



NICK HELME BOTANICAL SURVEYS

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Pri.Sci.Nat # 400045/08

**BOTANICAL AND FAUNAL IMPACT
ASSESSMENT OF VEGETATION CLEARING
(PROPOSED AND PAST) AND INSTREAM DAM
ENLARGEMENT, REM OF PTN 1
MELKHOUTRIVIER 492, MALGAS,
SWELLENDAM.**

Submitted to: PHS Consulting, Hermanus

Client: Mr H. Booysen, Somerset West

4 Sep 2025

Draft: 24 October 2023

DECLARATION OF INDEPENDENCE

In terms of Chapter 5 of the National Environmental Management Act of 1998 specialists involved in Impact Assessment processes must declare their independence and include an abbreviated Curriculum Vitae.

I, N.A. Helme, do hereby declare that I am financially and otherwise independent of the client and their consultants, and that all opinions expressed in this document are substantially my own, notwithstanding the fact that I have received fair remuneration from the client for preparation of this report.



NA Helme

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Since 1997 I have been based in Cape Town, and have been working as a specialist botanical consultant, specialising in the diverse flora of the great Cape Floristic Region. Since the end of 2001 I have been working on my own and trade as Nick Helme Botanical Surveys.

A selection of previous work undertaken in the region is indicated below:

- Botanical assessment of proposed development on Ptn 29 of Farm 410 Caledon (PHS Consulting 2022)
- Botanical assessment of Ptns 3 & 6 of Farm 563 Kleinmond (Lornay Environmental 2021)
- Botanical assessment of Ptn 9 of Farm 429 Gabrielskloof, Caledon (Infinity Environmental 2021)
- Baseline ecological assessment of Karwyderskraal 584, Caledon (Terramanzi 2021)
- Botanical impact assessment of proposed development of Ptn 29 of Farm 410, Caledon (PHS Consulting 2021)

- Biodiversity Compliance Statement - Philippi erf 1/1460 (Infinity Environmental 2020)
- Botanical assessment of Kleinmond WWTW expansion (Aurecon 2020)
- Botanical assessment of Struisbaai cemetery sites (Infinity Environmental 2020)
- Botanical assessment of MoPama development site, Swellendam (Landscape Dynamics 2020)
- Botanical assessment of Ptn of Rem of Erf 1 Caledon (Theewaterskloof Municipality 2019)
- Botanical assessment of proposed sand mine near Brandvlei Dam (PHS Consulting 2017)
- Scoping and Impact Assessment of Proposed Wind Energy Facility near Swellendam (CSIR 2010)
- Scoping Assessment of Proposed Wind Energy Facility near Bredasdorp (CSIR 2010)
- Scoping and Impact Assessment of proposed Wind Energy Facility near Caledon (Savannah Environmental 2010)
- Scoping and Impact Assessment study of Proposed Wind Energy Facility near Caledon (Arcus Gibb 2009 & 2010)
- Impact Assessment of proposed Blue Crane Signature Golf Estate, Caledon (Doug Jeffery Environmental Consultants; 2010)
- Kogelberg Biosphere Reserve corridor study (CapeNature; 2008)
- Botanical Assessment of Erf 173, Hawston (PHS Consulting; 2008)
- Botanical Assessment of Farm 587/6, Cloud's End, Hemel & Aarde (Peter Dall Consultancy; 2007).
- Botanical Scoping and Impact Assessment of proposed Romansbaai development, Danger Point (Doug Jeffery Environmental Consultants; 2006 & 2007)
- Botanical Assessment of Erf 4574, Betty's Bay (Headland; 2006)
- Botanical Assessment of Erf 4570 and Erf 4576, Betty's Bay (Headland; 2006)
- Botanical Assessment of Erf 589 and Ptn. Erf 595, Greyton (DJ Environmental Consultants; 2006)
- Botanical Assessment of eastern portion of farm Afdakrivier 575, Fisherhaven (Mr J. Carstens; 2006)

TABLE OF CONTENTS

Introduction	1
Terms of Reference	3
Limitations, Assumptions & Methodology	4
Study Area Context	4
Description of the Vegetation	7
Plant Species of Conservation Concern	12
Botanical Conservation Value	14
Fauna	14
Impact Assessment	16
Required Mitigation	22
Conclusions and Recommendations	24
References	26

1. INTRODUCTION

This biodiversity assessment was commissioned in response to a Pre-Compliance and a Pre-Directive notice issued to Mr H Booysen by the Department of Environment Affairs and Development Planning on 9 Feb 2022, and a similar notice of intention to issue a directive issued by the Breede-Gouritz Catchment Management Agency on 24 May 2021. These documents confirmed that unlawful activities had been undertaken in the vicinity of two existing (but largely abandoned and sedimented up) instream dams on the site (Rem of Portion 1 of Farm Melkhoutrivier 492, Swellendam, 1073ha in total) without environmental authorisation, but none included any accurate maps of the extent of the impacts identified, none discussed any loss of identified natural vegetation, and none identified any other impacts such as ancillary road construction. As part of the current application consideration of the eastern firebreak, a new tourist lodge (proposed) and two owner's houses (built since 2021) have been added to the assessment.

During this survey an approximately 1km new access road was also surveyed, evidently created in late 2021, although small sections of this road (along the old fields) appear to have been present as far back as 2012. In addition a 250m section of firebreak, cleared by means of surface scraping, was created along the northeastern boundary, between March 2021 and March 2022, resulting in short to long-term loss of about 0.12ha of Eastern Ruens Shale Renosterveld.

A map of the study areas is shown in Figures 1a & 1b. The property is currently run as a sort of game farm, breeding various exotic, extralimital animals (such as sable, and apparently giraffe arriving soon). These are currently housed and grazed entirely on old, cultivated lands.

It is clear from Google Earth time series imagery that dam 1 (the larger, lower dam) was cleared out and upgraded between August 2019 and July 2020, and that dam 2 (the smaller, upper one) was similarly cleared out and upgraded between July 2020 and March 2021. It is also clear from the imagery that the access road was cleared/enlarged between March 2021 and March 2022. In the period from October 2022 (most recent Google Earth imagery) to Nov 2023 (Cape Farm mapper imagery; see Figure 1c) two new houses and a shed have been built in an area of natural vegetation next to old lands (0.27ha footprint).

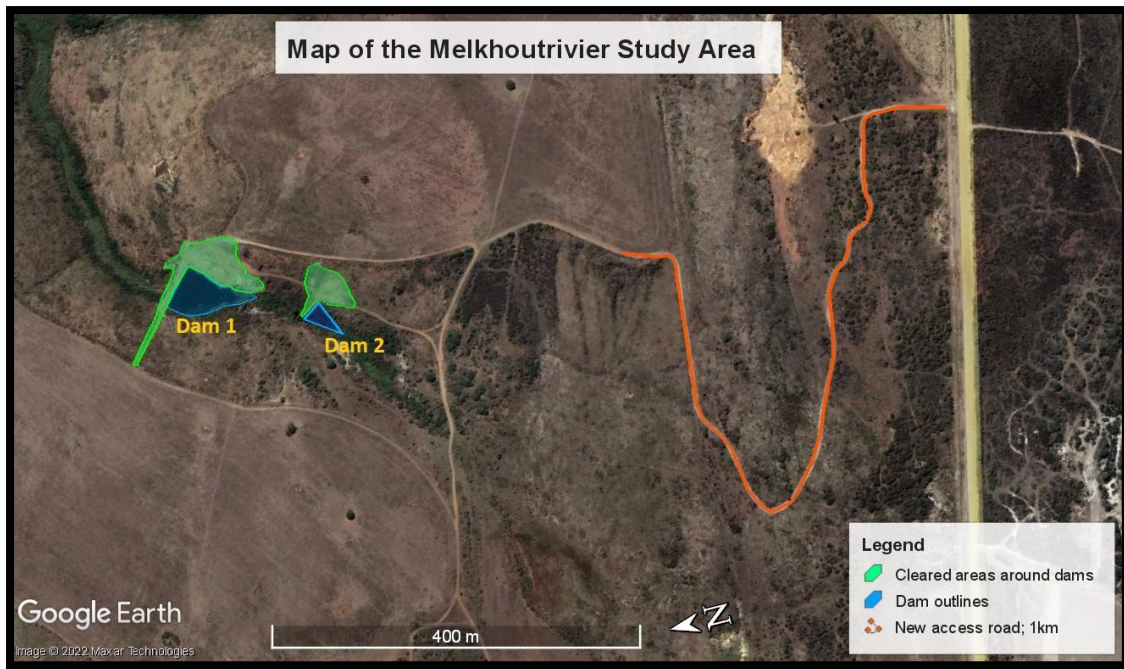


Figure 1a: Google Earth image (dated March 2022) of the southern study areas, showing the two dams, recently cleared areas around the dams, and the new/enlarged access road. Dam 1 is the larger dam downstream, and Dam 2 is the smaller dam to the south.

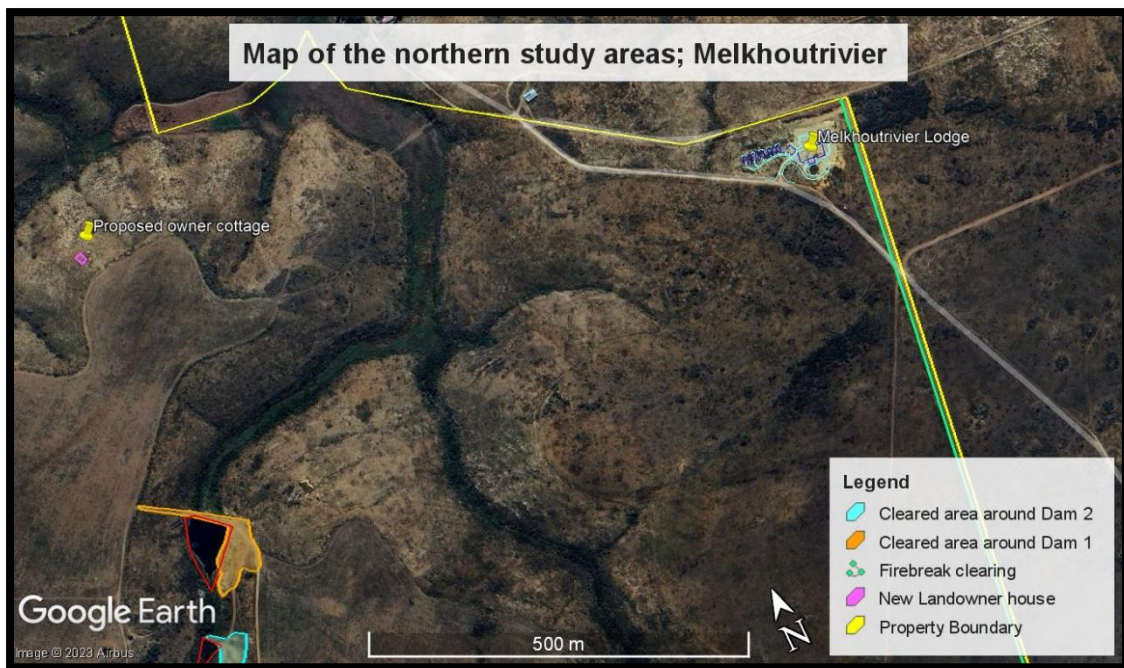


Figure 1b: Google Earth image (dated March 2022) of the northern study areas, showing recently cleared areas around the dams, eastern firebreak clearing, proposed new owner cottage (two houses and a shed now built here; see Fig 1c) and proposed lodge.

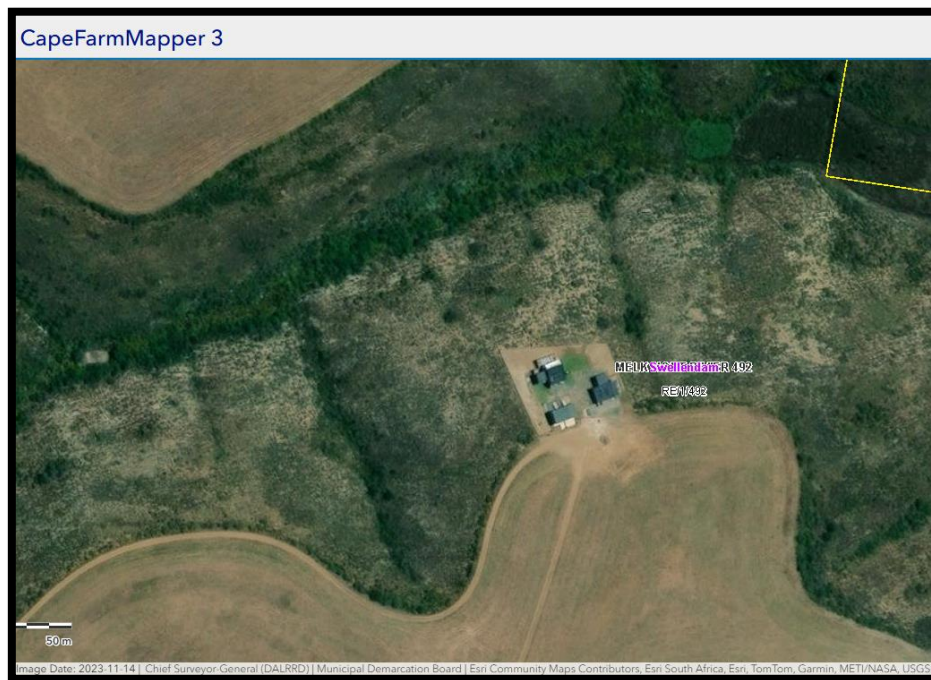


Figure 1c: Screenshot from Cape Farm Mapper, showing two new houses and shed in November 2023, built in area marked in Figure 1b as “proposed owner cottage”.

2. TERMS OF REFERENCE

The terms of reference for this study were as follows:

- Undertake a site visit to assess the vegetation and fauna in the study area
- Identify and describe the vegetation and fauna in the study area and place it in a regional context, including its status in terms of the relevant CapeNature Spatial Biodiversity Plans (CBA/ ESA/ONA, etc)
- Identify and locate any (likely) plant Species of Conservation Concern in the study area, based on observation, literature and iNaturalist website review
- Provide an overview and map (Google Earth kmz files) of the botanical and faunal conservation significance (sensitivity) of the study area
- Identify any sensitive habitats and rare or threatened plant and faunal species (SCC) that may have been impacted
- Identify and assess the likely botanical and faunal impacts of the dam and road expansion, the new houses, and the irrigation of old cultivated lands, before and after mitigation (using standard IA methodology)
- Provide all mitigation and rehabilitation requirements for any identified negative impacts on the vegetation and fauna.

3. LIMITATIONS, ASSUMPTIONS AND METHODOLOGY

The property was visited on 8 November 2022, which is outside the optimal winter - spring flowering season in this largely winter rainfall region. Most, but not all perennial plant species were identifiable, but few of the seasonally evident bulbs and annuals were identifiable and evident. It is thus possible that certain plant Species of Conservation Concern may have been overlooked (*i.e.* were not evident) in the cleared areas, due to both the seasonal constraints and the recent clearing. Not all areas were visited, and notably the house footprint/s and eastern boundary areas were not surveyed. However, the author believes that sufficient information was available to make an accurate assessment of the vegetation in both the cleared and surrounding areas and its botanical and faunal significance, and the confidence level in the accuracy of the findings is high.

All plant species were noted in the field, and various digital photographs were taken (using a Motorola phone camera). The GIS based South African National Biodiversity Institute (SANBI) vegetation map for South Africa (Mucina & Rutherford 2006 and 2018 online update) was consulted, along with the National List of Threatened Ecosystems (DEA 2011, and Skowno *et al* 2019 update), and other relevant references noted in the text. Photographs of particular species observed on site, including most of the SCC, have been posted to the biodiversity website inaturalist.org. Conclusions were drawn based on this documentation and professional experience in the area and the region. Faunal observations were made whilst on site, but no trapping or photography was undertaken.

Google Earth satellite imagery dated March 2022 (and earlier, notably July 2020 and March 2021) was used to verify vegetation patterns, cleared areas and the chronology, and for mapping purposes. Google Earth was used to measure areas.

It is assumed that all mitigation recommendations made in this report will be included in any environmental authorisation, and that they will be adequately and timeously implemented.

4. STUDY AREA CONTEXT

The study area is located in the Lower Breede River Valley, and is within the Core Cape Subregion (CCR) of the Greater Cape Floristic Region (GCFR; Manning & Goldblatt 2012). The study area is part of the Fynbos biome. The GCFR is one of

only six Floristic Regions in the world, and it is also by far the smallest floristic region. The Core Cape Subregion occupies only 0.1% of the world's land surface, and supports about 9400 plant species, almost half of all the plant species in southern Africa, and some 20% of the plant species in sub-Saharan Africa. About 68% of all the species in the CCR do not occur elsewhere, and many have very small home ranges (these are known as narrow endemics). Most of the lowland habitats are under pressure from agriculture, urbanisation and alien plants, and thus many of the range restricted species are also under severe threat of extinction, as habitat is reduced to extremely small fragments. Data from the Red Data Book listing process undertaken for South Africa is that 67% of the threatened plant species in the country occur only in the Fynbos biome, and these total over 1800 species (Raimondo *et al* 2009)! It should thus be clear that the southwestern Cape is a major national and global conservation priority, and is quite unlike anywhere else in the country in terms of the number of threatened plant species. Developments in this area thus need to take this into account.

The study area could be considered to be part of the East Coast Renosterveld bioregion (Mucina & Rutherford 2006). More than 75% of this bioregion has been heavily impacted by agriculture, and consequently very little natural vegetation remains, and virtually all remnants support large numbers of threatened plant species (Raimondo *et al* 2009).

The CapeNature Spatial Biodiversity Plan (CapeNature 2023; see Figures 2a & 2b) shows that the cleared areas around the dams are mapped as CBA1 (terrestrial), with the lower dam area being a CBA1 (wetland) and the upper dam mapped as CBA1 (terrestrial). The access road passes through unmapped habitat, Ecological Support Area (ESA1), and CBA1. CBA stands for Critical Biodiversity Area, and CBA1 is the highest priority level. CBAs are Critical Biodiversity Areas, and should not be developed, lost or impacted, as they support critical habitat and species, and appropriate land uses should be low impact and biodiversity sensitive. The CBA mapping for this site is largely supported by my site observations. It is clear from this mapping that most of the clearing around the dams was undertaken in areas mapped as CBA1 (terrestrial), as was the building of about 65% of the area for the three new owner houses. As per the DEA&DP directive the proposed or actual clearing of vegetation from a mapped CBA is an Environmental Impact Assessment trigger (EIA Regulations Listing Notice 3 of 2014: Activity no.12).

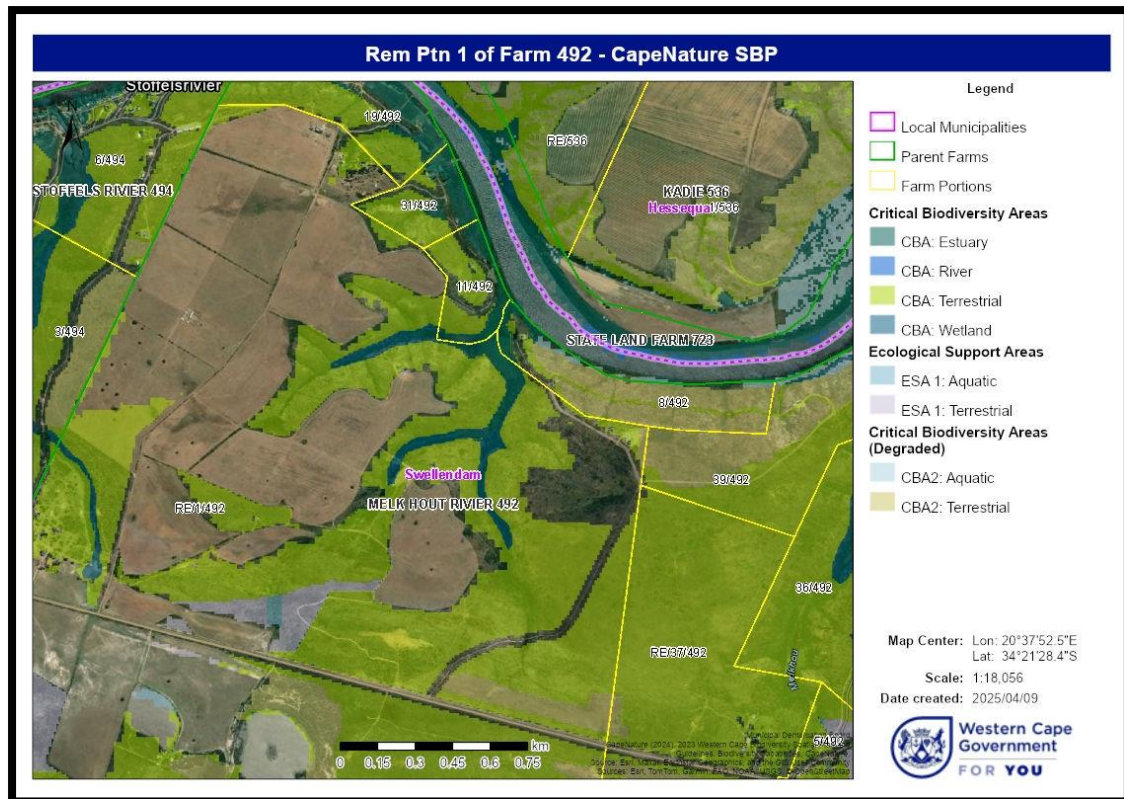


Fig 2a: Extract of the CapeNature Spatial Biodiversity Plan for the property (CapeNature 2023), showing that most natural vegetation areas are mapped as CBA1. Most of the eastern boundary fence is mapped as CBA1. CBA stands for Critical Biodiversity Area, and CBA1 is the highest priority level.

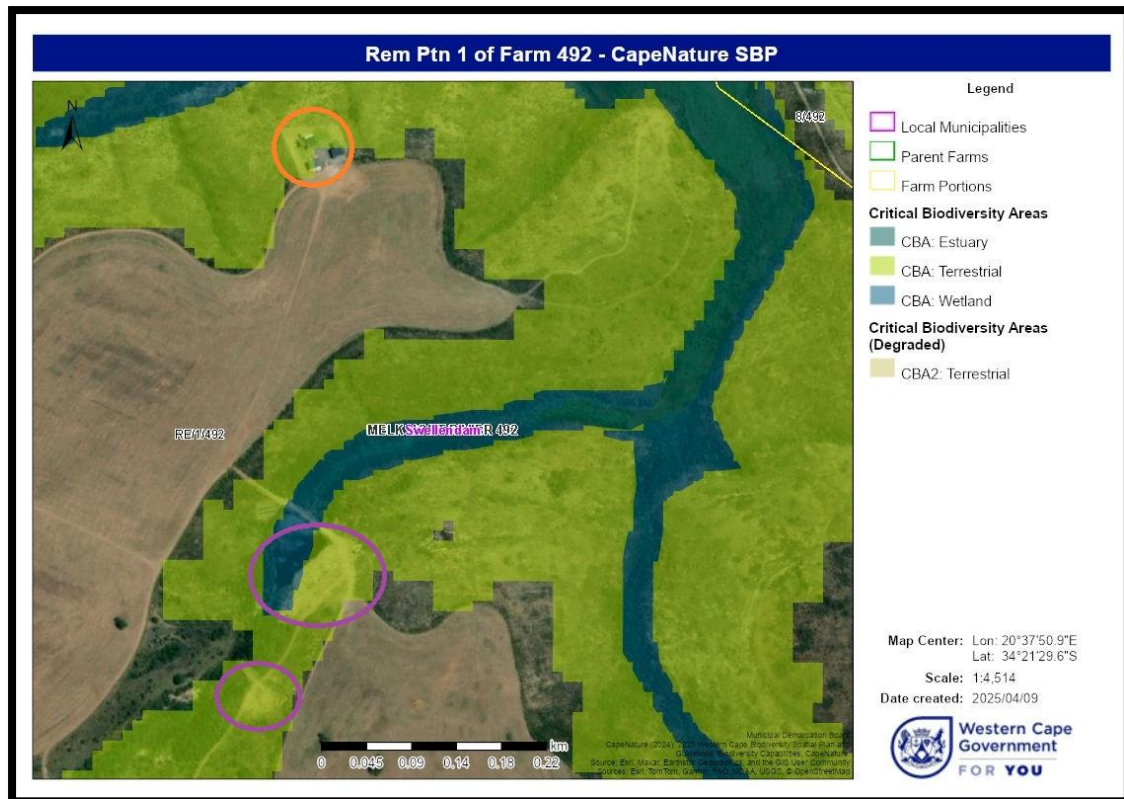


Fig 2b: Closeup of the CapeNature Spatial Biodiversity Plan (CapeNature 2023) showing that the 65% of the owner house area (orange circle) is mapped as CBA1 (terrestrial), as are both dam areas (purple ellipses)

5. DESCRIPTION OF THE VEGETATION IN THE STUDY AREA

5.1 Description of the Study Area

The two dams and the residential units are located in areas underlain by shales, and these drainage lines feed into the Breede River. The dams are fed by a natural spring some 100m above the upper dam, and both contained water at the time of the survey, with the upper dam overflowing into the lower dam. The soils on site are clay loams, with extensive surface shale evident. Most of the study area was burnt about 3 to four years ago in a wildfire, but some patches escaped that fire and have not burnt for much longer. The access track skirts a quartzite (sandstone) outcrop, and soils in most of this area are loams, with extensive sandstone and manganese rich alluvial pebbles.



Plate 1: View of upper (western) dam (dam 2), dam wall and partly cleared area in foreground, looking northwest.



Plate 2: View (looking west) of lower dam (dam 1), partly rehabilitated cleared area and untouched Renosterveld in foreground.



Plate 3: View of portion of new access track.

5.2 The Vegetation on Site

The vegetation map of South Africa (Mucina & Rutherford 2018; see Figure 3) indicates that two vegetation types are present in the area – Potberg Ferricrete Fynbos and Potberg Sandstone Fynbos, and I agree with this broad classification, but also note that what could be classified as Eastern Ruens Shale Renosterveld (Critically Endangered) is present in the river valleys and on the slopes (including in the areas impacted by the dams), but is not formally mapped as such.

Potberg Ferricrete Fynbos is restricted to alluvial soils with extensive sandstone cobbles, in the lower Breede River Valley. Due to the loamy soils, and the relatively gentle topography the area has a long history of agriculture (originally for cereals, but now with extensive olives and even vines). With only 60% of its original extent remaining, only 5% conserved and a national conservation target of 30% of original total extent (Rouget *et al* 2004), the vegetation is now gazetted as **Critically Endangered** (Government of South Africa 2022). Both dams are located within what is formally mapped as this vegetation type, although based on the presence of exposed shale (rather than alluvium) the vegetation in the dam footprints is actually best classified as **Eastern Ruens Shale Renosterveld**, which is also Critically Endangered).

Potberg Sandstone Fynbos is restricted to sandstone derived soils on the Potberg massif, bordering on the lower Breede River Valley. Due to the sandy soils, and inclusion of much of it in the De Hoop Nature Reserve, the vegetation is gazetted as **Least Threatened** (Government of South Africa 2022). This unit still has 95% of its original extent remaining, some 46% is conserved and the

national conservation target of 30% has been achieved (Rouget *et al* 2004). The access road upgrade is located within this vegetation type.

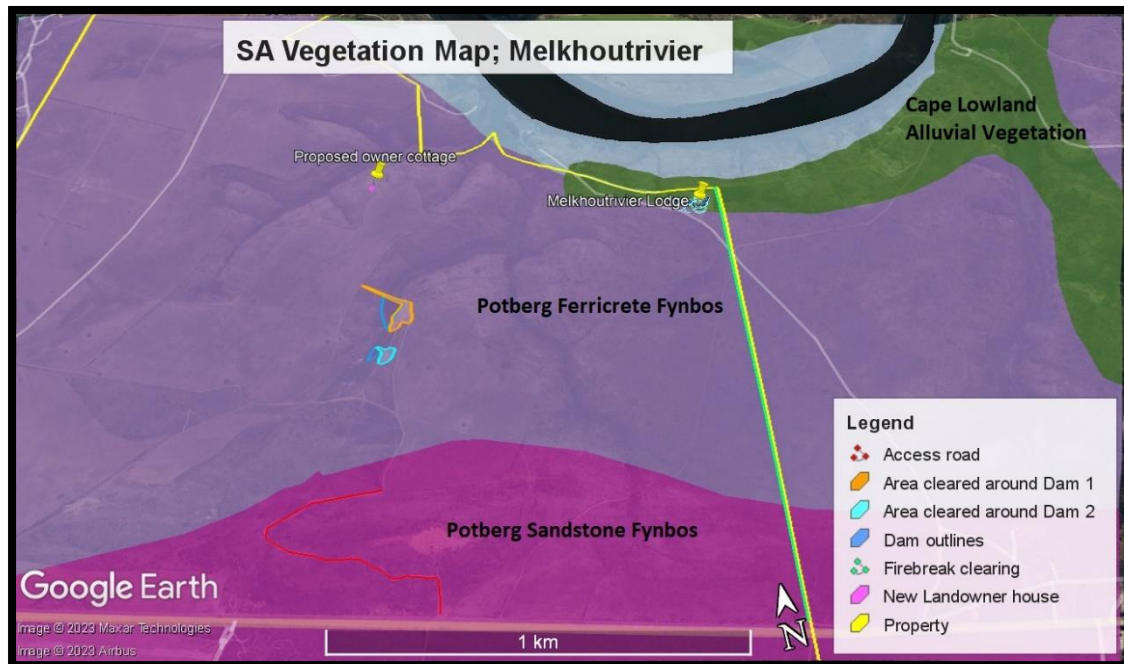


Figure 3: Extract of the SA Vegetation Map of South Africa, showing the mapped extent of the vegetation types in the area. The mapping of Cape Lowland Alluvial Vegetation in the northeast corner is not correct, and is shown as extending 50-100m too far south, and thus the proposed lodge is actually located within what should be mapped as Potberg Ferricrete Fynbos.

5.2.1 Dam 1 and 2

Judging by the available satellite imagery from August 2019, prior to dam excavation and clearing, the vegetation in the sediment-filled dam footprints was dense (100% cover), and composed of 30-50% canopy cover of alien invasive species such as rooikrans (*Acacia cyclops*), black wattle (*Acacia mearnsii*) and Port Jackson (*Acacia saligna*). Open water was significantly less than it is now. Indigenous species likely included those still present above and below the dams, such as *Morella serrata*, *Osteospermum moniliferum*, *Nidorella ivifolia*, *Searsia lucida*, *Gymnosporia buxifolia*, *Cotula coronopifolia*, *Fuirena* spp., *Athanasia trifurcata*, *Cyperus textilis*, *Isolepis costata*, *Aizoon africanum*, and *Cyperus* spp. From a botanical perspective the sensitivity would have been moderate (having been the site of previous disturbance when the dams were constructed), and no plant Species of Conservation Concern (SoCC) are likely to have been impacted by dam clearing within the wetland areas. The vegetation in the dam footprints now includes the above species, and drowned specimens of the alien trees noted

above. The wetland fringing vegetation is representative of this habitat throughout the region.

The adjacent areas where soil was harvested for the enlarged dam walls cover about 0.65ha in total (including dam walls), and these were in areas that had not been previously cultivated, and they thus probably supported largely natural vegetation. The vegetation type in these shale areas is actually much closer to **Eastern Ruens Shale Renosterveld** (gazetted as an Endangered unit) than the mapped Potberg Ferricrete Fynbos. Typical species observed in the nearby undisturbed areas include *Polygala fruticosa*, *Dicerotheramnus rhinocerotis*, *Selago glutinosa*, *Berkheya rigida*, *Athanasia trifurcata*, *Phyllaea* sp., *Thesium* sp., *Aspalathus steudeliana*, *Ficinia gracilis*, *Oedera imbricata*, *Gnidia laxa*, *Helichrysum asperum*, *Anthospermum prostratum*, *Drimys capensis*, *Aspalathus spinosa*, *Carissa bispinosa*, *Asparagus aethiopicus*, *Cynodon dactylon*, *Eragrostis curvula*, *Senecio burchellii*, *Euclea acutifolia*, *Atriplex semibaccata*, *Aizoon africanum*, *Chrysocoma ciliata*, *Searsia lucida*, *Carpobrotus* sp., *Pelargonium grossularioides*, *Falkia repens*, *Hermannia lavandulifolia* and *Abutilon sonneratianum*.

Indigenous plant diversity and cover is recovering well in the previously scraped areas next to the dams, and is currently about 60% of the adjacent undisturbed areas, and is expected to progress to 80% within the next two years.

5.2.2 Access Road

The access road skirts a low sandstone ridge (with Potberg Sandstone Fynbos elements), and traverses an area that has been aggressively invaded by alien shrubs such as rooikrans (*Acacia cyclops*) and Port Jackson (*Acacia saligna*). The road is an average of 4-5m wide, and indigenous vegetation grows right up to the edge of the road, as does a lot of alien vegetation. Many of the same indigenous species as noted in Section 5.2.1 occur in this area, along with *Blepharis capensis*, *Lobostemon daltonii*, *Serruria ludwigii*, *Erica quadrangularis*, *Struthiola argentea*, *Microdon dubius*, *Metalasia brevifolia* and *Cliffortia stricta*.

5.2.3 Old, cultivated lands

These extensive areas are of no botanical conservation value, and are vegetated with a mix of weedy, secondary indigenous species (*Athanasia trifurcata*, *Cynodon dactylon*, *Helichrysum indicum*, *Ehrharta calycina*, *Arctotheca calendula*)

and various exotic grasses and herbs (*Physalis viscosa*, *Echium plantagineum*, *Lolium*, *Trifolium angustifolium*, *Bromus* spp.).

5.2.4 Eastern Firebreak

This area was not specifically looked at whilst on site, but plant species diversity is clearly high in this area, with a range of soil types driving local habitat diversity. A mix of indigenous species observed around the dams and along the access road is expected, with at least two or three likely SoCC to be present in that area.

5.2.5 Proposed Lodge

The proposed lodge is located in an area that was fully disturbed prior to 2009, as can be clearly seen in satellite imagery. Most of the vegetation that has returned could in fact be rooikrans (*Acacia cyclops*), a highly invasive woody species very common in the area. Indigenous plant species diversity is likely to be low, given the previous soil disturbance, and no plant SoCC are likely. The botanical sensitivity of the proposed footprint area is Low.

5.2.6 Owners house/s

Two new houses and a shed/utility building were built in 2023 on a north facing slope about 25m north of the edge of old cultivated lands. This area was not specifically looked at whilst on site, but judging by satellite imagery time series the site appears to have been natural vegetation until July 2020, and some sort of building footprint is evident there from March 2021, but it was then only about 300m² in extent. In 2023 two new houses and as shed/utility building were built here, and the total disturbance footprint enlarged to 2700m² (Cape Farm Mapper). The botanical diversity in most of this 0.27ha area was probably fairly high, there may have been one or two SoCC present, and the botanical sensitivity was likely to have been Medium to High.

5.3 Plant Species of Conservation Concern (SCC)

Table 1 is a list of the 3 plant Species of Conservation Concern (SCC) that were recorded from the surveyed study area footprints and immediately adjacent areas. This is a relatively low number of SCC, and is indicative of the partly disturbed and alien invaded nature of much of the surveyed area. Many more SCC are likely to be present elsewhere on the greater property, including within some of the unsurveyed footprints (*i.e.* new houses and eastern boundary fence) but not within the actually surveyed study areas.

Two of the three SCC (the *Aspalathus* and *Hermannia*) were commonly recorded in the recently cleared areas near the dams, with no SCC recorded exclusively in the cleared areas, indicating 1) that the disturbance caused by the clearing around the dams has not been significantly deleterious to most species and 2) that the cleared areas still have significant botanical value.

Aspalathus steudelina (Vulnerable) has an EOO of 12 000km² and its population on site (12 plants within 30m of the dams) is not among the largest 10 aggregations known for the species. The population of this species in the study areas (the disturbed areas and immediate surrounds) is regionally of low significance.

Hermannia lavandulifolia (Vulnerable) has an EOO of 12 000km² and its population on site (15 plants within 30m of the dams) is not among the largest 10 aggregations known for the species, which is still common in suitable habitat in much of the southern Cape. The population of this species in the study areas (the disturbed areas and immediate surrounds) is regionally of very low significance.

Lobostemon daltonii (Endangered) is a sandstone species and is locally quite common on sandstone outcrops, and may not have lost any individuals to the new access road, although this is impossible to retrospectively confirm. Its total known range is small (EOO of <20km²), but its population on site (5 plants within 30m of the road) is not among the largest 10 aggregations known for the species. The population of this species in the study areas (the disturbed areas and immediate surrounds) is regionally of low to moderate significance.

The likelihood of there being undetected Species of Conservation Concern in the surveyed study areas on the property is deemed to be Low, but is High in at least one of the unsurveyed study areas (the eastern firebreak), and Moderate for the house footprint area. Required buffer distances for the SoCC are not known, but as long as the ecosystem is still largely functional in the areas where these species occur (notably a natural fire regime with fire once every 10-15 years) no buffers should be required.

Species	Redlist Status	Seen in recently cleared areas around dams and in track	Seen in undisturbed areas nearby
<i>Aspalathus steudeliana</i>	Vulnerable	yes	yes
<i>Hermannia lavandulifolia</i>	Vulnerable	yes	yes
<i>Lobostemon daltonii</i>	Endangered	no	On sandstone outcrops next to access track

Table 1: Table showing the plant Species of Conservation Concern that were recorded from the dam and road study areas.

5.3 Botanical Conservation Value

The botanical conservation value of a site is a product of plant species diversity, plant community composition, rarity of habitat, degree of habitat degradation, rarity of species, ecological viability and connectivity, vulnerability to impacts, restoration potential and reversibility of threats.

Overall conservation value (botanical sensitivity) of most of the undisturbed vegetation on the greater property is **High** at a regional scale, as these areas support good examples of mostly threatened vegetation types, and at least 10 plant Species of Conservation Concern, many of which are poorly conserved.

The actual dam footprints are likely to have been of **Moderate** botanical sensitivity prior to clearing, and the adjacent cleared terrestrial areas are still of **Moderate to High botanical** sensitivity, as is most of the area through which the new access track is routed, and as was the house footprint area.

The botanical sensitivity of the eastern firebreak area is likely to be **High**.

The conservation-oriented management of the High sensitivity vegetation on the greater property would materially contribute to meeting species and habitat conservation targets.

6. FAUNA

No significant faunal impacts are likely to have arisen as a result of the vegetation clearing next to the dams or in the road footprints, largely because the noise associated with such would have caused most of the fauna to vacate the

area and move to suitable nearby habitat, which is still available. The clearing out of the dams would have temporarily disturbed the fauna in these areas, but appears to have recovered fully and quickly, as would be expected.

Birds observed on the dams include Reed Cormorant (*Microcarbo africanus*) and Dabchick (*Tachybaptus ruficollis*), and Red Bishops (*Euplectes orix*) were breeding in the reeds (*Typha capensis*) fringing the dams.

Four species of frogs (all common and widespread taxa) were heard calling in or near the dams – Cape Reed Frog (*Hyperolius marmoratus*; extralimital in this area), Cape River Frog (*Amietia fuscigula*), Clicking Stream Frog (*Strongylopus grayi*) and a Caco species (*Cacosternum* sp.). It would thus appear that the dam clearing activities had no significant negative impacts on frog populations, and a far more serious problem would be drying up of the spring that feeds these dams. This could potentially be caused by 1) increased and excessive abstraction of groundwater 2) sustained droughts and 3) ongoing alien invasive plant invasion. All three are potential and likely issues in the region, and indeed also in the vicinity of the study areas (as referred to in the Conclusion).

Two invertebrates were flagged by the Screening Tool. *Aneuryphymus montanus* (Yellow-winged Agile Grasshopper) is poorly known and seldom recorded, but seems to occur throughout the Overberg Ruens (2 observations on iNaturalist), and there is no way of saying – without a detailed survey by a specialist (capable of identifying it) in the appropriate season whether 1) the species occurs in the area and 2) whether it is likely to have been impacted by any of the activities in or around the dams, or is likely to be impacted elsewhere on site. Given the relatively small footprint of all the impacts assessed (compared to agriculture, the dominant driver of habitat transformation in the region) the impact on this species is likely to have been Low.

Chrysoritis brooksi teari (Brooks Opal) has also been flagged by the Screening Tool, and is a butterfly restricted to the Struisbaai to Stilbaai area, and may well occur in the study area. Its larval foodplant *Roepera* and *Zygophyllum* are present in the area, and its larvae are dependent on *Crematogaster* ants, which are also present in the area. A specialist butterfly survey would be required to confirm its presence, but given the relatively small footprint of all the impacts assessed (compared to agriculture, the dominant driver of habitat transformation in the region) the impact on this species is likely to have been Low.

Eight bird SCC are flagged for this area by the Screening Tool, and seven of these could potentially occasionally occur in or close to the various study areas (all except *Hydroprogne caspia*; Caspian Tern), at various times, although only two of these (*Circus maurus*, Black Harrier and *Afrotis afra*, Southern Korhaan) may occasionally breed within 200m of any of the study areas. None are likely to have been impacted in any significant, permanent way by the clearing activities, although had they been present at the time they would certainly have temporarily moved away. Consequently, the impact on bird SCC is likely to have been Low.

No faunal SoCC are likely to be permanently present with the proposed footprints for the lodge nor for the owner's houses, but some may occasionally be present in the eastern firebreak area, but would not have been negatively impacted in the long term by the clearing of the firebreak. None of the proposed or existing development footprints would need specific buffers in order to mitigate further likely negative impacts on any of the faunal SoCC, largely because all the SoCC are highly mobile and can, and essentially do self-buffer, by moving to the most suitable habitats.

7. IMPACT ASSESSMENT

7.1 Identification and assessment of impacts

Botanical impacts associated with the development of an area may be both direct and indirect, with the former occurring mostly at the construction stage and the latter mostly at the operational stage. Direct impacts may be both permanent and long term. All impacts in this case are negative, although proposed/required mitigation would have notable positive impacts.

Construction Phase Impacts (Direct Impacts)

Some of the primary direct impacts have already occurred, being the temporary degradation and/or clearing of about 0.6ha of previously largely natural Eastern Ruens Shale Renosterveld (although officially mapped as Potberg Ferricrete Fynbos) adjacent to dams 1 and 2, permanent loss of about 0.35ha of vegetation in the access road area (see Figure 1), and long term to permanent loss of about 0.1ha of Eastern Ruens Shale Renosterveld (although officially mapped as Potberg Ferricrete Fynbos) in the northeastern firebreak area (see photo 8 in Photoreport by PHS). As of August 2025 two new houses and a shed have also been built in the "owners cottage proposed footprint" (0.27ha; see Figures 1b and 1c).

Additional impacts here assessed include damage to vegetation within the enlarged dam footprints.

The status of the vegetation in the impacted areas is complicated by the fact that most of it is formally mapped as Potberg Ferricrete Fynbos, but is in fact arguably better classified as eastern Ruens Shale Renosterveld. The former is gazetted as Critically Endangered, whilst the latter is now gazetted as Endangered (Government of South Africa 2022).

Essentially most (>80%) of the vegetation clearing activity was undertaken in areas mapped as CBA1.

Only 3 plant Species of Conservation Concern were recorded in (or next to) the access road area and in (or next to) the areas cleared around the dams, and a further 1 or 2 may have occurred in the area cleared for the firebreak and in the house footprint area. The impact on plant SCC of all the elements assessed is deemed to be Low, and in fact 2 of the 3 SSC have already re-established in the cleared areas around the dams, and their populations are likely to increase in this area.

The removal of natural vegetation in the areas next to the dams generally did not significantly disturb the upper soil layer, except in occasional areas (maybe <10% of total cleared area). This means that the clearing effectively removed all the vegetation above ground, but in most cases did not significantly disturb the seed bank, roots or underground storage organs of the indigenous species. In many respects it was thus akin to very close brushcutting of the vegetation, even though a brushcutter was not used. Natural rehabilitation is thus predicted to be good (Helme & Rebelo 2016), and there is already plenty of evidence of this on site, some 2 to 2.5 years after clearing.

The clearing of the vegetation in the road and firebreak areas appears to have been more comprehensive, especially in the former (not surprisingly). There is thus negligible natural rehabilitation (current and expected) in the road area, and only minor rehabilitation in the firebreak area, although the latter is expected to largely recover over a period of 7-10yrs, if not further disturbed.

The magnitude of the impacts ranges from Medium (ecological functioning previously present in the cleared areas will be partly disturbed) to High (no functioning), duration will be short to permanent (3-10yrs to natural recovery, but >10yrs for road), and extent will be site specific (local). No permanent loss of species or SCC is likely, provided that the cleared areas are allowed to rehabilitate naturally (excluding the access road, where it is not known if any SCC were present prior to clearing, but it seems unlikely that they were).

In the case of the owners house area the construction phase botanical and faunal impacts are likely to have been Low to Medium negative, given that the site was largely natural vegetation prior to 2021, and most of it was a mapped CBA1 with natural vegetation.

The overall construction phase impacts would be **Low to Medium negative**, before and after mitigation. Adequate and appropriate mitigation is only likely to be viable at the operational phase, primarily in the form of natural rehabilitation of disturbed areas and extensive alien vegetation removal on the site.

The impact of the assessed activities on fauna would seem to be low, with a healthy population of 4 frog species currently in the dams, and all the expected waterbirds in and around the dams. No animals are likely to have been permanently and negatively impacted by any of the activities, although the road and firebreak construction may have caused some loss of less mobile taxa (eg. slow moving ants or beetles), and others would have moved away. No faunal SCC are likely to have been permanently impacted by the activities, although some may have been temporarily impacted to a low level. In general the faunal impacts are likely to have been of Low to Medium negative significance, and Low negative after mitigation (operational phase alien clearing).

The No Go scenario here implies ongoing invasive alien plant issues, which is one of three major issues threatening biodiversity in the region, the others being water abstraction and new cultivation. There is currently a serious problem with various invasive alien plant species on the property (and many nearby properties), as these species crowd out the local biodiversity, increase the intensity of wildfires (and hence damage caused), and use a lot of water. Some of the seepage wetlands in the area (including west of the main road) are also clearly being negatively impacted by dropping water tables – possibly due to

large scale water abstraction, and probably in combination with dropping annual rainfall (due to climate change) and excess usage by alien invasive plants.

The required mitigation is discussed in Section 8 of this report.

<u>Impact</u>	<u>Extent of impact</u>	<u>Duration of impact</u>	<u>Intensity</u>	<u>Probability of occurrence</u>	<u>Degree of confidence</u>	<u>Significance before mitigation</u>	<u>Significance after mitigation</u>
0.65ha of vegetation clearance around dams	local	3-10yrs	Medium	Definite	High	Medium -ve	Low -ve
Clearance of dams	local	1-3yrs	Low - Medium	Definite	High	Low -ve	Low -ve
NE firebreak (0.1ha of vegetation loss)	local	3-10yrs	Medium	Definite	High	Medium -ve	Low -ve
Access road clearing	local	>10yrs	High	Definite	High	Medium -ve	Low -ve
Owners houses and shed(0.27ha)	local	permanent	High	Definite	High	Low to Medium -ve	Low to Medium - ve
Proposed lodge	local	permanent	High	Definite	High	Low -ve	Low -ve
No Go	Site	None; although extensive ongoing alien plant invasion	Medium	High	Medium	Low to Medium -ve	Not Applicable

Table 2a: Summary table for the assessed construction phase botanical impacts on the various sites. Mitigation (at the operational phase) includes undertaking appropriate, ongoing alien invasive vegetation management within 100m of all assessed areas, and also on the overall property, plus allowing natural rehabilitation to take its course in most of the cleared areas, although this will occur largely at the operation phase.

<u>Impact</u>	<u>Extent of impact</u>	<u>Duration of impact</u>	<u>Intensity</u>	<u>Probability of occurrence</u>	<u>Degree of confidence</u>	<u>Significance before mitigation</u>	<u>Significance after mitigation</u>
0.65ha of habitat disturbance around dams	local	<3yrs	Medium	Definite	High	Low to Medium -ve	Low -ve
Clearance of dams	local	<2yrs	Medium	Definite	High	Low -ve	Low -ve
NE firebreak (0.1ha of vegetation loss and habitat disturbance)	local	3-10yrs	Medium	Definite	High	Low to Medium -ve	Low -ve
Access road clearing	local	>10yrs	High	Definite	High	Medium -ve	Low -ve
Owners houses and shed (0.27ha)	local	permanent	High	Definite	High	Low -ve	Low -ve
Proposed lodge	local	permanent	High	Definite	High	Low -ve	Low -ve
No Go	Site	None; although extensive ongoing alien plant invasion	Medium	High	Medium	Low to Medium -ve	Not Applicable

Table 2b: Summary table for the assessed construction phase faunal impacts on the various sites. Mitigation (at the operational phase) includes undertaking appropriate, ongoing alien invasive vegetation management within 100m of all assessed areas, and also on the overall property, plus allowing natural rehabilitation to take its course in most of the cleared areas, although this will occur largely at the operation phase.

Operational Phase Impacts

The primary operational phase botanical impacts (post clearing) are habitat fragmentation, and further invasion of alien species, which is facilitated by the partial soil disturbance caused by the mechanical clearing, especially when combined with no stump poisoning of large Port Jackson and black wattle trees (which will thus resprout). The former cannot be mitigated (natural rehabilitation will mitigate this naturally over time), but the latter can be successfully mitigated by proper alien invasive plant management of the remaining natural areas (see Martins *et al* 2021 for required methodology). Expected significance of these

impacts is **Low - Medium negative** before mitigation, and **Low positive** after mitigation.

In the case of built infrastructure (proposed lodge and owners houses) this is likely to result in fire suppression around these areas, which if it goes on for too long (>15-20yrs) will have negative ecological impacts, as these are fire adapted ecosystems which require regular fire for optimal ecological functioning (Helme & Rebelo 2016). This is likely to have a local **Low - Medium negative** botanical impact, and is unlikely to be actively mitigated (in the form of controlled burns), as landowners are typically reluctant to undertake such due to legal liability concerns.

The operational phase impacts of the firebreak clearing along the eastern fence should be negligible if it doesn't happen again, but could be **Low - Medium negative** if it is repeated (no certainty on which way it is likely to go, but see required mitigation).

The proposed irrigation of currently fallow or cultivated land on the property was mentioned as a possible impact to be assessed. However, without any details on the total proposed areas this cannot be assessed in any detail, except to say that it is unlikely to have any direct negative faunal or botanical impacts. However, if large quantities of water are to be abstracted from the catchment then this is a potential indirect negative ecological impact, and should be investigated at a catchment level, by a competent geohydrologist, as there are already clear drying impacts evident in the seeps and wetlands in the area (see Section 9). Ideally river water would be used for any required irrigation, and not abstracted groundwater, as this is the only way to ensure no impact on the seepage areas nearby.

<u>Impact</u>	<u>Extent of impact</u>	<u>Duration of impact</u>	<u>Intensity</u>	<u>Probability of operational phase impacts</u>	<u>Degree of confidence</u>	<u>Significance before mitigation</u>	<u>Significance after mitigation</u>
0.65ha of vegetation clearance around dams	local	3-10yrs	Low	Low	High	Low -ve	Low +ve
Clearance of dams	local	1-3yrs	Low	Low	High	Low -ve	Low +ve
NE firebreak (0.1ha of vegetation loss)	local	3-10yrs	Medium	Low to moderate	High	Low to Medium -ve	Low +ve
Access road clearing	local	>10yrs	High	Moderate	High	Medium -ve	Low +ve
Owners houses and shed (0.27ha)	local	permanent	High	Definite	High	Medium -ve	Low -ve
Proposed lodge	local	permanent	High	Definite	High	Medium -ve	Low -ve
No Go	Site	extensive ongoing alien plant invasion	Medium	High	Medium	Medium -ve	Not Applicable

Table 3: Summary table for operational phase botanical impacts associated with the clearing of the various areas on site. The primary impacts considered are habitat fragmentation, a local increase in alien invasive vegetation caused by soil disturbance associated with construction and fire suppression around built infrastructure. Mitigation would be implementation of ongoing alien invasive plant management throughout the greater property and within 100m of all study areas, and natural (passive) rehabilitation of the recently cleared areas (except the access track).

7.2 The No Go Alternative

The No Go alternative is usually considered to mean a continuation of the status quo. Here it could imply further random loss of habitat to unauthorised development, largely unmanaged alien plant invasion, and possible unpredictable future impacts (such as excavation of trenches, or inappropriate fire regimes). Confidence in the likelihood of impacts is thus only moderate, but the No Go alternative would in this case probably not be the environmentally preferred alternative, as it may have a **Medium negative** impact over time, driven mainly

by the negative ecological impacts of ongoing, unmanaged alien plant invasion (habitat loss and degradation, species loss, degradation of wetlands; see Table 3).

7.3 Cumulative Impacts

The cumulative botanical impacts are understood to be equivalent to the regional botanical and faunal impacts, in that the vegetation type and fauna impacted by the proposed development has been, and will continue to be, impacted by numerous developments (mainly agricultural) and other factors (the cumulative impacts) within the region. However, in this case the botanical and faunal impacts are mostly not of a permanent nature (except perhaps in the case of the access road), and thus arguably the cumulative negative ecological impacts are relatively low. If large quantities of water are to be abstracted for irrigation this could have notable negative cumulative impacts on the groundwater dependant ecosystems in the nearby areas, such as the seeps.

8. REQUIRED MITIGATION

All mitigation noted below is regarded as feasible, reasonable and essential, and is factored into this assessment:

- All woody invasive alien vegetation (notably *Acacia cyclops*, *A. mearnsii* and *A. saligna*) within 100m of all footprints noted in this report (*i.e.* new houses, scraped areas around dams, new access road, eastern boundary fence) must be felled, using appropriate methodology (following best practise as outlined in Martens *et al* 2021). No heavy machinery may be used, and stems should be cut at close to ground level and immediately painted (not sprayed) with a suitable herbicide such as Garlon (but this not necessary for rooikrans). This must be completed within one year of the date of this report, and should be audited by CapeNature.
- A team trained in invasive alien invasive plant management (see Martens *et al* 2021) should be appointed to remove all woody alien invasive species on the on the applicant property (section of Rem of Ptn 1 south of Breede R and north of road to Cape Infanta) over the next three years, as well as all seedlings of invasive alien *Acacia* species, such that there is less than 1% overall woody alien vegetation cover on the property. The least densely invaded areas should be cleared first, as this is the most cost and ecologically effective strategy. This must be completed within three years of the date of this report, and should be audited by CapeNature. If not

adequately completed within three years the DEA&DP or similar authority should be tasked with enforcing this.

- No spraying of herbicide should be allowed anywhere where there is any natural vegetation, and should thus be restricted to designated cultivation areas.
- Any future clearing of firebreaks on the property must be done by brushcutting, to a height of no lower than 10cm. No soil disturbance should be allowed (hence no scraping by machinery), as this encourages alien plant invasion.
- All natural vegetation in moderate to good condition on the applicant property (between Breede River and Infanta Rd; about 200ha) should be signed up with CapeNature's Stewardship program within one year of any authorisation, with the applicant being responsible for all costs associated with this registration, and all Stewardship site management costs going forward.

9. CONCLUSIONS AND RECOMMENDATIONS

- The remaining natural vegetation on the greater study area is mostly of High conservation value, and is classified as Potberg Sandstone Fynbos (mainly south of Infanta road; Least Concern), Potberg Ferricrete Fynbos (Critically Endangered) and Eastern Ruens Shale Renosterveld (only in the valleys below the plateau, and not formally mapped in this area; Endangered).
- Most of the remaining natural vegetation on the greater property is mapped as a Critical Biodiversity Area (CBA1) in the CapeNature Spatial Biodiversity Plan.
- Only 3 plant Species of Conservation Concern were recorded in or close to the specific study areas, with at least eight others elsewhere on the greater property. Two of the three have already re-established in the disturbed areas next to the dams, suggesting that rehabilitation potential is good.
- A total of about 0.65ha of natural vegetation was cleared next to the dams, some 0.1ha in the northeast firebreak, and a further approximately 0.35ha in the access road area in the period March 2020 – March 2022. During 2023 about 0.27ha of vegetation was cleared for the owners houses and a shed.
- Fortunately most of the vegetation disturbance and clearing near the dams and along the firebreak did not significantly damage the upper soil surface,

and consequently natural (passive) vegetation rehabilitation is expected to be good, and will take place over a period of up to ten years. This is however not the case in the access road area, where regular use will mean that no natural rehabilitation will take place, nor obviously in the 0.27ha house footprint area.

- Overall botanical faunal and faunal impacts of the clearing are within acceptable limits (Medium negative significance or less), but key required mitigation is outlined in Section 8.
- All mitigation noted in Section 8 must be timeously and properly implemented, in which case the post mitigation impact of the vegetation clearing development could be reduced to Low positive, from Low to Medium negative prior to mitigation. The primary driver of the reduced post mitigation impact would be reduced alien invasive plant impact on the property and CapeNature Stewardship of all natural areas.
- Not only is alien invasive vegetation a major threat to the ecology and biodiversity of this property and region (Malgas – Infanta), but so is increased drying up of the springs, groundwater and streams. I have observed first-hand the effects of this, and noticed seasonal and previously permanent seeps and wetlands on Melkhoutrivier 492 that appear to be in the process of disappearing, with associated wetland vegetation (and fauna) dead or dying. Some of this is a result of the alien invasive vegetation itself, some is the result of a real long-term drying trend (declining annual average rainfall), but some (perhaps the majority) is the result of massively increased regional abstraction for irrigated agriculture. It is difficult to disentangle these three factors, but the bottom line is that alien invasive vegetation can be controlled and removed, and abstraction can be reduced, whilst we cannot manage the rainfall. Alien invasive vegetation has been a major issue in this area for many decades, but significant abstraction of underground water only began in about 2010, when the massive olive plantations (298ha) some 3km east of the study area were developed. According to various local sources (pers. comm.) this operation abstracts up to 2 million litres of water a day, from almost 70 boreholes (but only 4 operational according to the landowners, although no abstraction figure was confirmed by them, and they say river water is preferred), which in my opinion is likely to be far above the sustainable groundwater recharge rate for this area (for above-noted reasons), leading to rapidly dropping water tables, and loss of wetlands, especially in the last ten years. This is an important issue that needs to be

investigated by an independent geohydrologist, and properly regulated by the relevant authorities, as the ecological survival of key habitats in this region are under severe threat.

- Should irrigation of pastures on the study property be required, abstraction of groundwater is not supported from a botanical and ecological perspective, as the seepage areas and wetlands in the area are already clearly under pressure. Abstraction from the nearby Breede River would be strongly preferred, if possible. Groundwater should be purely for domestic use, as far less is required for this purpose than for irrigated cultivation.

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