale Fynbos on the Langrug Ridge. Note the dense *Protea repens* stands – the age of which is estimated to be more than 30 years.



Photo 9: *Leucadendron rubrum* individual observed on Langrug Ridge.

The pipeline over the ridge will follow an existing road/firebreak. This road is narrow on the western side of the ridge (Photo 10) but wider on the eastern side of the ridge (Photo 11).

Because of the critically endangered status of this vegetation type the placement of the pipeline **MUST** aim at minimal additional disturbance (even though it might be seen as a temporary disturbance). It is recommended that the pipeline is located within the existing road/firebreak to prevent unnecessary widening of the road – further impact on the vegetation.



Photo 10: The road/firebreak down the western side of the ridge (the dam wall just visible to the bottom of the road). In this area the location of the pipeline will have to be within the road, to minimise the impact on the Shale Fynbos.



Photo 11: The road/firebreak to up the eastern side of the ridge.

East of the ridge the pipeline will follow existing farm tracks and be placed in transformed agricultural land (Photo 12). No remnant indigenous vegetation of any significance was observed along this route.



Photo 12: A photo of the agricultural fields east of the Langrug Ridge (the blue line indicating the proposed route for the pipeline).

3.3. NEW BUFFER DAM

The new Buffer Dam will be located in a shallow basin overlapping existing agricultural land (dryland commercial crops). It will not impact on remaining natural veld (Photo 13 & Photo 14).



Photo 13: Looking from the bottom of the depression (where the new dam will be constructed) up (south) onto the area that will be covered by the dam.



Photo 14: Looking over the proposed Buffer Dam site from west to east. Note the degraded status of the veld (agricultural land).

3.4. FLORA ENCOUNTERED

Table 1 gives a list of plant species encountered in the study area. It is important to note that the species list is based on a one-day site visit, and the focus was on the evaluation of the vegetation type and its condition more than a full botanical assessment. However, the author took care to look for potential significant species (e.g., protected- and rare or endangered species) that might be impacted.

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

NO.	SPECIES NAME	FAMILY	STATUS	LOCATION
1.	<i>Acacia baileyana</i>	FABACEAE	NEMBA Cat. 3 & CARA Cat 3 Invader species	Bailey's Wattle – Scattered along the Langrug Ridge and next to the dam.
2.	<i>Cenchrus macrourus</i>	POACEAE	LC	River grass – dominant species in the seepage areas.
3.	<i>Cliffortia ruscifolia</i>	ROSACEAE	LC	Climbers' friend – common in Fynbos areas.
4.	<i>Cliffortia strobilifera</i>	ROSACEAE	LC	Vleibos – Often dominant in the fringe vegetation next to wetlands.
5.	<i>Cyperus</i> species	CYPERACEAE		<i>Cyperus</i> species occasionally

NO.	SPECIES NAME	FAMILY	STATUS	LOCATION
				observed in seepage areas.
6.	<i>Dicerotheramnus rhinocerotis</i>	ASTERACEAE	LC	A common almost weedy species observed in fallow land.
7.	<i>Elegia capensis</i>	RESTIONACEAE	LC	Occasional too common in fringe vegetation next to wetlands.
8.	<i>Elegia tectorum</i>	RESTIONACEAE	LC	Cape thatching reed: Occasional near wetlands
9.	<i>Erica cf. rubens</i>	ERICACEAE	LC	Only along/in watercourses in Alluvium Fynbos.
10.	<i>Erica curviflora</i>	ERICACEAE	LC	Water heath: Occasional in the fringe vegetation next to wetlands.
11.	<i>Ficinia</i> species	CYPERACEAE		One of the dominant species in the seepage areas.
12.	<i>Helichrysum cf. crispum</i>	ASTERACEAE	LC	Kooigoed occasional in fynbos areas.
13.	<i>Helichrysum foetidum</i>	ASTERACEAE	LC	Brandblaar: Occasional in seepage areas.
14.	<i>Helichrysum helianthemifolium</i>	ASTERACEAE	LC	Occasional in the fringe vegetation near wetlands.
15.	<i>Isolepis cf. cernua</i>	CYPERACEAE	LC	Occasional in the wetland areas.
16.	<i>Juncus acutus</i>	JUNCACEAE	LC	Steekbiesie: Occasional in the wetland areas.
17.	<i>Leucadendron rubrum</i>	PROTEACEAE	LC	Spinning top: Occasional on Langrug Ridge.
18.	<i>Metalasia densa</i>	ASTERACEAE	LC	Blombos: Occasional in Alluvium vegetation (near wetland).
19.	<i>Morella serrata</i>	MYRICACEAE	LC	Berg-wasbessie: Rarely in the fringe vegetation near wetlands
20.	<i>Phyllica odorata</i>	RHAMNACEAE	LC	Shale Fynbos on Langrug Ridge.
21.	<i>Pinus pinaster</i>	PINACEAE	NEMBA Cat. 1b & CARA Cat 2 Invader species	Cluster pine: Scattered throughout the farm.
22.	<i>Protea repens</i>	PROTEACEAE	LC	Suikerbos: Common to dominant in Fynbos areas.
23.	<i>Restio dispar</i>	RESTIONACEAE	LC	Occasional near or in wetland areas.
24.	<i>Seriphium plumosum (=Stoebe)</i>	ASTERACEAE	LC	Slangbos: A hardy pioneer species, common in fynbos areas.
25.	<i>Typha capensis</i>	TYPHACEAE	LC	Papkuil: Dominant in shallow standing water.
26.	<i>Xysmalobium undulatum</i>	APOCYNACEAE	LC	Milkwort: Occasional in the fringe vegetation near wetlands.

3.4.1. 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).

3.4.1.1. 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 species were observed.

3.4.1.2. 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.

3.4.1.3. 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.

3.4.2. PLANT SPECIES SENSITIVITY THEME

The DFFE screening report (Appendix 1) gives the relative plant species sensitivity as **Medium Sensitive**, because of potential impact on medium sensitive plant species associated with the Sandstone-, Alluvial and Shale Fynbos in this vicinity (Refer to Pp 14 - 15 of the screening report). It includes several unnamed sensitive species, mostly of the Iridaceae family.

- Although none of the sensitive species were observed, it is likely that at least some of these species will occur on the farm (because of the timing and veld age, many of the herbs, bulbs or forb may not have been visible).
- However, if impact mitigation measures are implemented it is unlikely that the enlargement of the dam will lead to irreversible species lost.

Because of the potential impact on sensitive vegetation and plant species, the plant species theme is rated **Medium Sensitive without mitigation** but may be reduced to **Medium-Low or Low Sensitivity** with mitigation.

3.5. FAUNA AND AVI-FAUNA

The Kouebokkeveld Mountains supports a rich variety of wildlife adapted to its rugged mountain fynbos, riparian corridors, wetlands, rocky outcrops, cultivated lands and farm dams, each supporting

a distinct faunal community. Although much of the plateau has been transformed by agriculture (particularly deciduous fruit production), extensive areas of natural vegetation remain on the surrounding mountain slopes and steeper terrain, providing important habitat for indigenous fauna.

3.5.1. MAMMALS

Mammal fauna is typical of mountain fynbos habitats, although most of the larger mammals have disappeared from the agricultural plateau (some persist in protected mountain areas), while medium- and small-sized mammals remain relatively common.

Mammal species that may be expected in the Kouebokkeveld includes: Chacma Baboon (*Papio ursinus*), Klipspringer (*Oreotragus oreotragus*), Grey Rhebok (*Pelea capreolus*), Common Duiker (*Sylvicapra grimmia*), Cape Grysbok (*Raphicerus melanotis*), Steenbok (*Raphicerus campestris*), Rock Hyrax (Dassie) (*Procavia capensis*), Cape Porcupine (*Hystrix africaeaustralis*), Scrub Hare (*Lepus saxatilis*), Cape Hare (*Lepus capensis*), Small Grey Mongoose (*Galerella pulverulenta*), Cape Grey Mongoose (*Herpestes pulverulentus*), Honey Badger (*Mellivora capensis*), Caracal (*Caracal caracal*), African Wild Cat (*Felis lybica*), Cape Clawless Otter (*Aonyx capensis*) along perennial rivers, the Leopard (*Panthera pardus*) is rare but still occurs in portions of the surrounding Cederberg and Winterhoek mountain ranges. These mountain ranges are critical refuges for larger predators such as leopard.

Numerous small mammals, including elephant shrews, gerbils, mice, shrews and several bat species, are also expected (Stuart & Stuart, 2015).

3.5.2. REPTILES

The Cape Floristic Region is particularly rich in reptiles, many of which are endemic because of its extensive mountain fynbos, high-altitude habitats and relatively intact ecological corridors. Species likely to occur include: Angulate Tortoise (*Chersina angulata*), Leopard Tortoise (*Stigmochelys pardalis*), Cape Girdled Lizard (*Cordylus cordylus*), Southern Rock Agama (*Agama atra*), Cape Crag Lizard (*Pseudocordylus microlepidotus*), Cape Skink (*Trachylepis capensis*), Many gecko species (*Afrogecko*, *Pachydactylus*), Boomslang (*Dispholidus typus*), Mole Snake (*Pseudaspis cana*), Cape Cobra (*Naja nivea*), Puff Adder (*Bitis arietans*) and the Berg Adder (*Bitis atropos*) at higher elevations.

3.5.3. AMPHIBIANS

Although amphibian diversity is lower than in the wetter southern Cape, mountain wetlands, perennial streams, seeps and farm dams provide important habitat for amphibians and may support several frog species, including the Clicking Stream Frog (*Strongylopus grayii*), Cape River Frog (*Amietia fuscigula*), Common Platanna (*Xenopus laevis*), Rauous Toad (*Sclerophrys capensis*) and the Arum Lily Frog (*Hyperolius horstockii*) in wetland habitats (Dorse & Dorse, 2023).

3.5.4. AVI-FAUNA

The Kouebokkeveld forms part of the internationally recognised **Cederberg–Koue Bokkeveld Important Bird and Biodiversity Area (IBA)**. More than **230 bird species** have been recorded in the area, reflecting its range of mountain fynbos, Karoo shrubland, wetland and agricultural habitats. The

area supports important Cape Fynbos endemic bird species, while the mosaic of natural and agricultural landscapes provides habitat for a diverse range of generalist mammals and birds.

Fynbos endemic species includes the Orange-breasted Sunbird (*Anthobaphes violacea*), Cape Sugarbird (*Promerops cafer*), Protea Seed-eater (*Crithagra leucoptera*), Cape Rockjumper (*Chaetops frenatus*), Cape Siskin (*Crithagra totta*), Victorin's Warbler (*Cryptillas victorini*), Cape Bulbul (*Pycnonotus capensis*) and the Cape Spur-fowl (*Pternistis capensis*). These species are closely associated with mature mountain fynbos, particularly protea- and erica-dominated vegetation (Birdlife South Africa, 2015).

The mountainous landscape also supports numerous **birds of prey**, such as the Verreaux's Eagle, Martial Eagle (occasional), Jackal Buzzard, Black Harrier, Black Eagle, Rock Kestrel, Lanner Falcon, Peregrine Falcon and the African Harrier-Hawk. Several of these species utilise the high cliffs and rocky escarpments for nesting (Birdlife South Africa, 2015).

Wetland and riparian birds that may be encountered include the Malachite Kingfisher, Giant Kingfisher, African Black Duck, Yellow-billed Duck, Reed Cormorant, Grey Heron, Little Egret, African Sacred Ibis, Three-banded Plover and the Common Moorhen, while cultivated orchards, pastures and farm dams provide habitat for the Hadedra Ibis, Egyptian Goose, Spur-winged Goose, Helmeted Guineafowl, Pied Crow, Fiscal Flycatcher, Southern Fiscal, Cape Weaver, Southern Masked Weaver, Common Starling, Barn Owl, Spotted Eagle-Owl, Rock Kestrel and the White-necked Raven (Birdlife South Africa, 2015).

3.5.5. ANIMAL SPECIES THEME SENSITIVITY

The DFFE Screening Report (Appendix 1) gives the Animal Species Theme Sensitivity is **Medium Sensitive** because of the potential impacts on two sensitive birds and one sensitive invertebrate species discussed in Table 2.

Table 2: Animal species theme discussions.

FEATURES	MOTIVATION
<i>Afrotis afra</i> (Southern Black Korhaan) Vulnerable (VU)	The Southern Black Korhaan (<i>Afrotis afra</i>) is a medium-sized bustard endemic to South Africa and one of the characteristic bird species of the Fynbos and Succulent Karoo biomes. It is a conspicuous ground-dwelling bird, well known for the male's striking black-and-white plumage and loud, explosive display calls during the breeding season. Status and distribution: The southern black korhaan is listed as vulnerable (locally and globally) and is suspected of undergoing a rapid population decline due to habitat loss, habitat fragmentation and infrastructure-related mortality (particularly collisions with powerlines and fences) (Hofmeyer <i>et al.</i>, 2015). The species occurs within the Fynbos-, Succulent Karoo-, Albany Thicket-, and the southern margins of the Nama Karoo biomes. Because the species relies on large, connected areas of natural vegetation, habitat fragmentation is considered its most significant long-term conservation threats and although still relatively widespread, its distribution has become increasingly fragmented (Evans, 2023). Habitat: It prefers semi-arid habitats with open, low-growing vegetation where visibility is good and flight is unobstructed, such as grasslands, shrublands and

FEATURES	MOTIVATION
	savannas. It generally avoids dense woody vegetation, forests and highly transformed landscapes lacking sufficient natural cover. Diet: It feeds mainly on insects, such as termites, grasshoppers, and beetles, but it also eats small reptiles and plant products such as seeds, bulbs, shoots and flowers foraging on the ground and picking up food items with its bill. Breeding: Breeding pairs are particularly dependent on relatively undisturbed natural vegetation where nests can be concealed amongst shrubs and grasses. Breeding may occur throughout the year, with a peak following winter rainfall in the Western Cape. The nest consists of a shallow scrape on the ground, usually well concealed beneath shrubs or grasses. Females alone incubate the eggs and care for the chicks, while males defend breeding territories. Like most bustards, chicks are precocial and leave the nest shortly after hatching, following the female while feeding themselves under her protection (Birdlife South Africa, 2025). Discussion: The proposed project will result in a slow increase in the footprint of the flooded area behind the dam, which will mostly impact existing wetland and seepage areas and a temporary (pipeline construction) impact on agricultural fields. The new Balancing dam will have a permanent impact on agricultural land. The proposed project will not significantly increase habitat fragmentation or breeding or feeding habitat for this species. As a result, it is considered unlikely that the proposed project will result in any significant additional impact on this species. For this project a sensitivity rating of Low Sensitive is considered appropriate.
Aves – High <i>Circus maurus</i> (Black Harrier) Endangered (EN)	Status: The Black Harrier is classified as endangered and is among the rarest endemic raptors in southern Africa (Birdlife International, 2023). The regional population is under 1,000 mature individuals, with 95% in a single sub-population and a projected decline of 20% over the next two generations. It is notable for being one of the most range-restricted harrier species globally, with its primary distribution centred in the Fynbos Biome of south-western South Africa and peripheral populations present in the southern regions of the Karoo and Grassland biomes. The species is estimated to have lost up to 50% of its core breeding habitat over the past century due to significant land transformation resulting from agricultural expansion (particularly in the Overberg), the spread of invasive alien vegetation, and urbanisation within the Fynbos Biome (Curtis <i>et al.</i> 2004). An isolated population comprising approximately ten mature individuals persists in northern coastal Namibia, where breeding may occur. The Black Harrier demonstrates seasonal migration, travelling distances of up to 1,200 km eastward to the grasslands of Lesotho and Free State during the summer months, before returning to the Western Cape in winter (Taylor, 2015) Habitat: The Black Harrier has a polarised distribution in the Fynbos Biome, with breeding birds restricted to the coastal strip and inland in the mountains (Curtis <i>et al.</i> 2004). This distribution reflects the birds' preference for cooler south-facing slopes and mountains, as well as land-use patterns in the region, with intensive agricultural development being concentrated on the flat, relatively fertile lowlands but largely absent along the coastal strip and steeper mountain slopes (Curtis <i>et al.</i> 2004, Jenkins <i>et al.</i> 2012). It favours Renosterveld, short Fynbos and Karoo habitat, where it breeds in shallow nests on the ground. These birds are almost always <u>associated with larger, well-connected, pristine veld and is often considered an indicator species of well-managed natural areas</u> (Curtis-Scott <i>et al.</i>, 2020).

FEATURES	MOTIVATION
	Discussion: The proposed project will result in a slow increase in the footprint of the flooded area behind the dam, which will mostly impact existing wetland and seepage areas and a temporary (pipeline construction) impact on agricultural fields. The new Balancing dam will have a permanent impact on agricultural land. The proposed project will not significantly increase habitat fragmentation or breeding or feeding habitat for this species. As a result, it is considered unlikely that the proposed project will result in any significant additional impact on this species. For this project a sensitivity rating of Low Sensitive is considered appropriate.
<i>Brinckiella aptera</i> (Mute Winter Katydid) Vulnerable (VU)	<i>Brinckiella aptera</i> is a flightless katydid (family Tettigoniidae) that is endemic to the winter-rainfall region of South Africa. It is one of several highly localized species within the genus. Status: The Mute Winter Katydid is listed as vulnerable because of its small extent of occurrence is relatively small (only recorded in four locations), and its habitat quality is estimated to be in decline (Bazelet & Naskrecki, 2014). Because the species is flightless and has limited dispersal ability, fragmented populations are particularly susceptible to local extinction. The species of grasshopper is endemic to the Fynbos and Succulent Karoo Biomes, both of which are notable biodiversity hotspots, naturally geographically restricted and under anthropogenic stress (Bazelet & Naskrecki, 2014). More recently (Guta 2022) confirmed that this species occurs in six vegetation types, with 66.8% of the population in the Fynbos. The principal threat to this species is habitat destruction (annual crop cultivation), over-grazing, urban development and alien species invasion. Climate change is also likely to affect the distribution of the host plants by altering rainfall patterns and ambient temperatures. Habitat: Guta (2022) confirmed that this species occurs in six vegetation types, namely Namaqualand Klipkoppe Shrubland, Namaqualand Strandveld, Bokkeveld Sandstone Fynbos, Breede Shale Fynbos, Hawequas Sandstone Fynbos and Overberg Dune Strandveld. Host plants: Unlike many generalist katydids, <i>Brinckiella aptera</i> appears to have relatively specific host plant associations. Studies by Naskrecki and Bazelet (2009) have recorded the species feeding and sheltering primarily on flowering shrubs within the family Asteraceae. Known host plants include <i>Stoebe</i> species, particularly <i>Stoebe plumosa</i> and closely related species and <i>Metalasia</i> species. Other indigenous shrub species within the Asteraceae, on which adults feed on flowers, leaves and developing seeds. These shrubs provide both food resources and protection from predators. The dependence on a relatively limited range of indigenous shrubs means that removal or degradation of natural fynbos vegetation can significantly reduce habitat suitability. Habits and ecology: <i>Brinckiella aptera</i> exhibits several distinctive ecological characteristics. It is flightless, possessing highly reduced wings, which severely limits dispersal. Adults are active primarily during the winter and early spring (August to October), unlike most South African insects that are active during summer. It is largely nocturnal, feeding at night, but frequently basks in the sun during cool winter days to elevate its body temperature. Very unusual for this genus and for katydids in general, this species is the first in its subfamily to display a complete lack of stridulatory organs, raising interesting evolutionary questions regarding mate attraction and intraspecies communication. The species feeds mainly on the flowers, leaves and developing reproductive structures of its host shrubs. Eggs are laid in plant tissues or within the surrounding vegetation and hatch following the winter rainfall cycle (Naskrecki & Bazelet, 2009; Bazelet & Naskrecki, 2014). Discussion: Although the development footprint falls within the broader distribution range of this species and potential host plants were recorded, the project will mainly

FEATURES	MOTIVATION
	affect wetlands, seepage areas and agricultural fields. It is therefore unlikely to significantly affect this species' habitat or host plants, and no significant additional impact is expected. For this project a sensitivity rating of Low Sensitive is considered appropriate.

Based on the discussion in Table 2, an animal species theme sensitivity rating of **Low Sensitivity** is considered appropriate for this project.

3.6. TERRESTRIAL BIODIVERSITY

The DFFE Screening Report (Appendix 1) gives the Terrestrial Biodiversity Theme Sensitivity as **VERY HIGH SENSITIVE**. The Western Cape Biodiversity Spatial Plan (WCBSP, 2023) maps all remaining natural veld of the two critically endangered ecosystems (Kouebokkeveld Alluvium Fynbos, Kouebokkeveld Shale Fynbos) that might be impacted as critical biodiversity area (CBA 1), while some of the Winterhoek Sandstone Fynbos (least threatened) has been marked as ecological support areas (ESA 1) (Figure 5). The reasons for the Very-High Terrestrial Biodiversity Sensitivity rating are discussed under the headings below.

3.6.1. IMPACTS ON ESA 2 (RESTORE FROM OTHER LAND USE)

None of the footprint areas associated with the proposed enlargement of the Helpmekaar Dam (floodplain area), the connecting pipeline or the new Buffer Dam will have a direct impact on any ESA 2 (WCBSP, 2023 - Figure 5). The nearest ESA2 is about 400 m to the south at the foothills of the Bokkeveld Mountains on the neighboring farm.

The potential impact on an ESA 2 is **Not Applicable** for this project.

3.6.2. IMPACTS ON ESA 1

The enlarged footprint of the Helpmekaar Dam will impact on a small area mapped as an aquatic ecological support area (ESA 1) where the foothills of the mountains to the west meets the dam.



Photo 15: A photo showing the area where the dam enlargement will impact on the ESA 1.

Because of the steep slopes of the mountain at that point (Photo 15), the impact on vegetation (terrestrial habitat) will be minimal, and the land-use (a freshwater dam) will remain the same. It will result in the additional loss of vegetation (a small band of 2-3m in width) along the foothills of the mountains, but it should not result in any significant habitat loss (within the ESA 2) or loss of ecosystem functioning.

As a result, the impact on ESA 2 will be minimal and is considered of **Low Significance**.

3.6.3. IMPACT ON CBA 1

The enlarged footprint of the Helpmekaar dam will impact on an area that might still support **Kouebokkeveld Alluvium Fynbos** – a **critically endangered** ecosystem. However, the site visit confirmed that most of the impact will be on wetland and seepage wetland vegetation (Refer to Heading 3.1.1). The impact on Alluvium Fynbos will be relatively small (between 0.6 – 1 ha).

The connecting pipeline must traverse the Langrug Ridge, which still supports **Kouebokkeveld Shale Fynbos** (also **critically endangered**) in good condition. However, the pipeline route will follow an existing road/firebreak and with careful placement the additional impact on vegetation (even the temporary impact) can be much reduced or even negated.

The site visits also confirmed that the CBA 1 areas mapped along the pipeline route and at the location of the Buffer Dam to the west of Langrug had been transformed and does not support any representative indigenous vegetation.

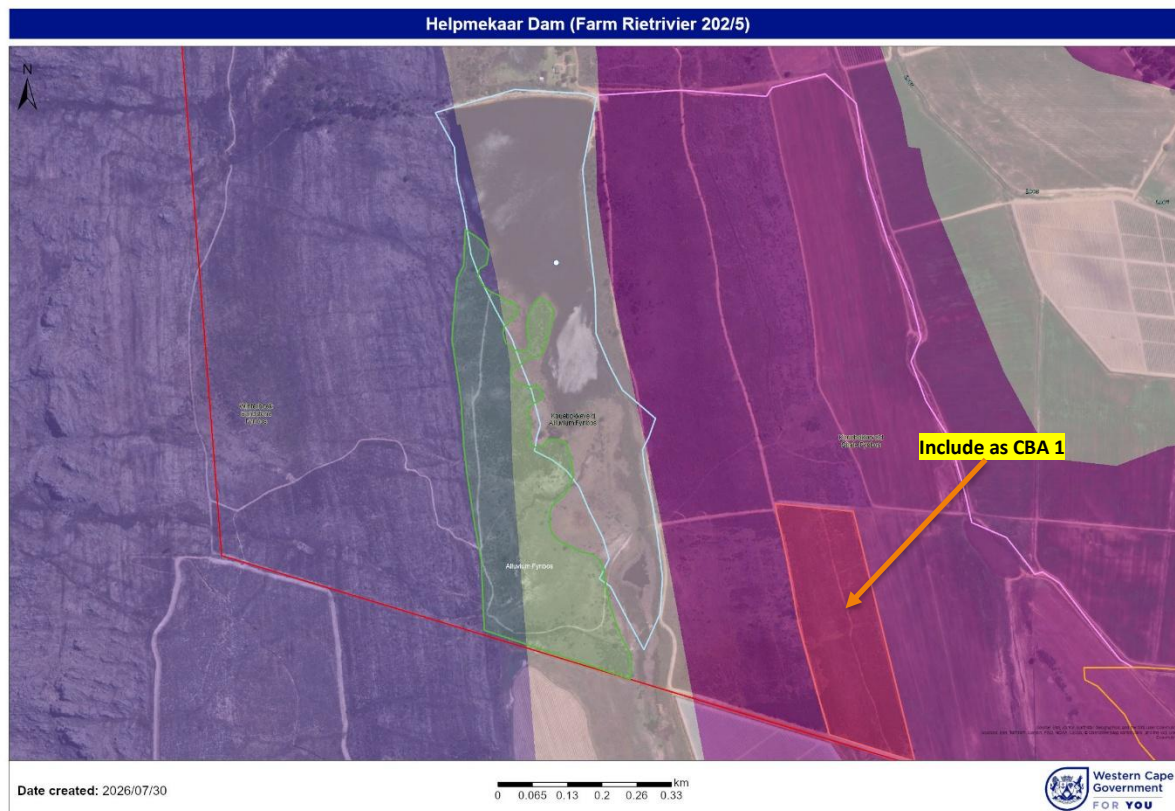


Figure 10: A map showing the potential extent of remaining Kouebokkeveld Alluvium Fynbos (green polygon) within the valley floor, overlaid onto the SA VegMap 2024, beta.

In this case the purpose of the CBA 1 areas is to protect critically endangered vegetation types.

- Ground truthing shows that the boundaries of the Alluvium Fynbos (in this valley) are slightly broader than mapped by the broadscale vegetation map of South Africa (VegMap 2024, beta) and that it extends further westwards, especially in the southern portion of the Valley (Refer to Figure 10).
- The site visit also shows that the southeastern block of the Langrug Ridge still supports Kouebokkeveld Shale Fynbos in good condition which should be included as a CBA 1 (the red area in Figure 10).

The dam enlargement will impact Kouebokkeveld Alluvium Fynbos, but the affected area will be very small and localized. The impact on CBA 1 is therefore considered **Medium to Medium-Low**.

3.6.4. IMPACT ON SWSA'S

Strategic Water Source Areas (SWSAs) are national ecological infrastructure assets that are essential for water security. These areas of high rainfall make up just 10% of the land area of South Africa, Lesotho and Eswatini but supply 50% of its water.

- In this case, the enlargement of the dam should aid water security in the Groot Winterhoek SWSA and should not alter ecosystem functioning as the Helpmekaar Dam is an existing dam which overflow into the downstream Langrug Dam (on the same property).

As a result, the impact on the Groot Winterhoek SWSA will be minimal (or positive) and considered of **Low Significance**.

3.6.5. IMPACT ON CRITICALLY ENDANGERED ECOSYSTEMS

Refer to Heading 3.6.3 for a discussion of the potential impacts on Kouebokkeveld Alluvium Fynbos and Kouebokkeveld Shale Fynbos.

3.6.6. TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Based on the discussions above it is considered unlikely that the proposed project 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.

For this project, a terrestrial biodiversity theme sensitivity rating of **Medium to Medium-Low Sensitivity** is considered appropriate, mainly because the impact on Kouebokkeveld Alluvium Fynbos will be small and localized.

NB: Based on the findings of the site visit it is suggested that the **CBA 1** on the Langrug Ridge are extended to include the bottom eastern section of the ridge (Refer to Figure 10).

4. DISCUSSION & CONCLUSIONS

The proposed development involves enlarging the existing **Helpmekaar Dam**. When full, the enlarged dam will cover approximately 18 ha, increasing the current footprint by about **7.6 ha**. This additional inundation area is expected to affect **Kouebokkeveld Alluvium Fynbos**, a **critically endangered** ecosystem (Figure 4) mapped as a **CBA1** (Figure 5).

The **Helpmekaar Dam** will be connected to a buffer dam by a new pipeline approximately **1.7 km** long. The pipeline will cross the Langrug Ridge along an existing road/firebreak before following internal farm roads, next to agricultural pastures, towards the buffer dam. The Langrug Ridge is expected to support **Kouebokkeveld Shale Fynbos**, also a **critically endangered** ecosystem (Figure 4), mapped as a **CBA1** (Figure 5).

The new Buffer Dam will have a footprint of about 9.83 Ha but will be in transformed agricultural land (of low botanical significance).

4.1. VEGETATION AND FLORA

The DFFE screening report (Appendix 1) gives the relative plant species sensitivity as **Medium Sensitive**, because of potential impact on sensitive plant species associated with the Sandstone-, Alluvial and Shale Fynbos in this vicinity.

- Although none of the sensitive plant species were observed, it is likely that at least some of these species will occur (because of the timing and veld age, many of the herbs, bulbs or forb may not have been visible).
- The enlargement of the Helpmekaar dam will mainly impact on wetland and seepage wetland areas (Refer to Heading 3.1.1). The **impact on Kouebokkeveld Alluvium Fynbos** will relatively **small** (between 0.6 – 1 ha) and localized.
- The connecting pipeline route will follow an existing road/firebreak and with careful placement the impact (even the temporary impact) on **Kouebokkeveld Shale Fynbos** can be negated or will be temporary at worst.
- Ground truthing indicates that Alluvium Fynbos in this valley extends slightly beyond the broadscale VegMap 2024 beta boundaries, particularly in the southern part of the valley (Figure 10).
- The site visit also confirmed that the southeastern block of the Langrug Ridge supports Kouebokkeveld Shale Fynbos in good condition and should therefore be included as CBA 1 (red area in Figure 10).

The enlargement of the Helpmekaar Dam is likely to affect a small area (<1 ha) of natural veld that still supports Kouebokkeveld Alluvium Fynbos. No additional impact on Kouebokkeveld Shale Fynbos is expected. Although sensitive plant species may occur, the project is unlikely to cause significant ecosystem-function impacts or irreversible species loss if mitigation is implemented (refer to Heading 3.4).

Because of the potential impact on sensitive vegetation and plant species, the plant species theme is rated **Medium Sensitive without mitigation**, but may be reduced to **Medium-Low or Low Sensitivity** with mitigation.

4.2. FAUNA AND AVI-FAUNA

The DFFE Screening Report (Appendix 1) gives the Animal Species Theme Sensitivity is **Medium Sensitive** because of the potential impacts on two sensitive birds and one sensitive invertebrate (Refer to Heading 3.5 and Table 2 for a more detailed discussion).

Avi-fauna: Of the two bird species considered, the **Black Harrier** is **endangered** and among South Africa's rarest endemic raptors, while the **Southern Black Korhaan** is **vulnerable**. The project will mainly affect existing wetland and seepage areas, with temporary pipeline-related disturbance in agricultural fields. The new buffer dam will permanently affect agricultural land. The project is unlikely to increase habitat fragmentation or significantly affect breeding or foraging habitat for either species, and is therefore not expected to cause any significant additional impact.

Invertebrate: *Brinckiella aptera* is a flightless katydid listed as a **vulnerable** endemic of South Africa's winter-rainfall region. Although the development footprint falls within the broader distribution range of this species and potential host plants were recorded, the project will mainly affect wetlands, seepage areas and agricultural fields. It is therefore unlikely to significantly affect this species' habitat or host plants, and no significant additional impact is expected.

The project is unlikely to increase habitat fragmentation or significantly affect habitat for any of the above species. An animal species theme sensitivity rating of **Low Sensitivity** is therefore considered appropriate.

4.3. TERRESTRIAL BIODIVERSITY

The DFFE Screening Report (Appendix 1) gives the Terrestrial Biodiversity Theme Sensitivity as **VERY HIGH SENSITIVE**. The Western Cape Biodiversity Spatial Plan (WCBSP, 2023) maps all remaining natural veld of the two critically endangered ecosystems (Kouebokkeveld Alluvium Fynbos, Kouebokkeveld Shale Fynbos) as critical biodiversity area (CBA 1), while some of the Winterhoek Sandstone Fynbos (least threatened) has been marked as ecological support areas (ESA 1) (Figure 5). The reasons for the sensitivity rating are discussed below.

- **Impacts on ESA 2:** Will **not** be **impacted** – the nearest ESA2 is about 400 m to the south at the foothills of the Bokkeveld Mountains on the neighboring farm (refer to Heading 3.6.1).
- **Impacts on ESA 1:** The rise in dam level will impact a small area still supporting Sandstone Fynbos, mapped as an aquatic ESA 1. The impact on vegetation (terrestrial habitat) will be minimal and should not result in any significant habitat loss (within the ESA 2) or loss of ecosystem functioning (Refer to Heading 3.6.2).
- **Impacts on CBA 1:** The purpose of the CBA 1 areas is to protect critically endangered vegetation types. The Helpmekaar dam enlargement will mainly impact on wetland and seepage wetland areas. The **impact on Kouebokkeveld Alluvium Fynbos** will be relatively **small** (between 0.6 – 1 ha) and localized. **Kouebokkeveld Shale Fynbos** should not be impacted, or the impact, at worst, can be temporary (Refer to Heading 3.6.3).

- **Impact on Strategic Water Source Areas (SWSA):** the enlargement of the dam should aid water security in the Groot Winterhoek SWSA and should not alter ecosystem functioning (it being an existing dam which any overflow into the downstream Langrug Dam (Refer to Heading 3.6.4).
- **Impact on critically endangered ecosystems:** Refer to Heading 3.6.3 or the CBA 1 discussions above.

Based on the discussions above it is considered unlikely that the proposed project 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.

For this project, a terrestrial biodiversity theme sensitivity rating of **Medium to Medium-Low Sensitivity** is considered appropriate, mainly because the impact on Kouebokkeveld Alluvium Fynbos will be small and localized.

4.4. SITE SENSITIVITY

The Sensitivity map (Figure 11) focuses on mapping sensitive vegetation to complement the impact minimisation recommendations.

In Figure 11:

- The **Green area** shows the remaining Kouebokkeveld Alluvium Fynbos, which is of critical conservation value. No additional construction-related impacts should be allowed in these areas (e.g. stockpile areas or laydown areas).
- The **Purple area** shows the remaining Kouebokkeveld Shale Fynbos, also of critically conservation value. No additional construction-related impacts should be allowed in these areas. The pipeline route should be chosen to minimize or avoid any additional impact on intact vegetation (even temporary impacts).
- The **Red area** also shows remaining Kouebokkeveld Shale Fynbos, that is currently not mapped as a CBA. The WCBSP should enlarge the existing **Langrug CBA 1** to **include this area**.
- The Light Blue area shows the footprint of the proposed Helpmekaar dam enlargement.
- The Dark Blue line shows the location of the proposed connecting pipeline.
- The Orange area shows the location of the proposed Buffer Dam.

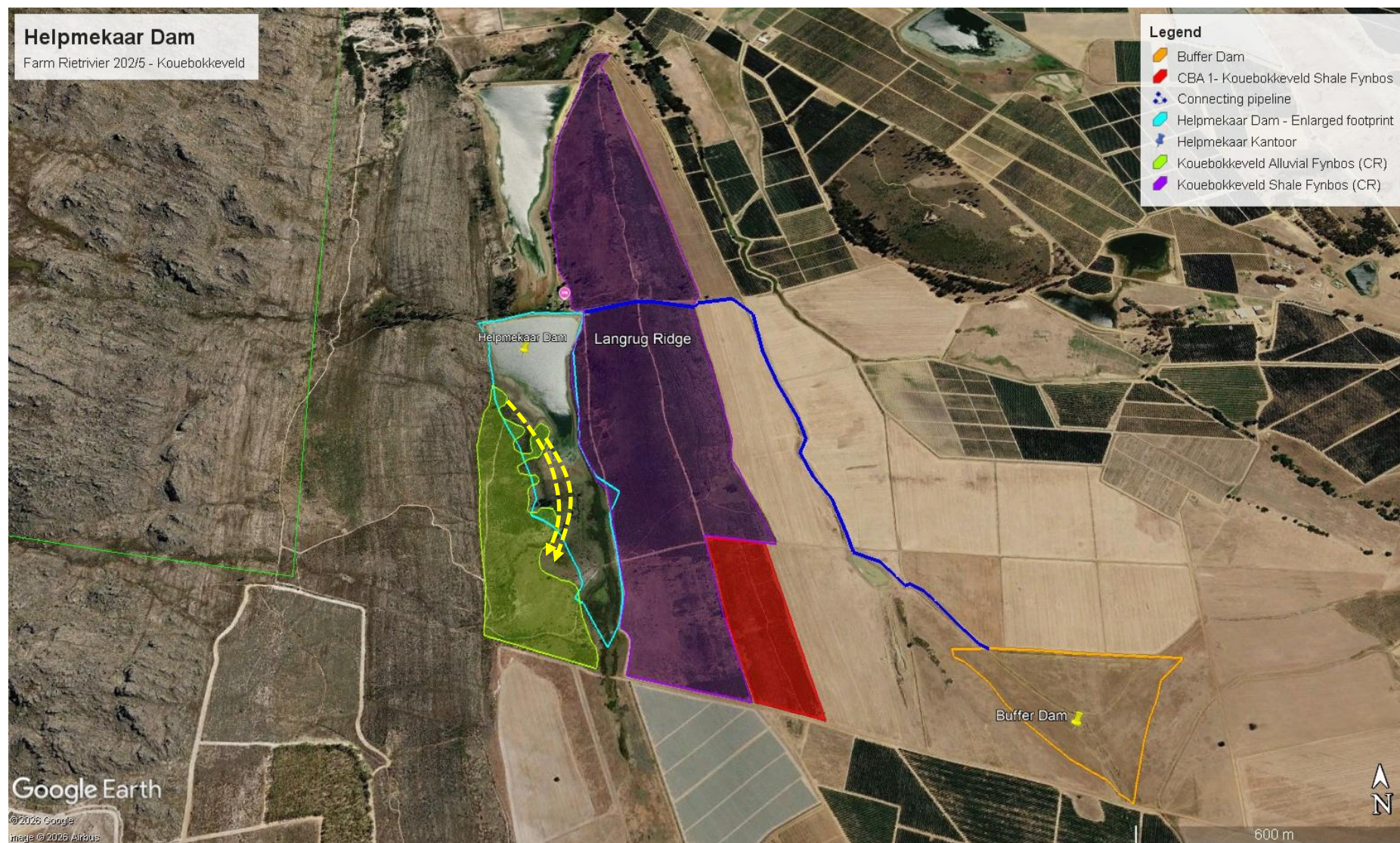


Figure 11: Sensitivity map: Google Earth Image showing the enlarged Helpmekaar Dam (light blue) the connecting pipeline (dark blue) the Buffer Dam (orange) and remaining sensitive vegetation Alluvium Fynbos (green) and Shale Fynbos (purple & red). The red area should be considered for inclusion as a CBA 1 in WCBS.

5. RECOMMENDATIONS

NB: The landowner demonstrated a strong commitment to biodiversity conservation. Agricultural activities are managed with an awareness of the ecological value of the property, and efforts are made to minimise impacts on natural habitats, watercourses, and indigenous vegetation. The landowner actively protects sensitive environmental features where possible, and has since this farm was bought, committed to the protection the Langrug Ridge and all remaining natural veld west of this ridge (the mountain areas) through a policy of no interference.

The mitigation recommendations focus on the protection of the remaining natural veld which will in turn, minimise the impact on vegetation type and species of conservation concern (both fauna and flora). The following mitigation recommendations should be implemented.

- An Environmental Control Officer (ECO) must be appointed to oversee the construction phase of the development and to ensure that all mitigation recommendations are implemented.
- Efforts should be made to **minimize the impact** on the remaining **Kouebokkeveld Alluvium Fynbos** vegetation type: Towards this goal the following is recommended:
 - The western boundary of the expected floodplain for the enlarged Helpmekaar dam should be demarcated or pegged out (e.g. using wooden pegs).
 - Topsoil should be removed from areas that still support Alluvium Fynbos that will become flooded (by the enlarged dam). Topsoil refers to the top layer of soil (the top 15 – 20 cm that contains up to 80% of the indigenous seed store).
 - This topsoil (with its seed store) should be scattered over disturbed areas of Alluvium Fynbos (outside of the flooded area) – e.g., as indicated by the yellow arrows in Figure 11. Although some vegetation will be lost, it might help to recover areas that are degraded and will boost the gene-pool of the remaining vegetation.
- The **connecting pipeline must** follow the existing farm road/firebreak over the Langrug Ridge (as proposed). All efforts must be made to minimize the impact on the remaining natural veld to the sides of this track.
 - Where the road is very narrow the pipe should be placed within the road (or right on the edge of the road).
 - If the pipeline route must impact areas still supporting natural veld, this area must first be prepared by removing the larger shrub (indigenous plant material should be distributed back into the natural veld). Topsoil must then be removed and stored separately from the other excavated material.
 - Once the construction is completed the topsoil must be placed back over the disturbed area (this re-seeding the footprint area).
- An **alien eradication program must** be implemented to remove all alien invasive species near (within 32 m) the development footprint (both dams and the connecting pipeline).

5.1. **GENERAL RECOMMENDATIONS:**

Veld Age: The average age of both the Alluvium Fynbos and the Shale Fynbos is very high, meaning that the veld has become old and stagnant (and a fire-risk). The landowner should seriously consider implementing a strategic block burn of at least the vegetation on the Langrug Ridge (the purple and red areas in Figure 11).

Smaller block burns will benefit the veld and will reduce future fire risk. Rather than burning extensive areas in a single fire event, selected patches of vegetation should be burnt in a planned, controlled manner. The primary objective of the block burns should be to:

- **Maintaining a mosaic of veld ages:** Burning relatively small areas at different times creates a patchwork of vegetation in different post-fire successional stages. This provides habitat for a wider range of plant and animal species, as different species are adapted to different vegetation ages.
- **Promoting plant regeneration:** Many fynbos species are fire dependent. Fire stimulates seed release in serotinous species (e.g. many proteas), breaks seed dormancy in soil-stored seed banks, and creates open, nutrient-rich conditions for seedling establishment.
- **Reducing fuel loads:** Regular, controlled burning prevents excessive accumulation of dead plant material, thereby reducing the intensity and spread of future wildfires.
- **Protecting sensitive habitats:** Smaller burns allow fire managers to avoid wetlands, riparian zones, rocky refugia, and populations of rare or threatened species, leaving these areas unburnt where appropriate.
- **Providing wildlife refuges:** Because only a portion of the landscape is burnt at any one-time, adjacent unburnt vegetation provides immediate shelter, food, and breeding habitat for birds, mammals, reptiles, and invertebrates until the burnt area recovers.
- **Reducing the risk of large, high-intensity fires:** A landscape composed of smaller burnt and unburnt patches acts as a natural firebreak, limiting the spread of uncontrolled wildfires under severe weather conditions.

Alien eradication: Pine and Wattle trees were observed scattered throughout the surrounding natural veld (Langrug and the mountains west of the ridge). At present densities are relatively low, but as they spread control of these trees will become much more expensive and time-consuming. It is recommended that an active alien eradication program is implemented, starting at the Langrug Ridge – moving towards the mountains.

The Kouebokkeveld is characterised by important mountain catchments and numerous endemic plant species. Its relatively cool climate and winter rainfall favour the establishment of both pine and wattle. If these invasive trees are not controlled, they can:

- replace large areas of natural fynbos;
- reduce water yields from mountain catchments;
- increase the frequency and intensity of wildfires;
- threaten habitat for endemic plants and animals; and
- undermine long-term conservation and sustainable farming objectives.

6. REFERENCES

- Bazelet, C.S. & Naskrecki, P. 2014.** *Brinckiella aptera*. Red List of South African Species. South African Biodiversity Institute. <http://speciesstatus.sanbi.org/assessment/last-assessment/4298/>. Downloaded on 31/10/2025.
- Bester, M.C. 2024.** Preliminary design report for the proposed enlargement of Langrugboonste nr1 Dam, also known as Helpmekaar dam, on Rietrivier 202 Portion 5, district Ceres, Sterkwater farming. Unpublished report dated 12/12/2024, submitted as part of an NEMA EIA application.
- BirdLife International. 2023.** Species factsheet: *Circus maurus*. Downloaded from <http://www.birdlife.org> on 28/07/2023.
- BirdLife South Africa. 2015.** Cederberg–Koue Bokkeveld Complex Important Bird and Biodiversity Area. <https://www.birdlife.org.za/iba-directory/cedarberg-koue-bokkeveld-complex>.
- BirdLife South Africa. 2025.** Regional Red Data Book Assessment: Southern Black Korhaan (*Afrotis afra*).
- Curtis, O., Simmons, R.E., Jenkins, A.R. 2004.** Black Harrier *Circus maurus* of the Fynbos biome, South Africa: a threatened specialist or an adaptable survivor?. *Bird Conservation International*, 14(4): 233-245. ([bib](#)).
- Curtis-Scott, O., Goulding, M., Helme, N., McMaster, R., Privett, S. & Stirton, C.** Field Guide to Renosterveld of the Overberg. Penguin Random House, South Africa (Pty) Ltd.
- De Villiers C.C., Driver, A., Brownlie, S., Clark, B., Day, E.G., Euston-Brown, D.I.W., Helme, N.A., Holmes, P.M., Job, N. & Rebelo, A.B. 2005.** Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape. Fynbos Forum, c/o Botanical Society of South Africa: Conservation Unit, Kirstenbosch, Cape Town.
- Dorse, C. & Dorse, S. 2023.** Field Guide to Fynbos Fauna. Struik Nature.
- Evans SW. 2023.** The effects of habitat loss and fragmentation on the relative abundance and conservation of Southern Black Korhaan *Afrotis afra*, a South African endemic. *Bird Conservation International* 33 e71. DOI: <https://doi.org/10.1017/S0959270923000230>.
- Hofmeyer, S.D, Taylor, M.R, Young, D.J. & Smit-Robinson, H.A. 2015.** *Afrotis afra*. In: The Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland. Taylor, MR, Peacock F, Wanless RW (eds). BirdLife South Africa, Johannesburg, South Africa.
- Jenkins J, Simmons R E, Curtis O, Atyeo M, Raimondo D, Jenkins A R. 2012.** The value of the Black Harrier *Circus maurus* as a predictor of biodiversity in the plant-rich Cape Floral Kingdom, South Africa. *Bird Conservation International*, 23(1): 1-12. ([bib](#)).
- Monyeki, M.S. & Skowno, A.L. 2026.** Ecosystem threat status: Terrestrial realm. National Biodiversity Assessment 2025. South African National Biodiversity Institute. <http://nba.sanbi.org.za/>.
- Mucina, L. & Rutherford, M.C. (eds.) 2006.** The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.
- Naskrecki P., Bazelet C.S. (2009).** A species radiation among South African flightless spring katydids (Orthoptera: Tettigoniidae: Phaneropterinae: *Brinckiella* Chopard). *Zootaxa*, 2056.0: 46–62. ([bib](#)).
- Rebelo, A.G., Boucher, C., Helme, N., Mucina, L. & Rutherford, M.C.** Fynbos Biome. In Mucina, L. & Rutherford, M.C. 2006. (eds.) The Vegetation of South Africa. Lesotho & Swaziland.

Strelitzia 19. South African National Biodiversity Institute, Pretoria. pp. 53 – 219.

South African National Biodiversity Institute. 2020. Statistics: Red List of South African Plants version 2020.1. Downloaded from Redlist.sanbi.org on 2023/01/17

South African National Biodiversity Institute. 2024. Vegetation map of South Africa, Lesotho and Swaziland [vector geospatial dataset] 2018.

Stuart, C. & Stuart, T. 2015. Field Guide to Mammals of Southern Africa. Struik Nature.

Taylor, M. 2015. *Circus maurus*. In: The Eskom Red Data Book of Birds of South Africa, Lesotho and Swaziland. Taylor, MR, Peacock F, Wanless RW (eds). BirdLife South Africa, Johannesburg, South Africa.

Watson Africa. 2025. Freshwater Report for the enlargement of the Helpmekaar Dam on the Farm Rietrivier 202 Ceres. A requirement of Section 21(c) and (i) of the National Water Act (36 of 1998). An unpublished report submitted as part of a NEMA EIA application dated October 2025.

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 Enviroscentific, 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 Enviroscentific 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): Rietfontein 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 Rheebofsfontein 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 Plaatje 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, Gordonias road, Keimoes. Kai !Gariep Local Municipality, Northern Cape Province. 6 February 2020.
- Botes, P. 2020(b): Feldspar Prospecting & Mining, Farm Rozyne Bosch 104, Kakamas. Botanical assessment of the proposed prospecting and mining activities on Portion 5 of The Farm Rozyne 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.

Helpmekaar Dam

Farm Rietrivier 202/5 - Kouebokkeveld

Legend

- Buffer Dam
- CBA 1- Kouebokkeveld Shale Fynbos
- Connecting pipeline
- Helpmekaar Dam - Enlarged footprint
- Helpmekaar Kantoor
- Kouebokkeveld Alluvial Fynbos (CR)
- Kouebokkeveld Shale Fynbos (CR)

Helpmekaar Dam

Langrug Ridge

Buffer Dam

Google Earth

© 2025 Google
Image © 2025 Airbus



600 m

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS
REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE
ENVIRONMENTAL SENSITIVITY**

EIA Reference number: .

Project name: Helpmekaar Dam

Project title: Helpmekaar Dam

Date screening report generated: 10/01/2025 15:07:26

Applicant: Sterkwater Farming

Compiler: EnviroAfrica

Compiler signature:

.....

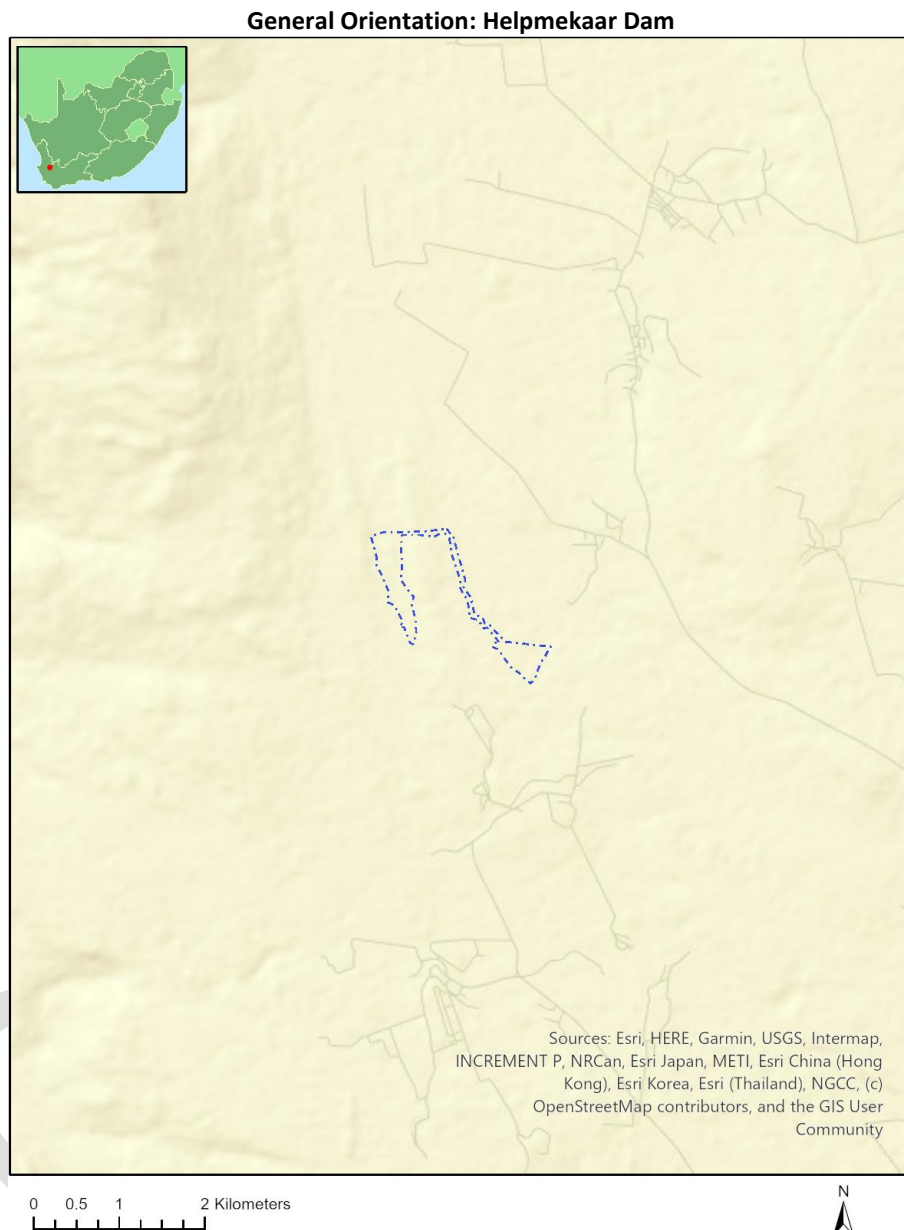
Application Category: Services|Water services|Storage|Dams

Table of Contents

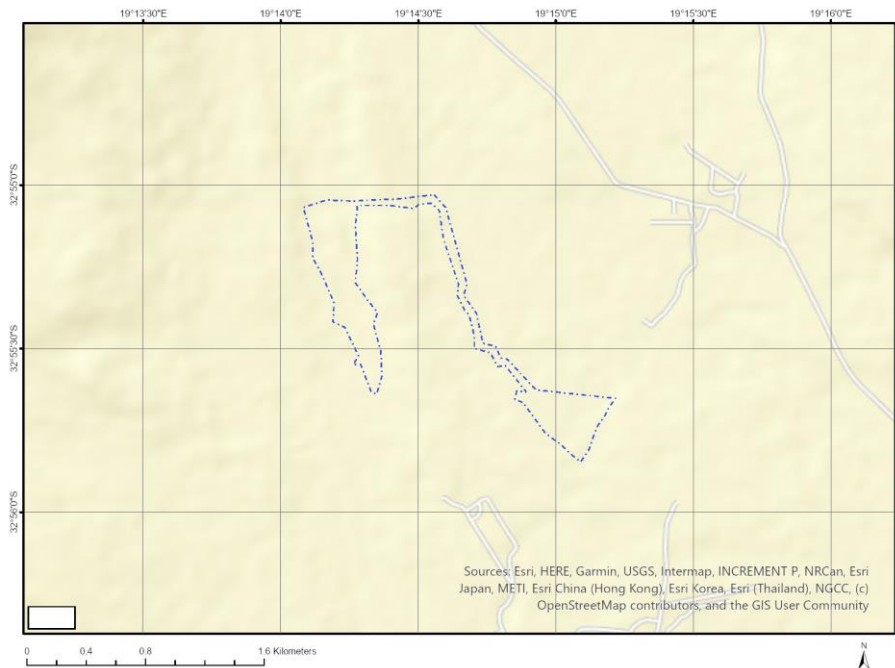
Proposed Project Location	3
Orientation map 1: General location	3
Map of proposed site and relevant area(s)	4
Cadastral details of the proposed site	4
Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area	4
Environmental Management Frameworks relevant to the application	4
Environmental screening results and assessment outcomes	5
Relevant development incentives, restrictions, exclusions or prohibitions	5
Proposed Development Area Environmental Sensitivity	5
Specialist assessments identified	5
Results of the environmental sensitivity of the proposed area	7
MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY	7
MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY	8
MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY	9
MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY	10
MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY	11
MAP OF RELATIVE DEFENCE THEME SENSITIVITY	12
MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY	13
MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY	14
MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY	16

Proposed Project Location

Orientation map 1: General location



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	RIETRIVIER	202	0	32°55'0.39S	19°14'56.22E	Farm
2	KROMFONTEIN	201	0	32°57'11.76S	19°14'14.92E	Farm
3	KROMFONTEIN	201	1	32°56'24.06S	19°14'2.18E	Farm Portion
4	RIETRIVIER	202	5	32°55'0.39S	19°14'56.22E	Farm Portion

Development footprint¹ vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

¹ “development footprint”, means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is:

Services | Water services | Storage | Dams.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Strategic Transmission Corridor-Central corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf
Strategic Gas Pipeline Corridors-Phase 1a & 1b: Saldanha to Ankerlig and Saldanha to Mossel Bay	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_GAS.pdf

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme	X			
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

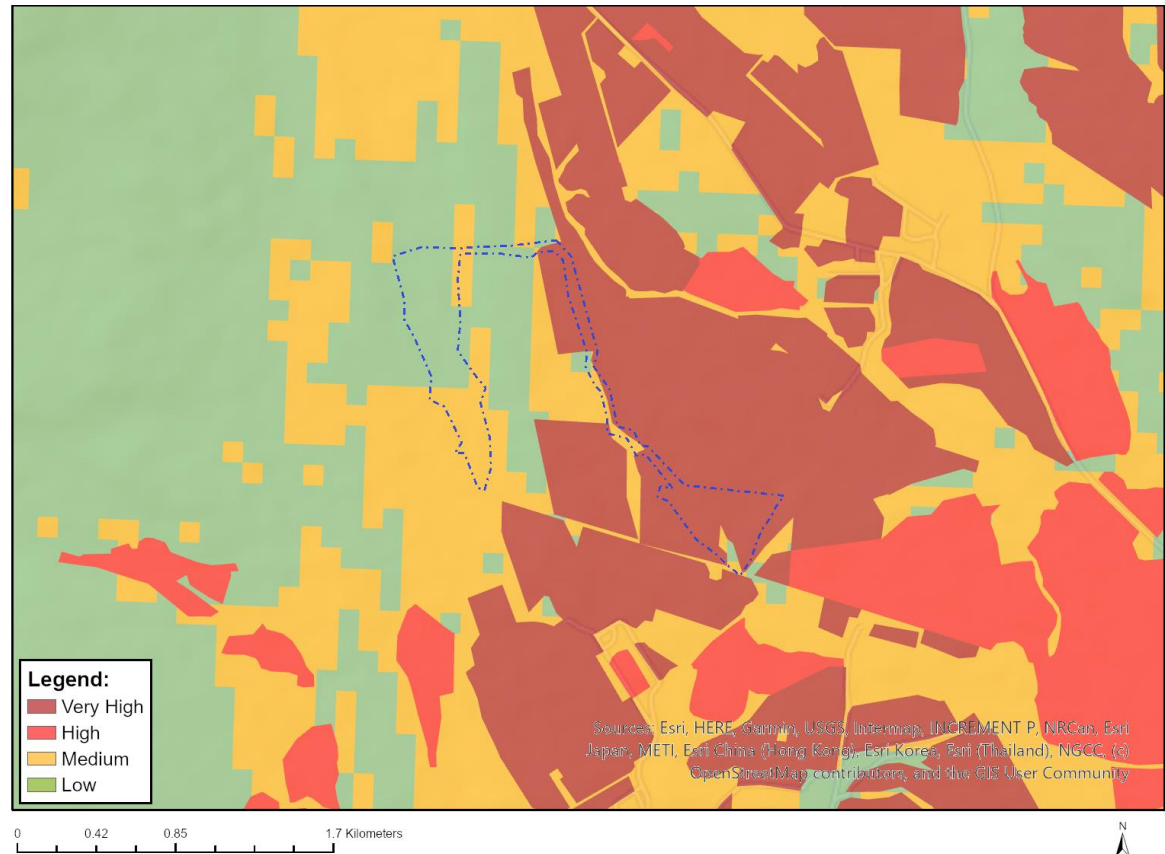
Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf
2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
5	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
6	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
7	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Seismicity Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
11	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
12	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

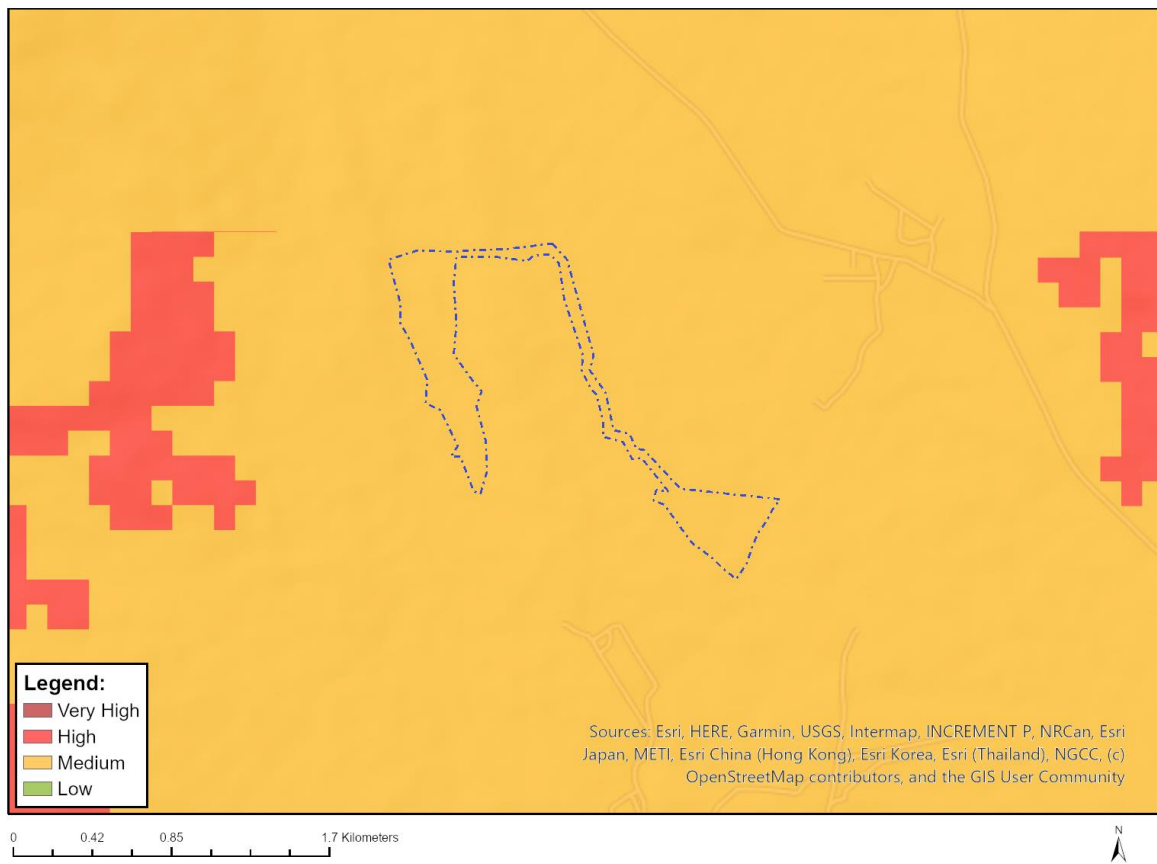


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Horticulture;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Very High	Horticulture;Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



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

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Aves-Afrotis afra
Medium	Aves-Circus maurus
Medium	Invertebrate-Brinckiella aptera

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

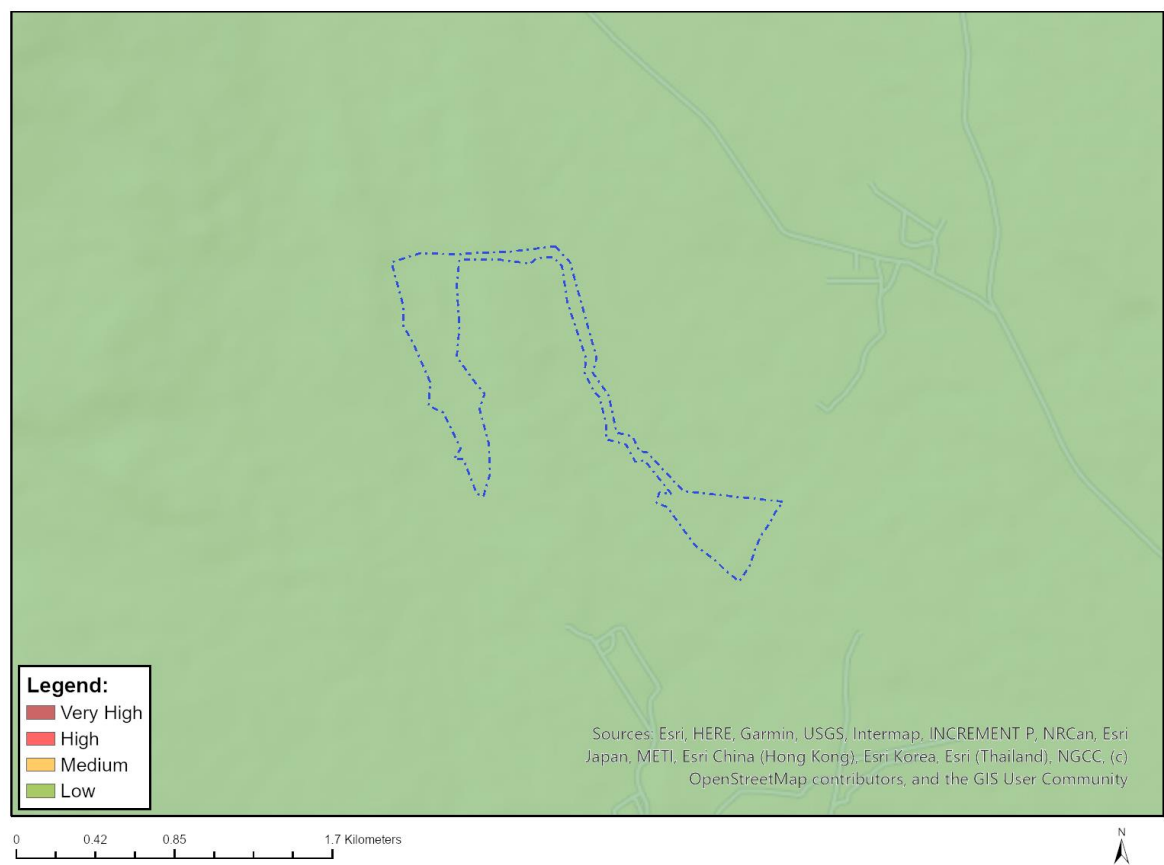


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	CBA 1: Aquatic
Very High	SWSA (SW) _Groot Winterhoek

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

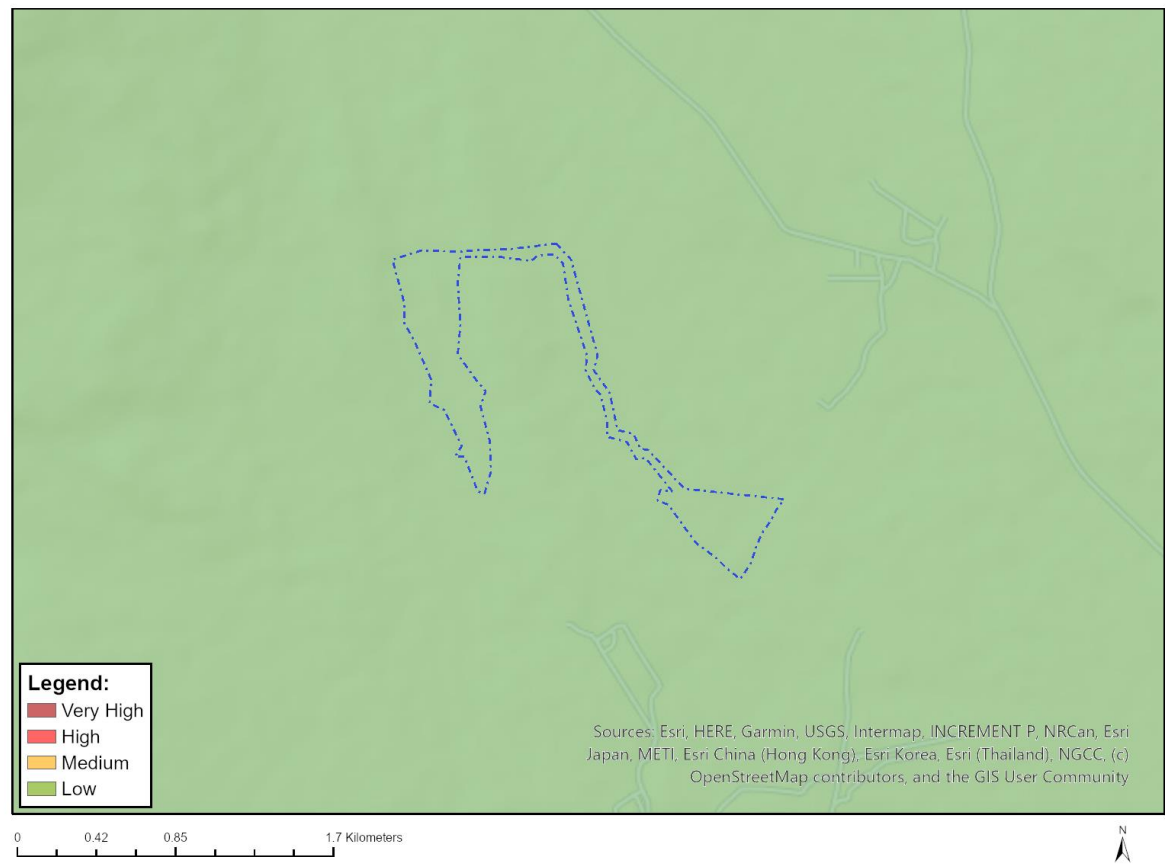


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

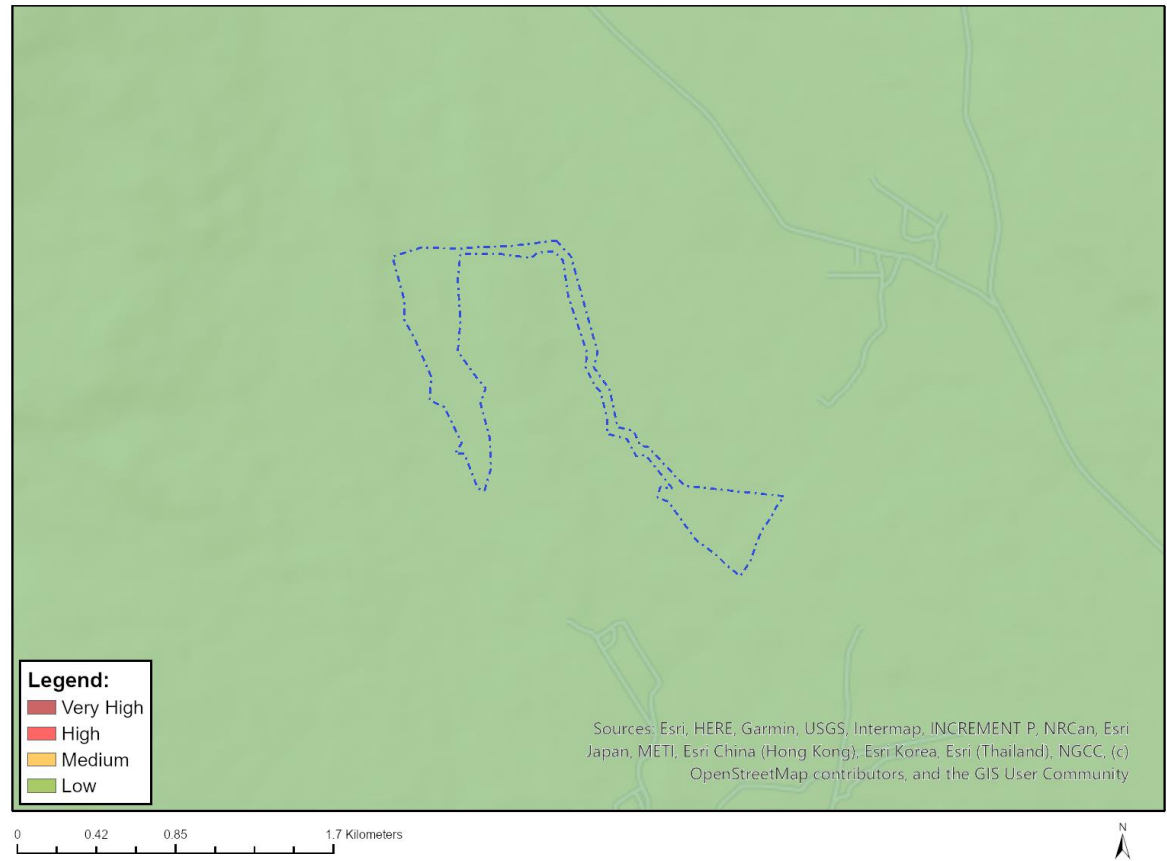


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

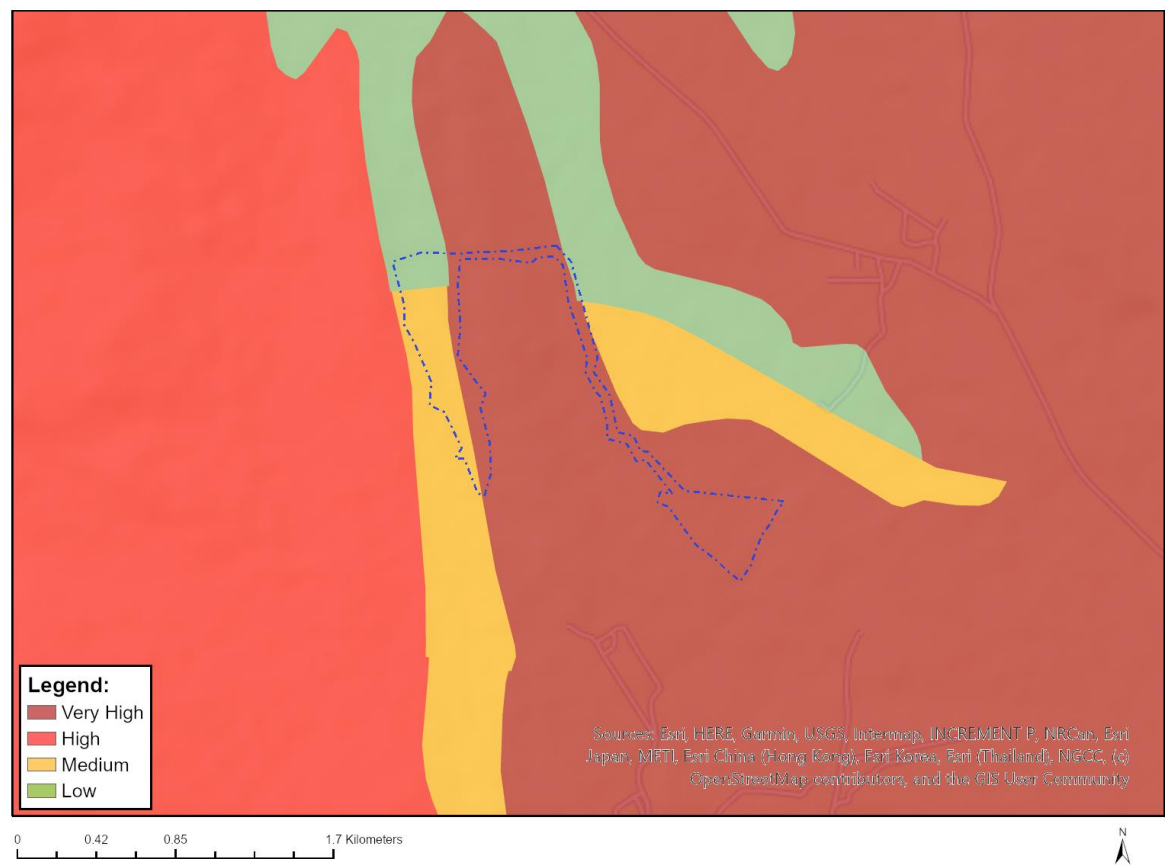


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

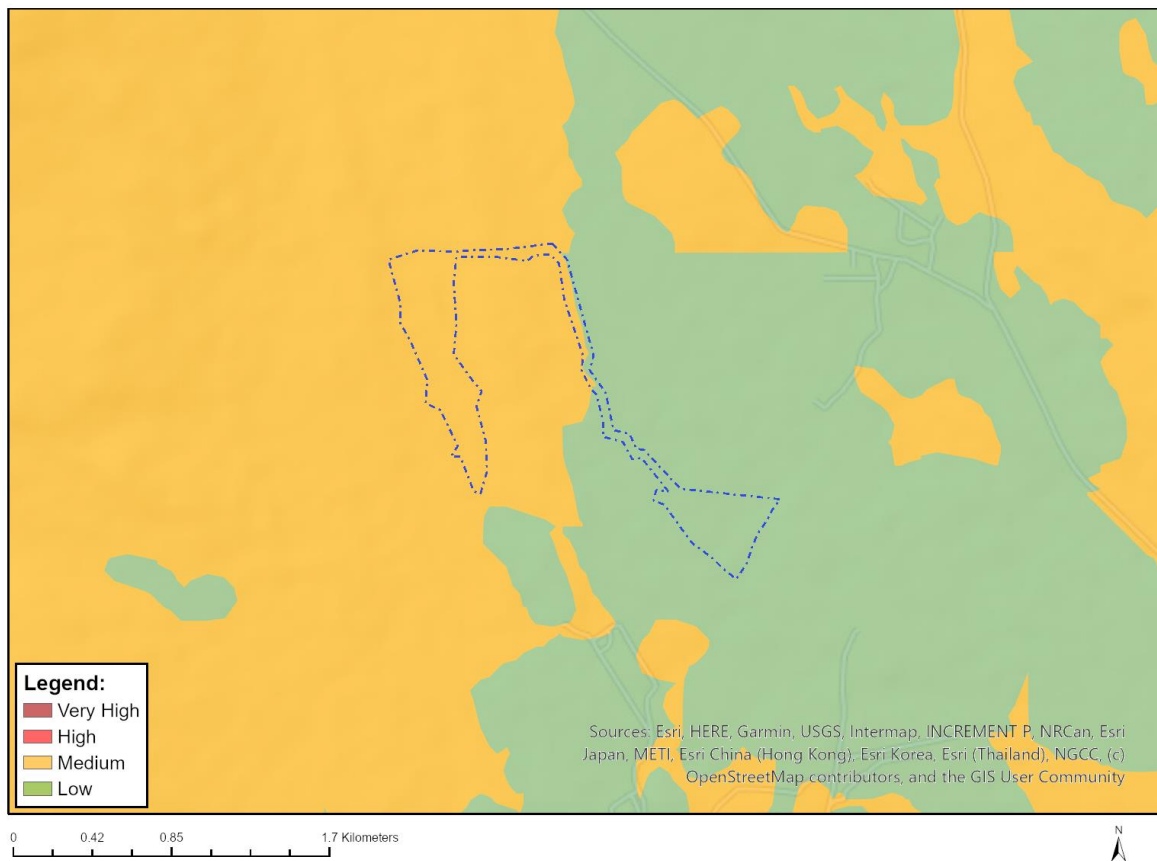


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Features with a Low paleontological sensitivity
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



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

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Lampranthus antonii
Medium	Psoralea tenuissima
Medium	Indigofera fulcrata
Medium	Aspalathus lanifera
Medium	Leucadendron chamelaea
Medium	Leucadendron sericeum
Medium	Leucospermum catherinae
Medium	Spatalla caudata
Medium	Spatalla tulbaghensis
Medium	Serruria confragosa
Medium	Serruria reflexa
Medium	Sensitive species 794

Medium	Manulea juncea
Medium	Nemesia acornis
Medium	Geissorhiza geminata
Medium	Romulea albomarginata
Medium	Sensitive species 480
Medium	Sensitive species 1230
Medium	Erica aspalathoides
Medium	Erica caprina
Medium	Pharnaceum microphyllum var. albens
Medium	Ficinia cedarbergensis
Medium	Cannomois anfracta
Medium	Anthochortus singularis
Medium	Restio durus
Medium	Restio parthenocarpus
Medium	Sensitive species 848
Medium	Sensitive species 459
Medium	Sensitive species 263
Medium	Sensitive species 373
Medium	Heliophila cedarbergensis
Medium	Lachnaea pedicellata
Medium	Haplocarpha parvifolia
Medium	Senecio umbricola
Medium	Cotula sericea
Medium	Lamprocephalus montanus
Medium	Agathosma bathii
Medium	Agathosma insignis
Medium	Macrostylis barbiger
Medium	Phylica altigena
Medium	Phiambolia littlewoodii
Medium	Capeochloa setacea
Medium	Psoralea alata
Medium	Sensitive species 1209
Medium	Sensitive species 593
Medium	Restio paludosus
Medium	Heliophila elata
Medium	Lachnaea capitata
Medium	Lachnaea grandiflora

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	ESA 2: Restore from other land use
Very High	ESA 1
Very High	CBA 1: Terrestrial
Very High	SWSA (SW) _Groot Winterhoek
Very High	CR_Kouebokkeveld Alluvium Fynbos
Very High	CR_Kouebokkeveld Shale Fynbos