TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT.

THE ALLEGED UNLAWFULL CLEARING OF INDIGENOUS VEGETATION OF MORE THAN 1 HA ON FARM 91 (CJ ENGELBRECHT FAMILY TRUST), NEAR RIVERSDALE, HESSEQUA MUNICIPALITY, WESTERN CAPE PROVINCE.

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19 June 2025

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EXECUTIVE SUMMARY

Farm 91, Riversdale (Sandrift Farm) is a sizable farm located in a narrow valley on the southern foothills of the Langeberg Mountains, between Heidelberg and Riversdale (Western Cape Province). The Duivenhoks River runs along the bottom of the valley, and most of the agricultural land is located on the lower slopes towards the bottom of the valley, next to the river. In 2016, the landowner built a small farm dam for watering stock in the corner of a larger agricultural field that was still being cultivated at that time. More recently he enlarged two agricultural fields (June 2022 and between September 2023 and May 2024), using land that was, according to landowner, previously cultivated (these fields were considered marginal land and is the reason it had not been cultivated in recent years). These activities resulted in the alleged clearing of more than 1 ha of indigenous vegetation (Field 1 enlarged by 2.91 ha, Field 2 enlarged by 4.8 ha, while the dam is about 640 m^2 in size).

VEGETATION TYPE & STATUS

According to the Vegetation map of South African, Lesotho and Swaziland (Mucina & Rutherford, 2006), the study area is expected to support Garden Route Shale Fynbos (Figure 4), a vegetation type that was classified as **vulnerable** before November 2022 (applicable to the development of the small dam and Field 1), but that are now classified as **endangered** (applicable to Field 2) (GN 2747 of 18 November 2022).

WATER-COURSES & WETLANDS

According to the DFFE screening tool report for this project (Refer to Appendix 1), the relative aquatic biodiversity theme sensitivity is considered **Very High Sensitive**.

An aquatic wetland has been mapped in the lower parts of Field 2 (unchanneled valley bottom wetlands associated with the Duivenhoks River), but no typical wetland vegetation or indications were observed during site verification. It is considered unlikely that any of the developments impacted directly on any watercourse or wetland.

However, a freshwater specialist had been appointed to assess the potential impact the aquatic environment.

VEGETATION ENCOUNTERED

The farm dam overlap existing agricultural land (dryland annual crops) and would not have resulted in any additional impact on natural veld. The field enlargements impacted on virgin soils (in both cases it seems to have impacted on previously cultivated or disturbed veld). In both cases the vegetation had been laying fallow for a long period of time and indigenous vegetation had started to re-establish itself, but plant diversity were low, and the vegetation comprised mostly of hardy- and early successional species. However, the vegetation type is considered endangered, and any suitable remaining habitat should be protected. Thus, even though the impacted areas were disturbed the impact on vegetation is considered **Medium-Low**.

CONSERVATION PRIORITY AREAS

According to the 2017 WCBSP the small dam would have impacted on a terrestrial CBA2, while both agricultural expansions overlapped terrestrial CBA1 areas (Figure 5). Field 2 also overlapped an area mapped as an aquatic CBA1 (unchanneled valley bottom wetlands associated with the Duivenhoks River). The site verification showed that:

- The small dam impacted on transformed agricultural land and should be described as transformed (existing agricultural land).
- Field 1 impacted on previously cultivated land that has been lying fallow for between 15 – 20 years. Because of the low species diversity and lack of sensitive species encountered a status of ESA1 or CBA2 is considered more appropriate.
- Field 2 also impacted on previously disturbed land (most likely cultivated) that has been laying fallow for up to 40 years but was still regularly burned and used for cattle grazing. No typical wetland vegetation or indications were observed during the site

verification. Again, because of the low species diversity and lack of sensitive species encountered a status of ESA1 or CBA2 is considered more appropriate

RED-LISTED & PROTECTED PLANT SPECIES

The DFFE screening tool (Refer to Appendix 1), gives the relative plant species sensitivity as **Medium Sensitivity**, because of the potential for encountering a number of medium sensitive plant species (Heading 5.6).

No plant species of conservation concern were observed, and it is considered unlikely that the development would have had any significant additional impact on sensitive plant species. Because of historical disturbance and ongoing management practices, a plant species theme of **Low Sensitive** is considered appropriate.

FAUNA & AVI-FAUNA

According to the DFFE screening report (Appendix 1), the relative animal species sensitivity is considered **High Sensitivity**, because of the potential for encountering four sensitive birds and one sensitive invertebrate species (Refer to Table 8).

- It is considered unlikely that the development would have resulted in any significant additional impact on the breeding or feeding patterns of any of the bird species.
- It is possible that the development might have impacted on a small portion of habitat for Invertebrate species, but because of the small scale of the development it is considered unlikely that it would have resulted in any significant impact on the survival of this species

As a result, the animal species theme sensitivity is considered **Low Sensitive**.

THE NO-GO OPTION

In this case, the No-Go alternative is not applicable.

TERRESTRIAL BIODIVERSITY

According to the DFFE Sensitivity report (Appendix 1) the Terrestrial Biodiversity Theme Sensitivity is considered **HIGH SENSITIVE** because the development footprint overlaps an **ENDANGERED** vegetation, within a CBA1.

In Table 9 the accumulative impact (based on site verification), is considered to be **Medium/Low negative**, mainly because of the potential impacts on an endangered vegetation type within a CBA.

It is considered highly unlikely that the development has 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 species.
- Loss of ecosystem connectivity.

For this project the **Terrestrial Biodiversity Theme Sensitivity** is considered **Medium-Low Negative**.

MAIN CONCLUSION

The development resulted in the transformation of about 8 ha of fallow land (not been ploughed in the last 10 years) located in a disturbed version of an endangered vegetation type within an CBA area (Refer to Heading 7.1 for more detail).

DETAILS OF THE AUTHOR

This is a specialist report compiled by Peet Botes from PB Consult.

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INDEPENDENCE & CONDITIONS

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

RELEVANT QUALIFICATIONS & EXPERIENCE OF THE AUTHOR

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

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

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

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

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

DECLARATION OF INDEPENDENCE

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

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

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

Note: The terms of reference must be attached.

Signature of the specialist:

PB Consult (Sole Proprietor)

Name of company:

19 June 2025

Date:

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ABBREVIATIONS

BGIS	Biodiversity Geographic Information System
CBA	Critical biodiversity area (in terms of the 2017 City of Cape Town Biodiversity Network)
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 (in terms of the 2017 City of Cape Town Biodiversity Network)
GIS	Geographic Information System
LC	Least Threatened
NEMA	National Environmental Management Act, 1998 (Act no. 107 of 1998)
NT	Near Threatened
SANBI	South African National Biodiversity Institute
SoCC	Species of Conservation Concern
VU	Vulnerable
WCBSP	Western Cape Biodiversity Spatial Plan

1. INTRODUCTION

Farm 91, Riversdale (Sandrift Farm) is a sizable farm located in a narrow valley on the southern foothills of the Langeberg Mountains, between Heidelberg and Riversdale (Western Cape Province). The Duivenhoks River runs along the bottom of the valley, and most of the agricultural land is located on the lower slopes towards the bottom of the valley, next to the river. In 2016, the landowner built a small farm dam for watering stock in the corner of a larger agricultural field that was still being cultivated at that time. More recently he enlarged two agricultural fields (June 2022 and between September 2023 and May 2024), using land that was, according to landowner, previously cultivated (these fields were considered marginal land and is the reason it had not been cultivated in recent years). These activities resulted in the alleged clearing of more than 1 ha of indigenous vegetation (Field 1 enlarged by 2.91 ha, Field 2 enlarged by 4.8 ha, while the dam is about 640 m^2 in size).

According to the vegetation map of South Africa (2018 & 2024 Beta), the impacted areas overlaps areas that were likely to support Garden Route Shale Fynbos (Figure 4), a vegetation type that was classified as **vulnerable** before November 2022 (applicable to the development of the small dam and Field 1), but that are now classified as **endangered** (applicable to Field 2) in terms of the revised national list of ecosystems that are threatened and in need of protection (G N. 2747 of 18 November 2022). Both expansion areas and the dam overlap areas mapped as Critical Biodiversity Areas (CBA 1 for the two fields and CBA2 for the small dam) in terms of the both the 2023 Western Cape Biodiversity Spatial Plan (BSP) and the 2017 BSP. In addition, Field 2 is in close proximity to the Duivenhoks River (and its associated unchanneled valley bottom wetland), while the small dam is about 15 m away from a smaller non-perennial subsidiary of the Duivenhoks River.

The verification site visit confirmed that the small dam was constructed on existing agricultural land, whereas the two field enlargements also overlaps previously cultivated land (or otherwise disturbed land). However, both of the areas (where the fields were enlarged) have been laying fallow for more than 10 years. According to the landowner, Field 1 was last cultivated 15 to 20 years ago, while Field 2 was cultivated during his father's time, approximately 40 years ago.

The DFFE screening report for the impacted areas, compiled by PB Consult on 20 May 2025 (Appendix 1), identifies the following potential environmental sensitivities:

- The relative Animal species theme sensitivity is considered of **High Sensitivity**;
- The relative Plant species theme sensitivity is considered of **Medium Sensitivity**;
- The relative Terrestrial Biodiversity theme sensitivity is considered of **Very High Sensitivity** (CBA2 & Endangered Garden Route Shale Fynbos).
- NB. Note that a freshwater specialist had been appointed to evaluate the Aquatic theme sensitivities.

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

The Terms of Reference for this study were to perform a site visit and to compile a specialist report that assesses the potential impacts on *Botanical and Terrestrial Biodiversity* features associated with the development.

Study should address:

- Habitat sensitivity;
- Threatened ecosystems (including critical biodiversity areas and ecological support areas);
- Flora and fauna species of conservation concern;
- Any significant botanical or other terrestrial biodiversity features that might be impacted because of the proposed development as identified in the DFFE Screening Report for the site.
- Potential direct and cumulative impacts resulting from the proposed development on the receiving environment.

2. STUDY AREA

2.1. LOCATION & LAYOUT

Sandrift farm (Remainder of Farm 91, Riversdale) is a sizable farm, located on the southern slopes of the Langeberg Mountains (near Hamerkop) between Heidelberg and Riversdale in the Hessequa Municipality of the Western Cape (Figure 1).

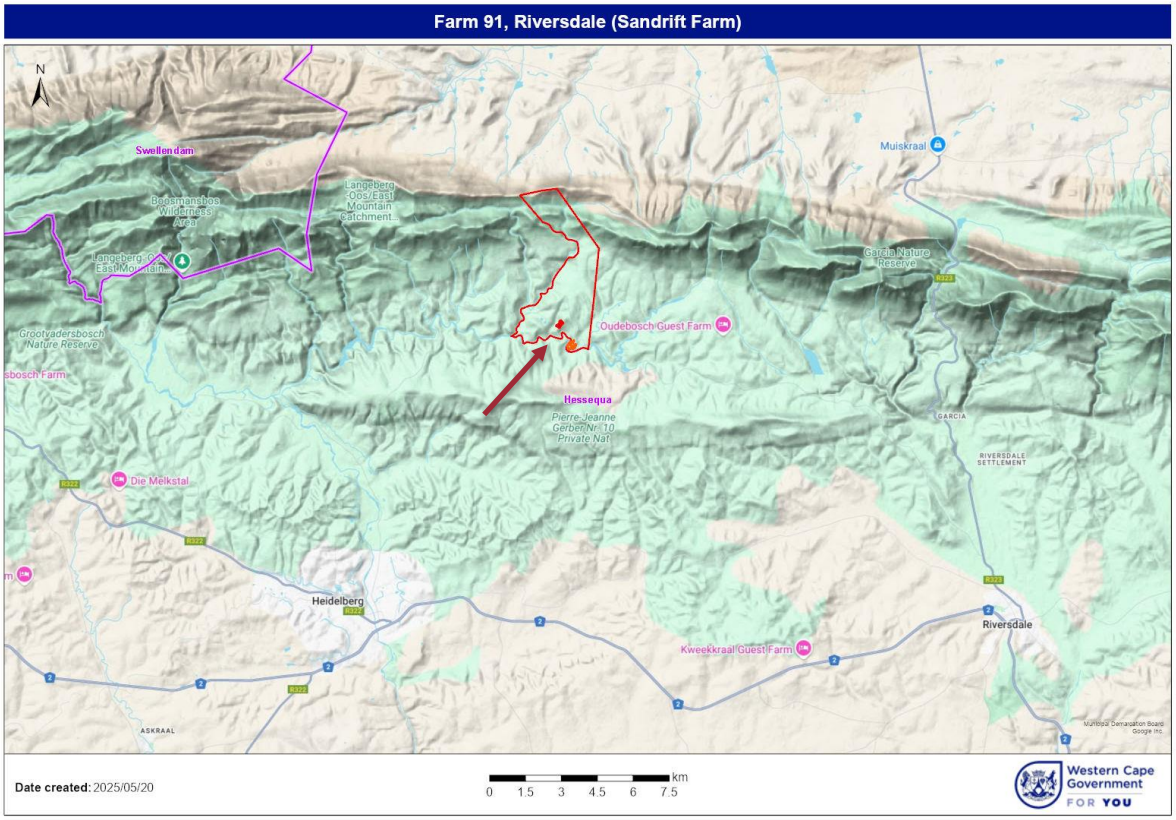

Figure 1: The location of the Farm (red) in relation to Heidelberg and Riversdale (CapeFarmMapper).

Farm 91 farm is about 1 178.32 ha in size bordering on the Duiwenhoks River to the south. The areas impacted by the construction of the dam is about 640 m^2, by Field 1 is about 2.91 hectares and by Field 2 is about 4.8 hectares (Figure 2).

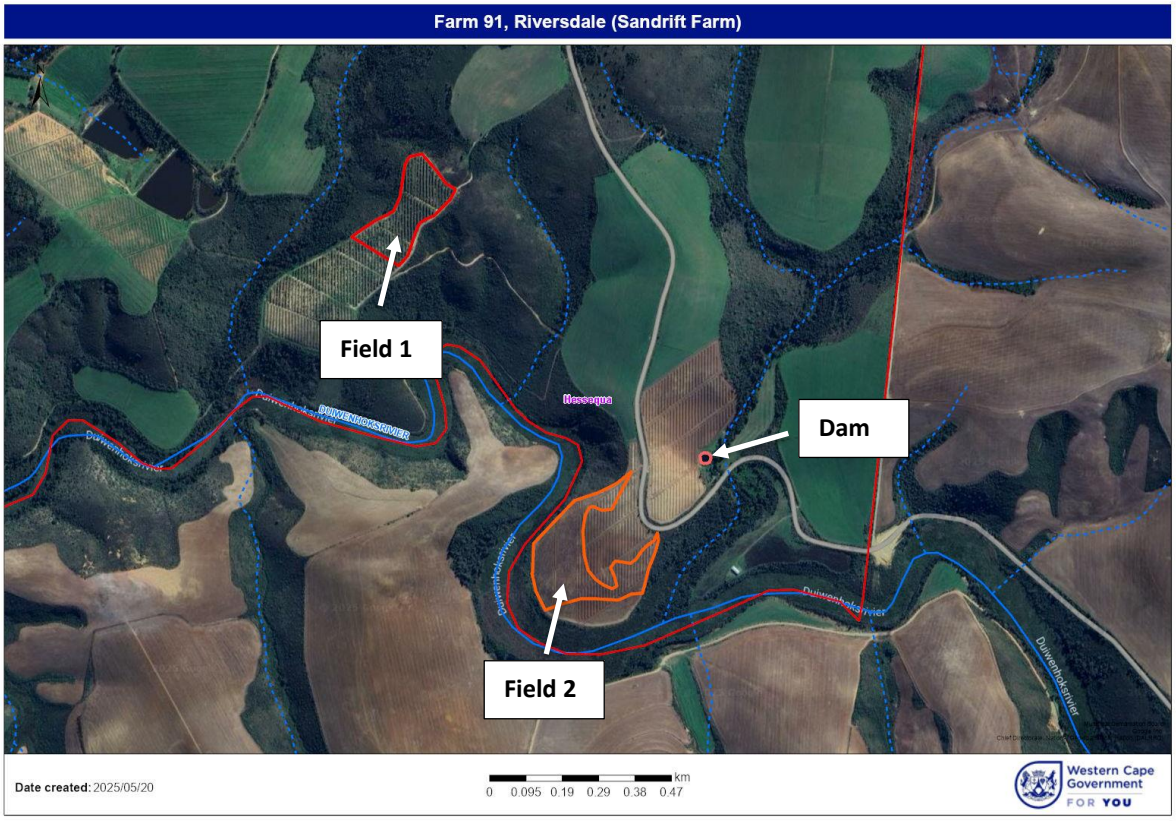

Figure 2: Google image showing the boundaries of Farm (red) and impacted areas (CapeFarmMapper)

2.2. ACTIVITY DESCRIPTION

The alleged illegal activities includes (timeframes based on historical Google Imagery):

1. During 2016: The construction of a small dam (about 640 m^2), used for watering of domestic stock on the edge (but still within) an agricultural field, but nearer than 30 m of a small non-perennial subsidiary to the Duiwenhoks River;
2. June 2022: Enlargement an existing agricultural field by about 2.91 ha (Field 1). The enlargement impacted on virgin land or land that might still supported indigenous vegetation;
3. Between September 2023 – May 2024: Enlargement of a second field by 4.8 ha (Field 2) that might still have supported indigenous vegetation in an area in close proximity to the Duiwenhoks River and associated unchanneled valley bottom wetland.

3. APPROACH & METHODOLOGY

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

3.1. DESKTOP ANALYSIS

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

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

3.2. SITE SENSITIVITY VERIFICATION

The fieldwork for project was carried out on the 20th of February 2025. The site survey was conducted over a 4-hour period, by walking the impacted areas and adjoining veld, whilst evaluating the condition of the veld and listing species observed.

Figure 3: Google imagery, showing the impacted areas and the routes used during site verification.

Protected plants, species of conservation concern and terrestrial features of significance (where

observed) were marked by waypoints and photographed. A hand-held Garmin GPSMAP 67 was used to track the sampling route and for recording waypoints (Figure 3). 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.

3.3. LIMITATIONS, ASSUMPTIONS AND UNCERTAINTIES

The findings are based on a one-day site visit (not long-term repetitive sampling), which means that it is likely that some species might have been missed. Because the impacts already occurred, the original condition of impacted areas had to be evaluated based on that of similar looking surrounding veld. However, the condition of the surrounding veld were relatively easy to access. The dam site was clearly transformed (agricultural land), while the veld surrounding Field 1 still shows plough lines (supporting the claims that it was previously cultivated). The veld surrounding the area impacted by the Field 2 expansion also shows clear signs of previous disturbance (even old plough lines). There was clear signs that plant species composition had been altered (disturbed veld) and diversity was significantly reduced (even in the older veld associated with Field 2). There should be no limiting factors which could significantly alter the outcome of this assessment and confidence in the findings is high. It is considered unlikely that a full botanical assessment will result in any additional findings that would have a significant impact on the outcome.

3.4. IMPACT ASSESSMENT METHOD

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

The objective of this study was to evaluate the remaining biodiversity of the study area to identify significant environmental features which might be impacted by of the proposed activity. The Ecosystem Guidelines for Environmental Assessment (De Villiers *et. al*., 2005), were used to evaluate the botanical significance of the property with emphasis on:

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

3.4.1. DETERMINING SIGNIFICANCE

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

Significance = Conservation Value x (Likelihood + Duration + Extent + Severity) (Edwards 2011)

3.4.2. CRITERIA USED

***Conservation value*:** Conservation value refers to the intrinsic value of an attribute (e.g., an ecosystem, a vegetation type, a natural feature or a species) or its relative importance towards the conservation of an ecosystem or species or even natural aesthetics. Conservation status is based on habitat function, its vulnerability to loss and fragmentation or its value in terms of the protection of habitat or species (Refer to Table 1 for categories used).

Likelihood refers to the probability of the specific impact occurring because of the proposed activity (Refer to Table 2, for categories used).

Duration refers to the length in time during which the activity is expected to impact on the environment (Refer to Table 3).

Extent refers to the spatial area that is likely to be impacted or over which the impact will have influence, should it occur (Refer to Table 4).

Severity refers to the direct physical or biophysical impact of the activity on the surrounding environment should it occur (Refer to Table 5).

Table 1: Categories used for evaluating conservation status.

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

Table 2: Categories used for evaluating likelihood.

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

Table 3: Categories used for evaluating duration.

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

Table 4: Categories used for evaluating extent.

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

Table 5: Categories used for evaluating severity.

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

3.4.3. SIGNIFICANCE CATEGORIES

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

Potential significant impacts are evaluated, using the method described above, to determine its potential significance. The potential significance is then described in terms of the categories given in Table 6. Mitigation options are evaluated, and comparison is then made (using the same method) of potential significance before mitigation and potential significance after mitigation (to advise the EAP).

Table 6: Categories used to describe significance rating (adjusted from DEAT, 2002)

SIGNIFICANCE	DESCRIPTION
Insignificant or Positive (4-22)	There is no impact, or the impact is insignificant in scale or magnitude because of low sensitivity to change or low intrinsic value of the site, or the impact may be positive.
Low (23-36)	An impact barely noticeable in scale or magnitude because of low sensitivity to change or low intrinsic value of the site or will be of very short-term or is unlikely to occur. Impact is unlikely to have any real effect and no or little mitigation is required.
Medium Low (37-45)	Impact is of a low order and therefore likely to have little real effect. Mitigation is easily achieved. Social, cultural, and economic activities can continue unchanged, or impacts may have medium to short term effects on the social and/or natural environment within site boundaries.
Medium (46-55)	Impact is real, but not substantial. Mitigation is both feasible and easily possible but may require modification of the project design or layout. Social, cultural, and economic activities of communities may be impacted, but can continue (albeit in a different form). These impacts will usually result in medium to long term effect on the social and/or natural environment, within site boundary.
Medium high (56-63)	Impact is real, substantial, and undesirable, but mitigation is feasible. Modification of the project design or layout may be required. Social, cultural, and economic activities may be impacted, but can continue (albeit in a different form). These impacts will usually result in medium to long-term effect on the social and/or natural environment, beyond site boundary within local area.
High (64-79)	An impact of high order. Mitigation is difficult, expensive, time-consuming or some combination of these. Social, cultural, and economic activities of communities are disrupted and may come to a halt. These impacts will usually result in long-term change to the social and/or natural environment, beyond site boundaries, regional or widespread.
Unacceptable (80-100)	An impact of the highest order possible. There is no possible mitigation that could offset the impact. Social, cultural, and economic activities of communities are disrupted to such an extent that these come to a halt. The impact will result in permanent change. Very often these impacts are un-mitigatable and usually result in very severe effects, beyond site boundaries, national or international.

4. RESULTS OF THE DESKTOP ANALYSIS

The desktop analysis used available SANBI BGIS data and Google imagery (including historical imagery) to identify potential areas of significance and to prepare species lists and maps for use during site verification. The results of the desktop assessment is discussed below.

4.1. BROAD SCALE VEGETATION EXPECTED

According to both the 2018 and the 2024 Beta version of the Vegetation map of South African, Lesotho and Swaziland (Mucina & Rutherford, 2006), the study area is expected to support Garden Route Shale Fynbos (Figure 4), a vegetation type that was classified as **vulnerable** before November 2022 (applicable to the development of the small dam and Field 1), but that are now classified as **endangered** (applicable to Field 2) in terms of the "*Revised List of ecosystems that are threatened and in need of protection*" (GN 2747 of 18 November 2022), promulgated in terms of the National Environmental Management Biodiversity Act, Act 10 of 2004.

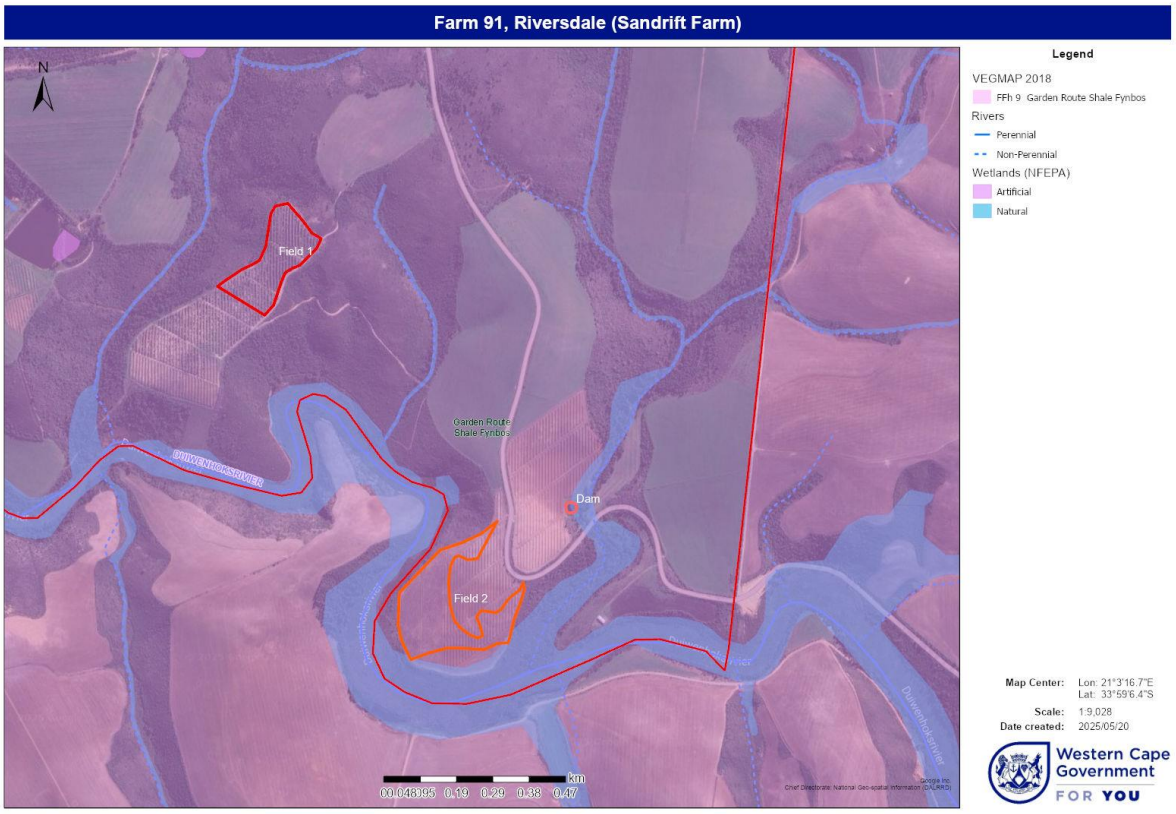

Figure 4: The SA Vegsmap (2018), showing the expected vegetation in the impacted areas (CapeFarmMapper).

4.2. THE VEGETATION IN CONTEXT

Located at the southern tip of Africa, the Cape Floral Kingdom (CFK) has been described as one of the wonders of the world. It covers an area of **only** approximately 87 892 km^2 but hosts an amazing 9 000 different kind of plant species of which 70% are endemic (does not occur anywhere else in the world). So special is this vegetation that the CFK has been designated as one of the earth's six plant kingdoms,

putting it on par with the Boreal Forest Kingdom which covers 50 million square kilometres (Cowling & Richardson 1995). It has also been listed as one of 25 internationally recognized biodiversity hotspots. The CFR is one of the richest parts of the world in terms of floristic diversity and the degree of endemism is among the highest in the world. The CFK is also an Endemic Bird Area and levels of endemism are exceptionally high in freshwater ecosystems – many Cape Rivers show almost complete turn-over in species assemblages from one system to the next (Cowling & Richardson 1995).

Within the CFK many of the lower lying areas is under pressure from agriculture, urbanization and alien plant invasion, which means that many of the range restricted plant species are also under severe pressure and even threat of extinction as habitat becomes more and more fragmented. The Core Cape Floristic Subregion is particularly susceptible to invasion by alien trees, mostly species of Australian *Acacia*, Hakea and *Eucalyptus*, and pines from the Northern Hemisphere. Many of these trees are considered ecosystem transformers as they out-compete the indigenous vegetation and alter ecosystem processes, such as nutrient cycling, fire, and the hydrological regime.

Garden Route Shale Fynbos is located in the Western and Eastern Cape Provinces. It appears along the coastal foothills of the Langeberg at Grootberg (northeast of Heidelberg), the Outeniqua Mountains from Cloete's Pass through Groot Brak River Valley to Plettenberg Bay, and from Bloukrans Pass south of Tsitsikamma Mountains to south of Clarkson and the Kareedouw Mountains at altitudes between 0–500 m above sea level. It occurs on undulating hills and moderately undulating plains on the coastal forelands.

Structurally it is a tall, dense proteoid and ericaceous fynbos in wetter areas, and graminoid fynbos (or shrubby grassland) in drier areas. Fynbos appears confined to flatter more extensive landscapes that are exposed to frequent fires, while most of the shales are covered with afrotemperate forest. Fairly wide belts of *Virgilia oroboides* occur on the interface between fynbos and forest. Fire-safe habitats nearer the coast often have small clumps of thicket, and valley floors may support scrub forest (Vlok & Euston-Brown 2002).

4.3. WETLANDS AND WATERCOURSES

According to the DFFE screening tool report for this project (Refer to Appendix 1), the relative aquatic biodiversity theme sensitivity is considered **Very High Sensitive**.

An aquatic wetland has been mapped in the lower parts of Field 2 (unchanneled valley bottom wetlands associated with the Duivenhoks River), but no typical wetland vegetation or indications were observed during site verification. It is considered unlikely that any of the developments impacted directly on any watercourse or wetland.

However, a freshwater specialist had been appointed to assess the potential impact the aquatic environment.

4.4. CRITICAL BIODIVERSITY AREAS

Since 2001, a systematic conservation planning process had been adopted by the Western Cape using a scientific, data-driven approach to identify and protect areas of high biodiversity value. The strategy aims to create an Information and Monitoring System for informed decision-making and precise

biodiversity tracking.

The 2023 Western Cape Biodiversity Spatial Plan (WCBSP), signed into law 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).

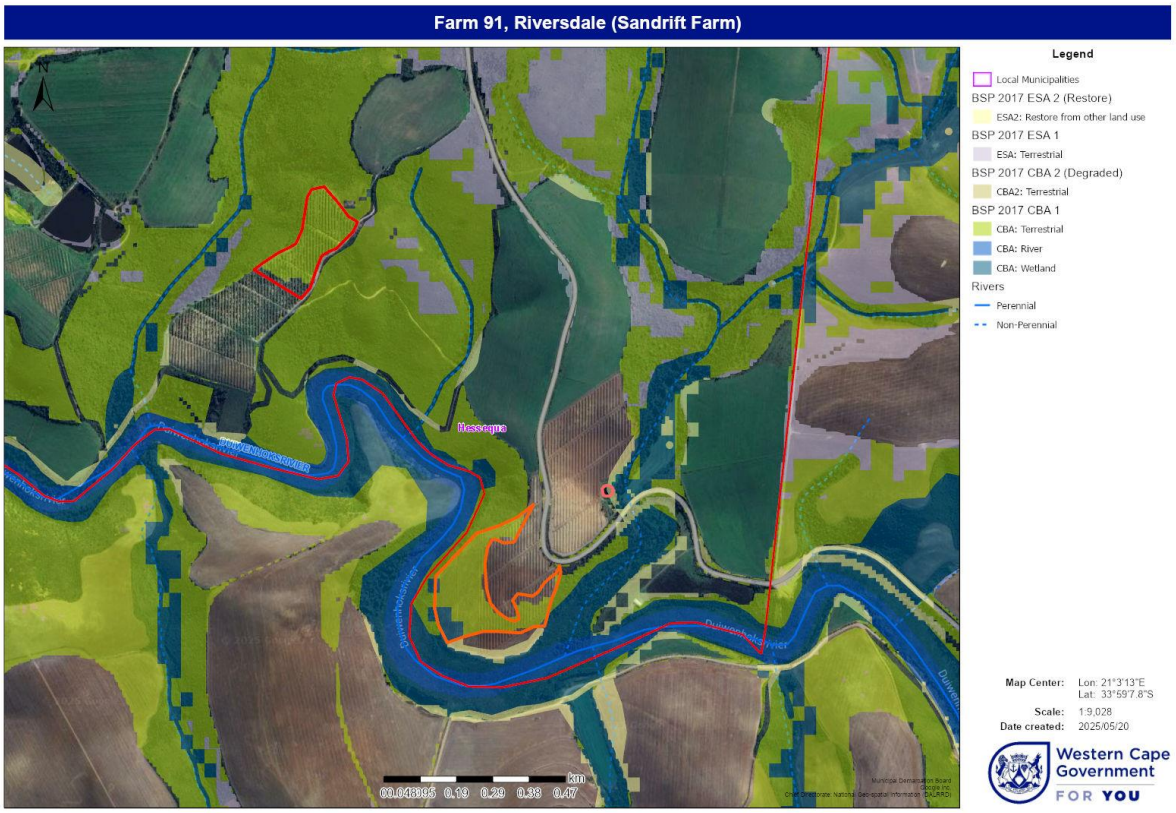

Figure 5: WCBSP (2017) showing the impacted area (arrows) and its associated CBA status (CapeFarmMapper).

At the time of development, the 2017 WCBSP was in effect. The CBA maps indicated that the small dam overlapped a terrestrial critical biodiversity area (CBA2), while both agricultural expansions overlapped CBA1 areas (Figure 5). Field 2's might also have impacted on areas mapped as aquatic CBA1 areas (unchanneled valley bottom wetlands associated with the Duivenhoks River).

4.5. HISTORY OF THE IMPACTED AREAS

The history of the impacted areas are based on personal communications with the land owner, and historical Google Imagery.

The Dam: The area in which the small farm dam was built was clearly always part of existing agricultural land (planted pastures / seasonal dryland crops). Historical Google Imagery from 2004 to 2016 clearly shows that it the dam is located in an area that used to be cultivated (Figure 6).

Field 1: Historical Google Imagery from 2004 seems to confirm that the area impacted by the expansion had been disturbed. The historical disturbance footprint was roughly the same size as the June 2022 expansion area (and slightly larger – to the north) (Refer to Figure 7). According to the landowner this area used to be cultivated 15 to 20 years ago. The site verification still shows previous plough lines, which confirms that it had been ploughed in the past. Since then, it had laid fallow, and a disturbed version of natural vegetation had re-established.

Figure 6: Historical Google Image (2009) showing the location where the small dam was built.

Figure 7: Historical Google Image (2004) showing a potential disturbance footprint very similar to that impacted by the Field 1 expansion of 2022.

Field 2: Although not very clear, historical Google Imagery dating from 1985 seems to suggest that some of the areas impacted by the 2023/24 expansion of Field 2 might have been ploughed in the past (Refer to Figure 8). Imagery from 2004 (Figure 9) also seems to confirm potential previous disturbance including an old track bordering the old field. The 2004 Image also seems to show a low open grassy vegetation cover, which is typically associated with disturbed or fallow land (although it could also be the effect of an altered fire regime coupled with long term grazing pressures).

Figure 8: Historical Google Image (1985) in relation to the area impacted by the 2023/24, Field 2 expansion (Note the fact that much of this area shows a similar disturbance to that of the known agricultural land to the northeast)

Figure 9: Historical Google Image (2004) in relation to the area impacted by the 2023/24, Field 2 expansion.

5. VEGETATION & FLORA

5.1. VEGETATION IMPACTED BY THE DAM

Historical Google Imagery suggested that the dam was constructed within cultivated land (Figure 6**Error! Reference source not found.**). This was confirmed by the site verification (Photo 1). The **area impacted by the dam** can be described as transformed agricultural land and the construction of the dam did not result in any additional impact on remaining natural veld.

Photo 1: A photo of the small dam that was constructed in the lower corner of existing agricultural fields. There was no impact on remaining natural veld. Even the riparian vegetation are dominated by alien invasive species.

5.2. VEGETATION IMPACTED BY THE FIELD 1 EXPANSION (2.91 HA)

According to the landowner, this area used to be cultivated but was considered marginal lands. Available irrigation water was used for crops on more providable fields and as a result, this area had not been cultivated for the past 15 – 20 years. With improved irrigation methods, surplus water has become available (e.g., Macadamia trees). Google Imagery from 2004 (Figure 7) seems to support the fact that this area had been disturbed in the past.

During the site verification, the status of the vegetation adjacent to, and on the slope above the impacted area were evaluated in order to understand what the condition of the veld that was impacted might have been. Focus was placed on areas that showed similar disturbance in historic Google Imagery. It was immediately clear that these areas had been ploughed in the past. Old plough lines and even contour lines (erosion prevention was still visible).

Since it was last ploughed (15 – 20 years ago) a medium-low and medium dense fynbos shrubland had re-established itself in these areas (Photo 2 & Photo 3). The vegetation was dominated by *Metalasia muricata* (blombos), and *Anthanasia juncea* but with *Helichrysum petiolare* (Kooigoed), *Eriocephalus paniculatus* (kapokbos), *Helichrysum cymosum* and *Dicerothamnus rhinocerotis* (renosterbos) also common. *Anthospermum aethiopicum*, *Cliffortia ruscifolia* (climbers' friend), *Osteospermum moniliferum* (Bitou) *Selago* cf. *glomerata* and the willowy *Gnidia* cf. *oppositifolia* were occasionally observed, while disturbance indicator species such as *Anthanasia trifurcata* and *Berkheya onobromoides* (disseldoring) were observed along the disturbed edges of the new fields.

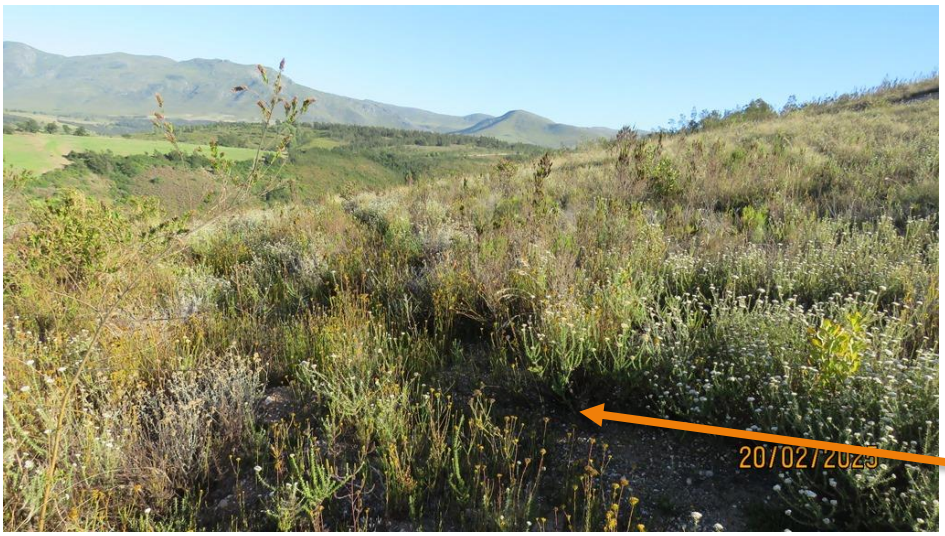

Photo 2: Similarly disturbed veld next to the Field 1 enlargement. Note the medium-low vegetation cover, dominated by *Metalasia* and *Athanasia*. To the left a *Gnidia* and in the background *Anthospermum* can be observed.

Note the old **plough ridge** in the foreground.

Photo 3: Recovering veld slightly further north (still next to the Field 1 enlargement). In this area the historical disturbance and the old plough lines is even more visible.

Higher up the slope, further away from the new development, the veld was also disturbed (previously ploughed) but here the vegetation became a graminoid fynbos (grass dominated) (Photo 4).

Photo 4: Slightly higher up the slope the vegetation showed a drier, graminoid fynbos variant.

It is almost certain that the Field 1 expansion overlapped a previously cultivated area, based on similar vegetation nearby. Even after 20 years, plant diversity remained low, and the vegetation is still dominated by hardy and early successional species. Later successional species such as *Protea*-, *Leucadendron*-, *Leucospermum*- and *Acmadenia* were absent (even though *Leucadendron* species can be observed on the lower slopes, to the west and south of the site).

In summary, it is believed that the expansion of Field 1 overlaps preciously cultivated land that had been laying fallow for 15-20 years. No species of conservation concern were found in adjacent disturbed areas. Therefore, the impact on vegetation is considered medium-low, and the potential impact on species of conservation concern is considered low.

5.3. VEGETATION IMPACTED BY THE FIELD 2 EXPANSION (4.8 HA)

According to the landowner most of the area impacted by the Field 2 enlargement also used to be cultivated (cattle grazing), in his father's time, about 40 years back. Since then, it was used for cattle grazing (calve camps) and were also regularly burned (every 7 – 8 years). Local farmers regularly burn

areas near the Duivenhoks River to prevent fires from spreading into the dense palmiet (*Prionium serratum*) stands within the river itself (Photo 5). Once a fire reaches these stands, it is likely to continue burning both upstream and downstream with little chance of stopping. There is a local believe that these areas used to be grasslands (which is true of this vegetation in drier areas) and are thus seen as useful cattle grazing areas. The landowner also pointed out that the area that was ripped was never intended to include the lower areas next to the river (in other words, the disturbed area is larger than it was supposed to be).

The species composition of the remaining vegetation next to the ploughed areas encountered during the site verification confirms that this most of this area had also been subject to some form of disturbance (Photo 5 to Photo 7). Physical evidence, that might be old erosion and plough lines are still visible (although not as evident as that at Field 1). Plant species composition was basically the same as that described for the disturbed areas next to Field 1. The main difference is the presence of occasional shrubs, mostly *Searsia* species, which are to be expected on the lower slopes near the Duivenhoks River. Due to regular fires, they appear as single individuals instead of bush clumps or thicket patches.

Photo 5: A photo showing some of the remaining natural veld next to the new field enlargement. Species composition is very similar to that encountered in the disturbed areas next to Field 1. Note the dense palmiet beds or stands in the Duivenhoks River.

Photo 8 shows the lower section of the area impacted by the Field 2 expansion, 8 months after being ploughed. This area was not planted (apparently it was not supposed to be cleared) and shows the speed of recovery of the vegetation. Note that species composition is still very similar to that encountered in the areas next to the Field 1 & 2 expansion (most of these species being hardy or early successional species).

Photo 6: Remaining natural veld next to the new fields. Dominated by *Metalasia* with a species composition very similar to that of the old, disturbed areas next to Field 1.

Photo 7: This picture clearly shows the historical vegetation next to the newly ploughed fields as well as what appears to be the remains of an old access roads next to what might have been old historical fields.

Photo 8: Recovering veld 8 months after being ripped.

Again, the site verification confirmed that it is almost certain that most of the area that was impacted by the Field 2 expansion overlapped areas that was most likely disturbed (ploughed) in the past. Since then, it had been used as cattle grazing, with fire used as a management tool to keep the fuel load of

the veld down (and to promote grasses). Plant diversity is low, and the vegetation is dominated by hardy and early successional species. Elements of later successional species such as *Protea*-, *Leucadendron*-, *Leucospermum*- and *Acmadenia* were absent. No species of conservation concern were observed in adjacent areas. Therefore, the impact on vegetation is considered medium-low, and the potential impact on species of conservation concern is considered low.

5.4. FLORA ENCOUNTERED

Table 7 gives a list of the plant species observed during the site verification. The status of each species is given in terms of the latest updated SANBI red-list of South Africa for plant species (SANBI, 2024). Most of the species were hardy or early successional species. No species of conservation concern (SoCC) were observed.

Table 7: List of plant species observed within the larger footprint area.

NO.	SPECIES NAME	FAMILY	STATUS	LOCATION
1.	*Anthanasia juncea*	ASTERACEAE	LC	Klaaslouwbos: A widespread hardy species, dominant in the recovering disturbed veld.
2.	*Anthanasia trifurcata*	ASTEARACEAE	LC	Klaaslouwbos: A widespread species, occasional in the recovering disturbed areas.
3.	*Anthospermum aethiopicum*	RUBIACEAE	LC	Jakkalsstert: A widespread species commonly observed in the recovering disturbed areas.
4.	*Berkheya onobromoides*	ASTERACEAE	LC	Reukdissel: Occasionally on the disturbed edges of the newly ploughed areas.
5.	*Cliffortia ruscifolia*	ROSACEAE	LC	Climbers friend: A widespread species occasionally observed in surrounding veld.
6.	*Dicerothamnus rhinocerotis*	ASTERACEAE		Renosterbos: A widespread hardy species, common in the recovering disturbed areas.
7.	*Eriocephalus paniculatus*	ASTERACEAE	LC	Kapokbos: A hardy and widespread species, common in the recovering disturbed areas.
8.	*Gnidia* cf. *oppositifolia*	THYMELAEACEAE	LC	Gonnatou: A widespread species occasionally observed in surrounding veld
9.	*Helichrysum cymosum*	ASTEARACEAE	LC	A small hardy species, occasional in the recovering disturbed areas
10.	*Helichrysum petiolare*	ASTEARACEAE	LC	Kooigoed: A hardy and widespread species, common in the recovering disturbed areas.
11.	*Metalasia muricata*	ASTERACEAE	LC	Blombos: a widespread and hardy species dominant in the recovering disturbed veld.
12.	*Osteospermum moniliferum*	ASTERACEAE	LC	Bitou: a widespread and hardy species occasionally observed in the surrounding veld.
13.	*Searsia* species	ANACARDACEAE	LC	Relatively common – forming part of the thicket vegetation to the south and east.
14.	*Selago* cf. *glomerata*	SCROPHULARIACEAE	LC	Occasional in disturbed areas throughout the site.

5.5. THREATENED AND PROTECTED PLANT SPECIES ENCOUNTERED

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).

5.5.1. 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, 2024).

- No Red List plant species were observed

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

- No species protected in terms of NEM: BA was observed.

5.6. PLANT SPECIES SENSITIVITY THEME

According to the DFFE screening tool report for this project (Refer to Appendix 1), the relative plant species sensitivity is considered **Medium Sensitivity**, because of the potential for encountering a number of medium sensitive plant species (Refer to Page 14 of the screening report, Appendix 1). None of these species were observed during the site verification.

It is not expected that the construction of the dam or the enlargements of the two fields would have had any significant additional impact on any of these species. However, the vegetation type is considered endangered, and any suitable remaining habitat should be protected.

Because of historical disturbance and ongoing management practices, a plant species theme of **Low Sensitive** is considered appropriate.

6. FAUNA AND AVI-FAUNA

Historically larger mammals such as Mountain Zebra, Quagga, Bluebuck, Red Hartebeest, Eland, Bontebok, Elephant, Black Rhino, Buffalo, Lion, Cheetah, Wild Dog, Spotted Hyena and Leopard were common in the Western Cape (although probably not in large numbers). Of these large mammals, only the Mountain Zebra and Leopard survived (by fleeing to the mountains), with the Bontebok just surviving near Bredasdorp. All the other species became extinct in the Fynbos Biome, although many have been re-introduced into conservation areas from outside the region. The Quagga and Bluebuck are now extinct (www.inaturalist.org/posts/13033-renosterveld). Smaller mammals common to fynbos are chacma baboons, klipspringers, grysbok, dassies, mongooses, cape dune mule-rat and the striped mouse. Fynbos also does not support high numbers of birds, but all six bird species endemic to the south-west Cape are fynbos species, e.g. the Cape sugarbird and orange breasted sunbird. These two birds are found only in fynbos and play an important role in pollinating flowers, including those of heaths (erica's) and proteas. Another very common sunbird frequenting the fynbos biome, is the lesser double collared sunbird.

On the other hand, Fynbos supports large numbers of butterfly species, many of which, are now at risk, especially the myrmecophilous (ant associated) butterflies from the family Lycaenidae. The early stages (larvae) of many of these butterfly species are entirely carnivorous and live on a diet of ant brood. The butterfly larvae live inside the nest of their host ant. Myrmecophilous butterflies require the presence of both host ant and host plant as well as optimal climatic conditions. The disturbance of their preferred habitat (often small areas) could lead to the extinction of a rare species confined to a single location.

Although fynbos is not particularly rich in reptiles and amphibians, many of the species living there are both endemic and threatened. The very rare geometric tortoise is found in only a few surviving fynbos areas and is regarded as the world's second rarest tortoise. The Cape has more than half of South Africa's frog species. Furthermore, of the 62 different frogs occurring here, 29 are endemic being found nowhere else on earth. The Table Mountain ghost frog lives only in the mountain's fast-flowing rocky streams. The tiny micro frog and Cape platanna are restricted to a few surviving vleis in the south-west Cape (https://whalecoast.info/attraction/animals-living-in-fynbos/).

The development activities are all within or adjoining existing agricultural land. The footprint enlargement associated with the two Fields might resulted in some impacts on some of the small animal species, but it is not expected to have had a significant additional impact on larger animal species or even avi-fauna species of conservation concern (SoCC). Both fields are still surrounded by large areas of natural veld.

6.1. ANIMAL THEME SENSITIVITY

According to the DFFE screening report (Appendix 1), the relative animal species sensitivity is considered **High Sensitivity**, because of the potential for encountering four sensitive birds and one sensitive invertebrate species (Refer to Table 8).

Table 8: Animal species of conservation concern that might be encountered according to the DFFE screening report.

FEATURES	MOTIVATION
Aves - High ***Neotis denhami*** (Denham's Bustard or Stanley Bustard) **Vulnerable (VU)**	**Status**: Stanley's Bustard is considered **vulnerable** and estimated to be undergoing a moderately rapid population decline due to hunting and conversion of grassland for agriculture. It has a wide but fragmented Afrotropical range, occurring in a band stretching from Mauritania to Ethiopia, and southwards through Kenya, Tanzania, southern Democratic Republic of the Congo and Zambia to northern Botswana; it is a non-breeding visitor to Angola and Congo. In the Western Cape, Denham's Bustard can be locally numerous in mosaics of cultivated pastures, agricultural croplands and natural vegetation with clear seasonal differences in the use of each habitat type (Allan 2002). Collisions with powerlines have been identified as a major threat to the species (Shaw *et al.* 2010). **Habitat**: The natural habitat for this species is open grassland, floodplains, and open fynbos (specifically after fire). **Feeding:** Denham's bustard are often solitary outside of the mating season, although they congregate at large food sources and temporarily band together for migratory movements. Migration is usually in search of food sources and follows passages of rain. This species is omnivorous, feeding on a wide variety of foods as it becomes available to them. Among the diverse foods recorded in the species are insects, small snakes, rodents, the nestlings of other birds and various green plant life. They will sometimes follow ungulate species in order to pick dung beetles out of their droppings (Del Hoyo *et al.* 1996). **Breeding**: Breeding occurs over varied times of the year, being especially undefined in East Africa and may be brought on by rain. The nest consists of a shallow scrape, in which the female lays one or two eggs, which (if they survive) she will raise alone (Alden *et al.* 1996). Stanley's Bustard may occur on the farm, although it is probably more likely to prefer the more open cultivated pastures further south. Given the small scale of the development, it is considered unlikely that the development have resulted in any significant additional impact on the breeding or feeding patterns of this species. With regards to this project the sensitivity rating is considered **Low Sensitive**.
Aves – High ***Bradypterus sylvaticus*** (Knysna warbler) **Vulnerable (VU)**	**Status**: The Knysna Warbler is classified as regionally **Vulnerable** due to its small, severely fragmented range and small population. In addition, all sub-populations contain less than 1 000 mature individuals and there is a perceived continuing decline in population size, range size, and area, extent and quality of habitat. Habitat loss is perceived as the main cause for decline in numbers (Taylor *et al.*, 2015). **Distribution**: The Knysna Warbler is a South African endemic with a highly restricted and fragmented distribution, being found in four zones in the littoral of Eastern and Western Cape provinces. The northernmost zone covers the stretch of coastal vegetation between Mbombazi Nature Reserve, south of Margate in KwaZulu-Natal, to Dwesa-Cwebe Nature Reserve in Eastern Cape. The next sub-population occurs between Tsitsikamma and Sedgefield (Berruti, 1997, in Taylor *et al.*, 2015), with a third sub-population persisting on the southern slopes of the Langeberg Mountains, near

FEATURES	MOTIVATION
	Swellendam (Berruti, 2000, in Taylor *et al*., 2015). A fourth sub-population occurs on the eastern slopes of Table Mountain on the Cape Peninsula (Pryke *et al.* 2011, in Taylor *et al*., 2015). The Knysna Warbler is extremely secretive, and its presence is normally revealed only during the breeding season when it sings. Contact calls, uttered by both sexes, are diagnostic but indistinctive. It is certain that this, coupled with the inaccessibility of most of its habitat, has led to it being under-recorded in both atlas projects. **Habitat**: The habitat of the Knysna warbler is low, dense tangled undergrowth, usually along watercourses, on the edge of temperate forests or in thickets. It has adapted to non-native bramble thickets and can colonise suburban riparian woodland if there is a vegetation undergrowth. Interestingly Visser and Hockey (2002, in Taylor *et al*., 2015) found that this species fares better in transformed urban landscapes than in adjacent protected areas, but this may have been due to unsuitable management practices within the protected area. The expansion of the agricultural fields and the development of the small dam did not impact on the typical thicket habitat preferred by this bird. As a result, it is considered unlikely that the development have resulted in any significant additional impact on the breeding or feeding patterns of this species With regards to this project the sensitivity rating is considered **Low Sensitive**.
Aves - High ***Circus ranivorus*** (African Marsh Harrier) **Endangered (EN)**	**Status**: The African Marsh Harrier is considered **endangered**, because of a perceived rapid decrease in its regional population numbers (greater than 50% decline over a 24-year period) (Taylor, 2015). The species is easily identifiable and highly conspicuous when foraging. The primary threat faced by this species is loss and degradation of its sensitive wetland habitats, as result of drainage or damming for development and agriculture (Monadjem *et al.* 2003). **Habitat**: The Marsh Harrier is sparsely distributed across wetlands throughout central and east Africa, and southwards to southern Africa (Ferguson-Lees & Christie, 2001). It is absent from areas with less than 300 mm of annual rainfall (Simmons 1997). It is absent from the drier parts of Northern Cape and inland areas parts of Western Cape. **Diet**: It has a varied diet which includes small mammals (70% of its diet), adult birds, fledglings, lizards, frogs, and large insects. **Breeding**: Nests are usually built in reedbeds, sometimes well above the water. Unlike many harriers, this species does not form communal roosts (normally roosts solitary) and is monogamous and remains on the breeding territory for most of the year (Brown *et. al*., 1982). Although the CBA maps suggest that Field 2 might have impacted on wetland areas, no typical wetland vegetation or indications were observed during the site verification. Given its wetland habitat- and reedbed nesting preferences, it is considered unlikely to highly unlikely that the proposed development will have any significant impact on the breeding or feeding patterns of this

FEATURES	MOTIVATION
	species. With regards to this project the sensitivity rating is considered to be **Low sensitive**.
Circus maurus (Black Harrier) **Endangered (EN)**	**Status**: The Black harrier is an **endangered** bird and one of southern Africa's rarest endemic raptors (Birdlife International, 2023). **Habitat**: It favours Renosterveld, short Fynbos and Karoo habitat, where it breeds in shallow nests on the ground. These birds are mostly associated with larger, well-connected, and more pristine patches of veld and is often considered an indicator of well-preserved natural veld (Curtis-Scott *et. al.*, 2020). Due to the existing agricultural activities, it is unlikely that the impacted areas would have been preferred habitat (given the regular human activities associated with agriculture). It is considered unlikely that the development would have had any significant additional impact on this species' breeding or feeding patterns. With regards to the is project the sensitivity rating should be **Low Sensitive**.
Invertebrate - Medium *Aneuryphymus montanus* Yellow-winged Agile Grasshopper **Vulnerable (VU)**	**Status**: The Yellow-winged Agile Grasshopper is a **vulnerable** endemic to the Cape region of South Africa. The continuing decline in the quality of habitat have resulted in a continuing decline in the number of mature individuals inferred. It is only known from six localities in the Cape region of South Africa. The main threats to this species are conversion of its habitat into farmland and invasions of non-native plant species (Hochkirch *et al.*, 2018). **Distribution**: Known from the Langkloof Valley, 16 km west of Kareedouw (Brown, 1960 in Hochkirch *et.al.*, 2018), while iNaturalist show 4 observations of for this species near Botriver, and Suurbraak in the Overberg District Municipality (https://www.inaturalist.org/). **Habitat**: The species is associated with fynbos vegetation, where it has been collected "amongst partly burnt stands of evergreen sclerophyllous plants in rocky foothills" (Brown, 1960 in Hochkirch *et.al.*, 2018). It prefers south-facing cool slopes (Kinvig, 2005 in Hochkirch *et.al.*, 2018). The development did impact on fynbos vegetation (even though disturbed) located on a south-facing cooler slope. The veld is also regularly burned according to the landowner. It is thus possible that the development might have impacted on a small portion of habitat for this species, but because of the small scale of the development it is considered unlikely that it would have resulted in any significant impact on the survival of this species. With regards to this project the sensitivity rating is considered **Low sensitive.**

7. TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

The development entailed the enlargement of two agricultural fields (one by 2.91 ha and one by 4.8 ha) and the construction of a small farm dam of approximately 640 m^2. Note that to date, only a portion of 4.8 ha extension had been developed (the remainder had been ripped but was never planted).

7.1. DISCUSSION OF THE IMPACTS ON TERRESTRIAL BIODIVERSITY

Vegetation: The farm dam overlap existing agricultural land (dryland annual crops) and would not have resulted in any additional impact on natural veld. The field enlargements impacted on virgin soils (in both cases it seems to have impacted on previously cultivated or disturbed veld). In both cases the vegetation had been laying fallow for a long period of time and indigenous vegetation had started to re-establish itself, but plant diversity were low, and the vegetation comprised mostly of hardy- and early successional species. However, the vegetation type is considered endangered, and any suitable remaining habitat should be protected. Thus, even though the impacted areas were disturbed the impact on vegetation is considered **Medium-Low**.

Plant species (Flora): No plant species of conservation concern were found in the adjacent veld, and it is considered unlikely that the development would have had any significant additional impact on sensitive plant species. As a result, the potential impact on species of conservation concern is considered **Low Negative**.

Critical Biodiversity Areas: According to the 2017 WCBSP the small dam would have impacted on a terrestrial CBA2, while both agricultural expansions overlapped terrestrial CBA1 areas (Figure 5). Field 2's also overlapped an area mapped as an aquatic CBA1 (unchanneled valley bottom wetlands associated with the Duivenhoks River). The site verification showed that:

- The small dam impacted on transformed agricultural land and should be described as transformed (existing agricultural land).
- Field 1 impacted on previously cultivated land that has been lying fallow for between 15 – 20 years. Because of the low species diversity and lack of sensitive species encountered a status of ESA1 or CBA2 is considered more appropriate.
- Field 2 also impacted on previously disturbed land (most likely cultivated) that has been laying fallow for up to 40 years but was still regularly burned and used for cattle grazing. No typical wetland vegetation or indications were observed during the site verification. Again, because of the low species diversity and lack of sensitive species encountered a status of ESA1 or CBA2 is considered more appropriate

Animal species (Fauna & Avi-Fauna): Four sensitive birds and one sensitive invertebrate species might be encountered in the vicinity of the developments.

- It is considered unlikely that the development would have resulted in any significant additional impact on the breeding or feeding patterns of any of the bird species.
- It is possible that the development might have impacted on a small portion of habitat for Invertebrate species, but because of the small scale of the development it is considered unlikely that it would have resulted in any significant impact on the survival of this species

- With regards to this project the sensitivity rating is considered to be **Low sensitive** (Table 8).

NB: Please note that, because of the small size of the dam and the fact that it was placed within existing agricultural land the impact of the construction of the dam on terrestrial biodiversity is considered almost negligible. As a result, it was not discussed in the Impact Assessment below (Table 9).

7.2. INDIRECT IMPACTS

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

In this case the indirect impact is limited to the transformation of a relatively small portion of fallow land overlapping an endangered vegetation type within a CBA area. Because of the low species diversity and lack of sensitive species the impact on vegetation or species is considered **Medium-Low**. The development would have resulted in further impacts on the ecological corridor along the Duivenhoks River but is relatively localised. The impact on connectivity is thus considered **Medium-Low Negative**.

7.3. THE NO-GO ALTERNATIVE

The No-Go alternative is not applicable in this case.

7.4. TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

The aim of the terrestrial biodiversity assessment is to evaluate the impacts resulting from the proposed development and its associated activities, taking all of the discussion in this report into account. It also evaluates the expected accumulative impact of the development. Refer to Table 6 (Heading 3.4.3) for a description of how the colouring relates to the significance categories in Table 9.

Table 9: Impact assessment associated with the proposed activity.

Impact assessment								
Aspect	**Mitigation**	**CV**	**Lik**	**Dur**	**Ext**	**Sev**	**Significance**	Short discussion
Vegetation status: Loss of vulnerable or endangered vegetation and associated habitat.	Without mitigation	4	2	4	2	2	40	Transformation of about 8ha of endangered vegetation for agriculture. Site verification shows that these areas were previously cultivated or disturbed.
	With mitigation	4	2	4	1	1	32	Ensure that suitable ecological corridors are maintained along river systems and that remaining natural veld on the property is managed with care.
Conservation priority: Potential impact on protected areas,	Without mitigation	4	3	4	2	2	44	Potential impact on 8ha of disturbed natural veld within CBA1. Site verification suggests a status of ESA1 or CBA2 is more appropriate.

Impact assessment								
Aspect	**Mitigation**	**CV**	**Lik**	**Dur**	**Ext**	**Sev**	**Significance**	Short discussion
CBA's, ESA's or Centre's of Endemism.	With mitigation	4	2	4	1	1	32	Ensure that suitable ecological corridors are maintained along river systems and that remaining natural veld on the property is managed with care.
Connectivity: Potential loss of ecological migration corridors.	Without mitigation	3	3	4	2	2	33	Potential impact on 8ha of disturbed natural veld within CBA1. Site verification confirms an additional, but localised impact on the river corridor.
	With mitigation	3	2	4	1	1	24	Ensure that suitable ecological corridors are maintained along river systems and that remaining natural veld on the property is managed with care.
Protected & endangered plant species: Potential impact on threatened or protected plant species.	Without mitigation	3	2	4	1	2	27	Potential, but unlikely, impact on sensitive plant species (Refer to Heading 4.6). None of these species were observed in the areas surrounding the impacted areas.
	With mitigation	3	1	4	1	1	21	Ensure that remaining natural veld is managed with care.
Fauna & Avi-fauna Potential impact on mammals, reptiles, amphibians & birds.	Without mitigation	3	2	4	1	2	27	Potential (but unlikely) impact on sensitive bird- and invertebrate species (Refer to Heading 6.1).
	With mitigation	3	1	4	1	1	21	Ensure that suitable ecological corridors are maintained along river systems and that remaining natural veld on the property is managed with care.
Cumulative impacts: Cumulative impact associated with proposed activity.	Without mitigation	4	3	4	2	2	44	Transformation of about 8ha of (disturbed) endangered vegetation for agriculture within a CBA.
	With mitigation	4	2	4	1	1	32	Ensure that suitable ecological corridors are maintained along river systems and that remaining natural veld on the property is managed with care.

According to the DFFE screening report (Appendix 1) the Terrestrial Biodiversity Theme Sensitivity is considered **HIGH SENSITIVE** because the development footprint overlaps an **ENDANGERED** vegetation type, within a CBA1.

In Table 9 the accumulative impact (based on site verification), is considered to be **Medium/Low negative**, mainly because of the potential impacts on an endangered vegetation type within a CBA.

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

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

For this development the impact on Terrestrial Biodiversity is considered **Medium-Low Negative**.

7.5. SITE SENSITIVITY EVALUATION MAP

Figure 10 is a historical Google Image from 2007, showing what is believed to be historical disturbance footprints in relation to the recent developments.

Field 1: The yellow area shows an area that was likely disturbed / previously ploughed. It shows that the new development falls within an area previously ploughed, but which had been laying fallow for between 15 – 20 years. Old plough- and erosion prevention furrows, together with the plant species composition seems to confirm this conclusion or assumption.

Field 2: Again, the yellow area indicate the area that is believed to be previously disturbed, while the orange area shows the new development. The boundaries of the disturbance footprint is based on historical google images and on physical disturbances still visible (e.g. an old access route still visible in images from 2004 likely marked the boundary of the old field). The vegetation suggests that this area was most likely ploughed in the past (although it could be the result of an altered fire regime coupled with constant livestock grazing).

Figure 10: 2007 Google Image showing historical disturbance footprints (yellow), in relation to the new developments (red/orange)**.**

8. DISCUSSIONS & RECOMMENDATIONS

The following is based on the evidence collected during the site verification:

- The farm dam did not impact on any virgin land or indigenous vegetation but is within 32 m of a small watercourse. Construction did not result in any additional impact on the watercourse, or the very disturbed and heavily infested riparian zone associated with the small stream.
- Field 1 impacted on fallow land (virgin soils) that was not ploughed for at least the last 15 – 20 years. At the time of the development the vegetation type was still listed as vulnerable.
- Field 2 impacted mostly (apart from small areas) on disturbed land (most likely old, ploughed fields), that has been laying fallow for up to 40 years. Historical images from 1985 (Figure 8) seems to support the fact that it was ploughed in the past. At the time of the development this vegetation type was listed as endangered.

Although the development footprints most likely impacted on previously disturbed and most likely cultivated areas, the vegetation type is considered **endangered**, and it overlaps an area identified a **CBA** area (Please refer to the discussion pertaining to the CBA area under Heading 7.1). As a result, the following impact mitigation recommendations are proposed:

- The palmiet (*Prionium serratum*) peat wetlands associated with the Duivenhoks River are highly sensitive to disturbance. All activities in close proximation to the Duivenhoks River must aim at preventing any disturbance to these wetlands. The Field 2 development must maintain a suitable buffer area to ensure that the palmiet wetlands are protected. It is recommended that at the very minimum, a buffer of at least 32m is maintained from the edge of the watercourse to the cultivated areas (also refer to recommendations made in the Freshwater specialist study).
- Alien invasive species along the Duivenhoks River and smaller watercourses must be removed systematically in accordance with a documented alien eradication strategy.
- Any additional impact on remaining endangered vegetation types, especially within a CBA must be prevented (NEMA EIA approval must be obtained for any future development plans).

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APPENDIX 1: DFFE SCREENING REPORT

APPENDIX 2: CURRICULUM VITAE – P.J.J. BOTES

Curriculum Vitae: Peet JJ Botes

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

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

BRIEF RESUME OF RELEVANT EXPERIENCE

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

2005-2010: Joined Enviroscientific, as an independent environmental consultant specializing in wastewater management, botanical and biodiversity assessments, developing environmental management plans and strategies, environmental control work as well as doing environmental compliance audits and was also responsible for helping develop the biodiversity part of the Farming for the Future audit system implemented

by Woolworths. During his time with Enviroscientific he performed more than 400 biodiversity and environmental legal compliance audits.

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

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

LIST OF MOST RELEVANT BOTANICAL & BIODIVERSITY STUDIES

Botes. P. 2007: Botanical assessment. Schaapkraal, Erf 644, Mitchell's Plain. A preliminary assessment of the vegetation in terms of the Fynbos Forum: Ecosystem guidelines. 13 November 2007.

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Botes, P. 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.

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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.