Section 24G Report for Activities Relating to Vegetation Clearance on Farm Portions 420 and 373, Part of Outeniqua Game Farm

Terrestrial Biodiversity and Plant Species Themes

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confluent

DECLARATION OF SPECIALIST INDEPENDENCE

- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP);
- At the time of conducting the study and compiling this report I did not have any interest, hidden or otherwise, in the proposed development that this study has reference to, except for financial compensation for work done in a professional capacity;
- Work performed for this study was done in an objective manner. Even if this study results in views and findings that are not favourable to the client/applicant, I will not be affected in any manner by the outcome of any environmental process of which this report may form a part, other than being members of the general public;
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- All the particulars furnished by me in this document are true and correct.

Bianke Fouche (MSc Conservation Biology)

August 2024

BIANKE FOUCHE ABRIDGED CV

Qualifications

- B.Sc. Environmental Sciences (Nelson Mandela University),
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- M.Sc. Conservation Biology (University of Cape Town)

SACNASP Registration No: 141757 (Professional Botanical; Candidate Ecological)

Skills and Core Competencies

- My MSc research will add to our understanding of plant community niche construction and Alternative Stable State (ASS) theory. The knowledge gained will be used to advise landscape stewardship practices, especially regarding reforestation initiatives in the Overstrand.
- I have worked closely with the conservation team of the Grootbos Foundation, where I assisted with vegetation surveys, mounting voucher specimens in the Grootbos herbarium, and taken part in controlled fynbos fires in the Overberg.
- Postgraduate studies of mine included assessing the allelopathic effects of *Eucalyptus* leaves on garden peas and leeks and assessing the accuracy of the climate leaf analysis multivariate programme (CLAMP) in predicting the climate of fynbos vegetation.
- In Cape Town I regularly took part in alien clearing activities and helped to identify relevant listed invasive plants.
- I am currently a member of SACNASP, the International Association for Impact Assessment (IAIA) in South Africa, Botanical Society of South Africa, and the custodians for rare and endangered wildflowers (CREW-Outramps) in George.

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ABBREVIATIONS

BPA	Biodiversity Priority Area
BSP	Biodiversity Spatial Plan
CARA	Conservation of Agricultural Resources Act (Acto no 43 of 1983)
CBA	Critical Biodiversity Area
CD:NGI	Chief Directorate: National Geo-spatial Information
DFFE	Department of Forestry, Fisheries, and the Environment
EIA	Environmental Impact Assessment
EMP	Ecological Management Plan
EN	Endangered
ESA	Ecological Support Area
LC	Least Concern (referring ecosystems)
LT	Least Threatened (referring to ecosystems)
NEM:BA	National Environmental Management: Biodiversity Act
ONA	Other Natural Areas
PA	Protected Area
PAOI	Project Area of Influence
SACNASP	South African Council for Natural Science Professionals
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SDP	Site Development Plan
SEI	Site Ecological Importance
VAST	Vegetation Assets, States, and Transitions

1. INTRODUCTION

1.1 Background

Confluent Environmental was appointed by Ecoroute to undertake a specialist assessment for botanical and terrestrial sensitivity of the vegetation on Portions 420 and 373, part of Outeniqua Game Farm. According to the Department of Forestry, Fisheries, and the Environment (DFFE) Screening Tool, this Section 24 G report is required because of listed activities that have taken place in sensitive areas according to the Terrestrial Plant Species and the Terrestrial Biodiversity themes. Fig. 1 clearly illustrates the location of Portions 420 and 373 in relation to surrounding settlements. The map in Fig. 1 also clearly illustrates that these portions represent large patches of remnant vegetation that is considered Critically Endangered (CR), with smaller sections of Endangered (EN) ecosystems.

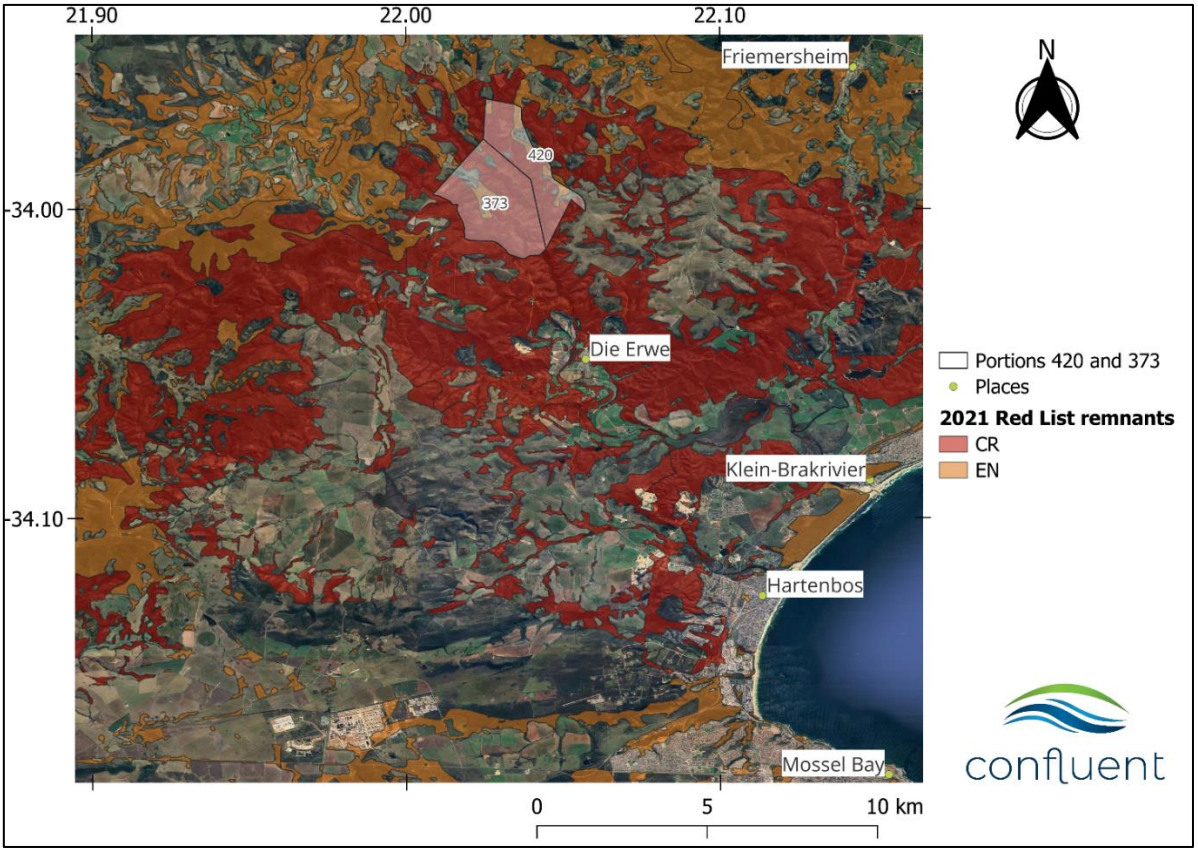


Figure 1: The general location of Portions 420 and 373, illustrated with the 2021 mapped remnants of Red Listed Ecosystem fragments.

1.2 Developments Flagged for the 24G Process

The National Environmental Management Act, 1998 (Act No. 107 of 1998), specifically Section 24G, which addresses retrospective applications for environmental authorization in South Africa is required for specific areas on Portions 420 and 373 of Outeniqua Game Farm. Section 24 G states that

"*The competent authority may direct the applicant to provide specialist studies or reports to assess the environmental impacts of the activity, which must be undertaken by a person with relevant expertise in the specific area of concern.*", and

"*In assessing the application, the competent authority may require the submission of detailed reports from qualified specialists to evaluate the environmental consequences and mitigation measures associated with the activity.*"

Portion 420 is ca. 489 ha, and Portion 373 is ca. 789 ha. In total these two portions have an area of ca. 1 278 ha. Later in this report, an area analysis for the project area of influence (PAOI) will be discussed in order to assess the impacts of the activities, as well as to inform appropriate mitigation as part of this process. The illegal activities that were shared by the environmental assessment practitioner (EAP), as well as one new observation made, are illustrated in Fig. 2. Most of the listed activities are related to vegetation clearance, which is described in Activity 12 of Listing Notice 3:

"*The clearance of vegetation in a critically endangered or endangered ecosystem listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), and which is identified in terms of this Act as a protected ecosystem*."

The "Illegal Road" orange dot in Fig. 2 was provided by the EAP, however the "New Road" red dot was added by the author of this report, due to the addition of a new road here which also resulted in vegetation clearance sometime between 28 May (the initial survey) and 07 August 2024 (the follow up survey date). The areas where listed activities have been highlighted (Fig. 2) are divided into three areas (Fig. 2):

Area 1 – This refers to the hilltop with five dwellings that have been built. The dwellings have resulted in vegetation clearance.

Area 2 – This is a section referring to two build dwellings where vegetation has been cleared, and where river crossings and new roads have been made.

Area 3 – This refers to a section of the drainage line where a weir has been repaired and where a small dam is located.

The road extending along the Ruiterbos River between Area 2 and 3 was also assessed for protected trees that may occur along the sides of the road that follows along the drainage line (which approximately follows the boundary between Portions 420 and 373).

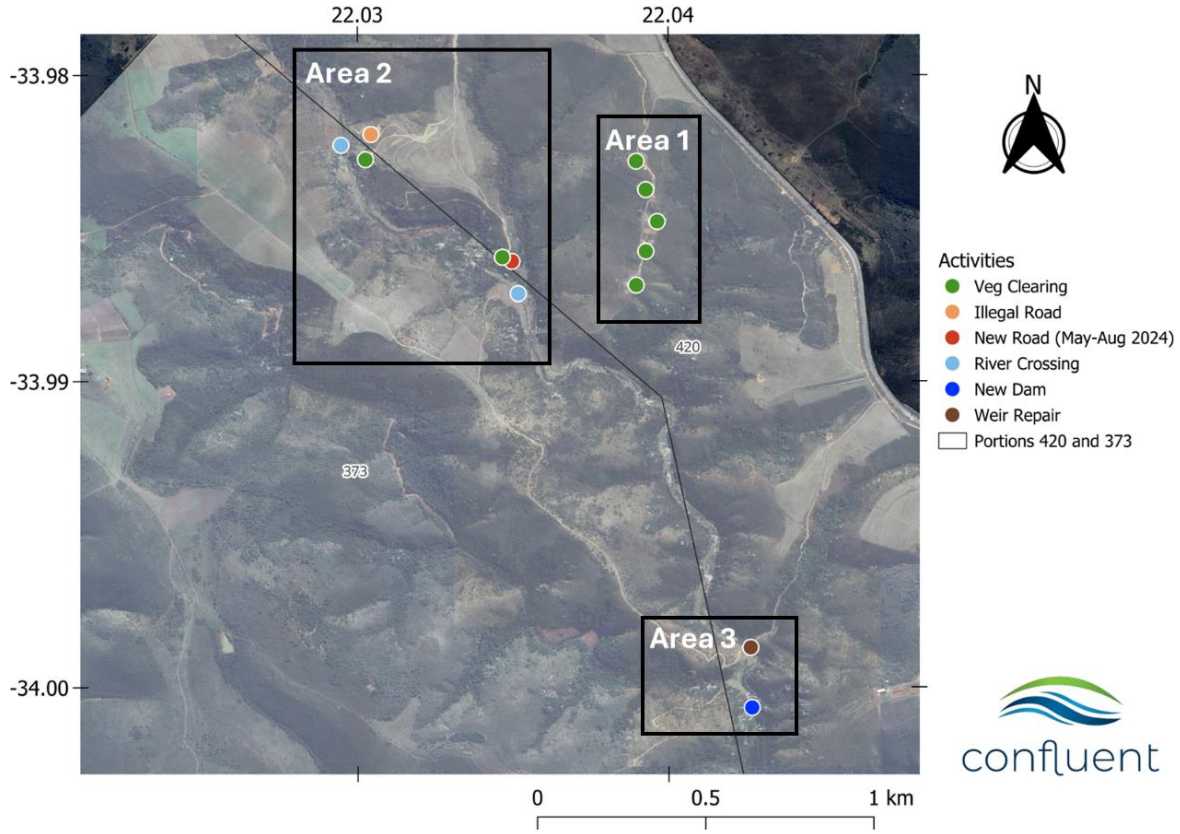


Figure 2: A map of flagged activities relating to this 24G report.

2. TERMS OF REFERENCE

This screening tool sensitivity verification report provides information on Terrestrial and Botanical diversity and sensitivity of the proposed development. The results presented are based on a desktop and field assessment, which includes a consideration of historical photographic records of the site. The assessment presented in this report follows the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity, and Terrestrial Plant Species themes.

This site sensitivity assessment follows the requirements of:

- The Environmental Impact Assessment Regulations, as promulgated in terms of Section 24 (5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), which includes:
    - The protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial plant species (28 July 2023).
    - The protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity (20 March 2020).
- Additional guidelines for the terrestrial biodiversity theme:
    - Ecosystem Guidelines for Environmental Assessment in the Western Cape (de Villiers et al., 2016).

  - The Western Cape Biodiversity Spatial Plan Handbook and summary booklet (CapeNature, 2017; Pool-Sandvliet et al., 2017).
  - The Subtropical Thicket Ecosystem Programme Handbook: Integrating the natural environment into land-use decisions at the municipal level: towards sustainable development (Pierce & Mader, 2006).

- Additional guidelines for the terrestrial plant species theme:
  - Species Environmental Assessment Guideline: Guidelines for the implementation of the Terrestrial Flora (3c) & Terrestrial Fauna (3d) Species Protocols for environmental impact assessments in South Africa (Verburgt et al., 2020).

The assessment was undertaken by a specialist registered with the South African Council for Natural Scientific Professionals (SACNASP) with relevant expertise in the field of Botanical and/or Ecological science.

2.1 Online Screening Tool

The Department of Forestry, Fisheries, and the Environment (DFFE) screening tool report for the development footprint has identified the **Terrestrial Plant Species Theme as having a Medium sensitivity**, and the **Terrestrial Biodiversity Theme as having a Very High sensitivity** (Fig. 3). Note that the Screening Tool plant species theme does not take Near Threatened plant populations into account. The Medium screening tool sensitivity for plant species is detailed in the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended), and associated guidelines. The best description is provided in the Species Environmental Assessment Guideline (Verburgt et al., 2020):

"*Model-derived suitable habitat areas for threatened and/or rare species are included in the medium sensitivity level … The models provide a probability-based distribution indicating a continuous range of habitat suitability across areas that have not been previously surveyed. A probability threshold of 75% for suitable habitat has been used to convert the modelled probability surface and reduce it into a single spatial area which defines areas that fall within the medium sensitivity level*."

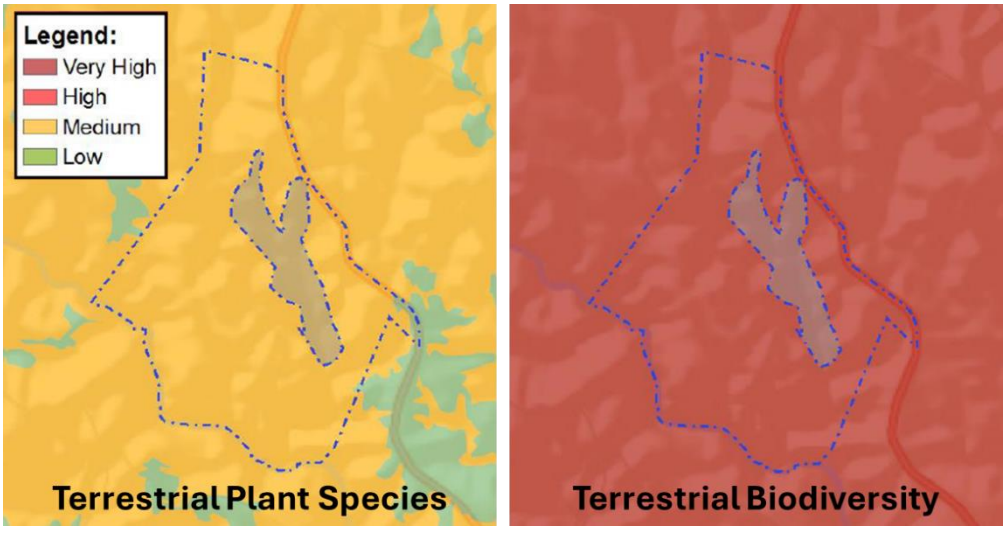


Figure 3: The screening tool generated site sensitivities for the highlighted section of Portions 420 & 373.

A Very High sensitivity rating for terrestrial biodiversity is triggered for all Biodiversity Priority Areas (BPAs) and other sensitive features (Stewart et al., 2021). BPAs include the various management layers of the Western Cape Biodiversity Spatial Plan (WC BSP), as well as the other sensitive features in Table 1 below.

Table 1: Sources of BPA data for the Terrestrial Biodiversity Theme sensitivity (Stewart et al., 2021). Only BPAs that have been triggered for Portions 420 and 373 by the screening tool are listed.

Sensitivity layer	Data included and source
Critical Biodiversity Areas (CBAs)	Most recent terrestrial CBA spatial footprint for metros, provinces, or bioregional plans, combined to create a national data set. Both CBA 1 and 2 areas have been triggered in the Screening Tool report
Ecological Support Areas (ESAs)	Most recent ESA spatial footprint for metros, provinces, or bioregional plans, combined to create a national data set. ESA 2 areas have been triggered in the Screening Tool Report.
Red Listed Ecosystems	Any ecosystem that is listed as Vulnerable (VU), Endangered (EN), or Critically Endangered (CR) according to the "Revised National List of Ecosystems that are Threatened and in Need of Protection (NEM:BA Act no.10 of 2004, as amended in November 2022). The specific triggered here are for CR Garden Route Granite Fynbos and EN Swellendam Silcrete Fynbos.

3. METHODOLOGY

3.1 Desktop Assessment

The desktop assessment was performed using Cape Farm Mapper and QGIS version 3.28.3 "Firenze". Plant species data was sourced from the following sources:

- The DFFE screening tool listed SCC.
- Information on plant occurrence prior to the site visit was sourced from SANBIs Botanical Research and Herbarium Management System (BRAHMS) for the Plants of Southern Africa (POSA) database.
- iNaturalist observations of the property and surrounding areas.
- Specialist insight into the species likely present in the area.

Ecosystem/ vegetation type data was sourced from:

- The 2018 updated South African National Vegetation Map from SANBIs Biodiversity GIS (BGIS) database, and the National Biodiversity Assessment report of 2018 (Skowno et al., 2018).
- Shapefiles for the Western Cape Biodiversity Spatial Plan (WC-BSP) i.e., information on PAs, CBAs, ESAs, and ONAs were downloaded from BGIS database (CapeNature, 2017; Pool-Sandvliet et al., 2017).
- Cape Farm Mapper for additional spatial information required for the site.
- Chief Directorate: National Geo-spatial Information (CD: NGI) Geospatial Portal and Google Earth for the acquisition of historical aerial imagery of the site.
- The conservation status of ecosystems was found in the Revised National List of Ecosystems that are Threatened and in need of protection, published under the

National Environmental Management: Biodiversity Act (Act No. 10, 2004, as revised in Nov. 2022), and also using the Vegetation of South Africa, Lesotho, and Swaziland (Mucina & Rutherford, 2006).

3.2 Field Assessment

Field work was undertaken on two dates, namely 28 May and 07 August 2024. The method for identifying species was similar to a BioBlitz, also described as a "timed meander", where the specialist records plant species composition of the site, and actively searches for rarer and threatened species. Some Red Listed plant species are found more easily during a site survey than other species. This survey method is an attempt to account for the short and single survey period, where detection probability of some rare and threatened species (e.g., geophytes, small succulents, small perennials etc.) are low (Garrard et al., 2008; Wintle et al., 2012). Observations of individual species and environmental characteristics were photographed.

3.3 Assumptions & Limitations

This assessment is subject to a few assumptions, uncertainties, and limitations, as listed below:

- Two surveys took place during Winter. Seasonal and time constrains always limit the findings of any botanical report, especially in fynbos where different sets of species flower / display diagnostic features at different times during the year.
- The species list and SCC reported are not exhaustive, and more species will be added to the list should more sampling effort, and sampling in different seasons occur (Perret et al., 2023).
- Some rare and threatened plant species are difficult to locate and easily overlooked in the field (e.g., geophytes, small succulents, small shrubs, and cryptic spp.). Furthermore, many plant species flower seasonally and are therefore difficult / not likely to be identified outside of their flowering season. The short duration of surveys also limit what was found during the site assessment.
- Environmental factors such as the prevailing fire regime (recent fires along the Ruiterbos River valley), successional stage of the vegetation present (senescent fynbos sections), previous cultivation of the land, and the level of alien infestation (mostly Rooikrans & Black wattle, depending on the location) at the site affects the species visible at the time of assessment (Cowling et al., 2010; Privett et al., 2001).
- Dense and tall vegetation made it hard to gain access to some places. It is possible that focus on "bundu bashing" and getting access to some parts of the site may have caused a lapse in concentration so that an SCC could have been missed on the site.

4. RESULTS: DESKTOP ASSESSMENT

4.1 Terrestrial Biodiversity

4.1.1 Climate, Geology, and Soil

The climate of Outeniqua Game farm is considered Mediterranean. Winters are usually mildly cold and wet, while summers are hotter and drier. The average temperature during summer months (November to March) is usually between 20 and 30˚C. Winter temperatures usually remain moderate, usually ranging between 5 and 15˚C. This climatic pattern facilitates a unique ecological environment, supporting a diverse array of plant and animal species

adapted to the seasonal fluctuations in temperature and precipitation. The geology of the assessment area is predominantly granite (see Fig. 4), which is consistent with the description for the critically endangered (CR) Garden Route Granite Fynbos mapped here. There were some sections of Enon conglomerate too (Fig. 4). According to Cape Farm Mapper, the erodibility of the soil here is high (with a score of 0.61).

Figure 4: Some of the rocks that were observed during the site assessment.

4.1.2 Vegetation Type(s)

The mapped vegetation types according to the 2024 Beta National Vegetation Map (NVM) here are mostly mapped as critically endangered (CR) Garden Route Granite Fynbos with some places mapped as endangered (EN) Swellendam Silcrete Fynbos (Fig. 5). Some of the valley vegetation is more representative of thicket, which is most consistent with CR Gouritz Valley Thicket. The five dwellings that were built in Area 1 (Fig. 2) are in a remaining patch of intact Garden Route Granite Fynbos, while Area 2 and 3 (as well as the area between Areas 2 & 3), are more invaded and disturbed compared to Area 1.

Vlok vegetation map (Vlok et al., 2008; Vlok & de Villiers, 2007) is also illustrated in Fig. 5 alongside the 2024 Beta NVM. This vegetation map offers a more nuanced and fine scale classification of the vegetation here and is therefore useful to include despite the lack of associated conservation Red List status for these vegetation communities.

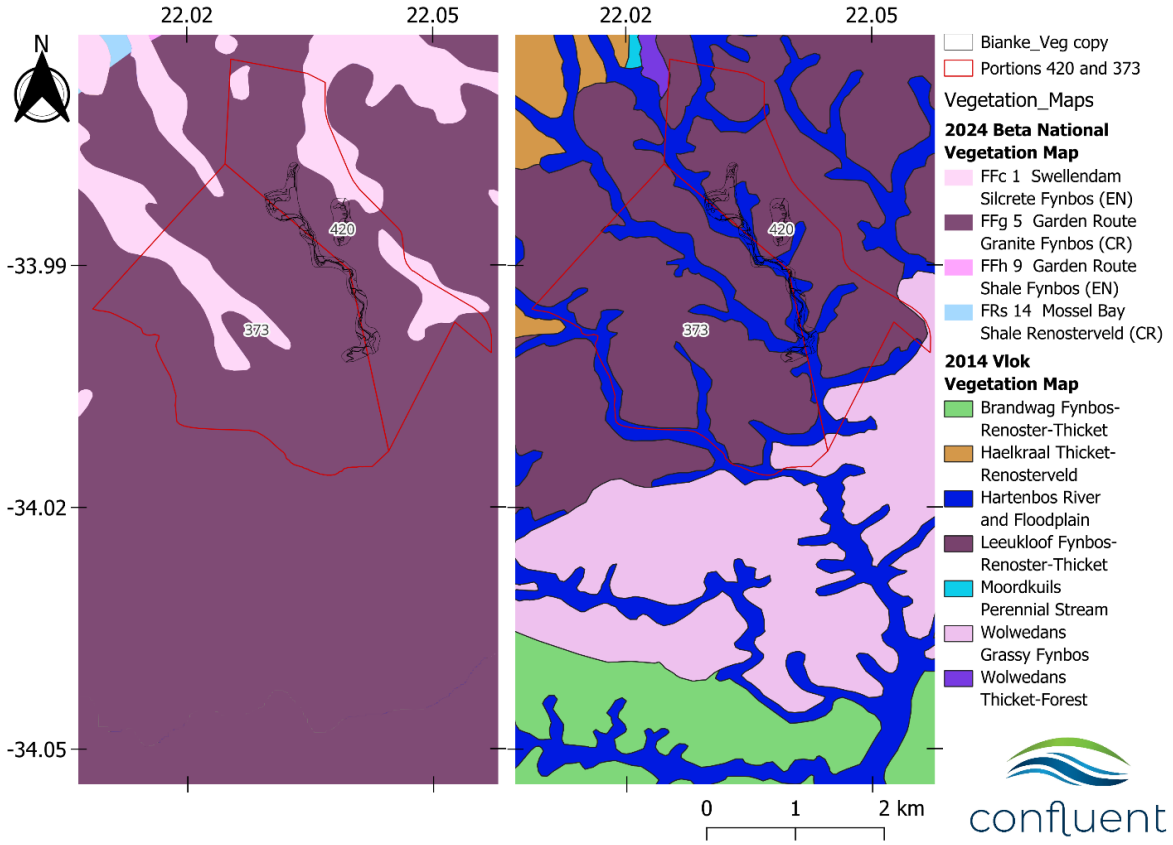


Figure 5: The 2024 Beta National Vegetation Map (NVM) and the Vlok vegetation map illustrated alongside each other. The outline of Portions 420 and 373 are in red, and the areas that were surveyed on these farms are illustrated with black outlines.

The important taxa for Garden Route Granite Fynbos, Swellendam Silcrete Fynbos, and Gouritz Valley Thicket are presented in Appendix 12.1. The important taxa can be used as a rough guide and indication for the applicability of the vegetation type assessed.

4.1.3 Western Cape Biodiversity Spatial Plan

The Biodiversity Spatial Plan for the Western Cape (WC BSP) for the approximate area included in this assessment is presented in Fig. 6. Explanations of the BSP categories on the site are in Box 1. The reasons for the BSP layers mapped here are presented below the map in Fig. 7. BSP layers are also associated with recommended land-uses, which is presented in Appendix 12.2.

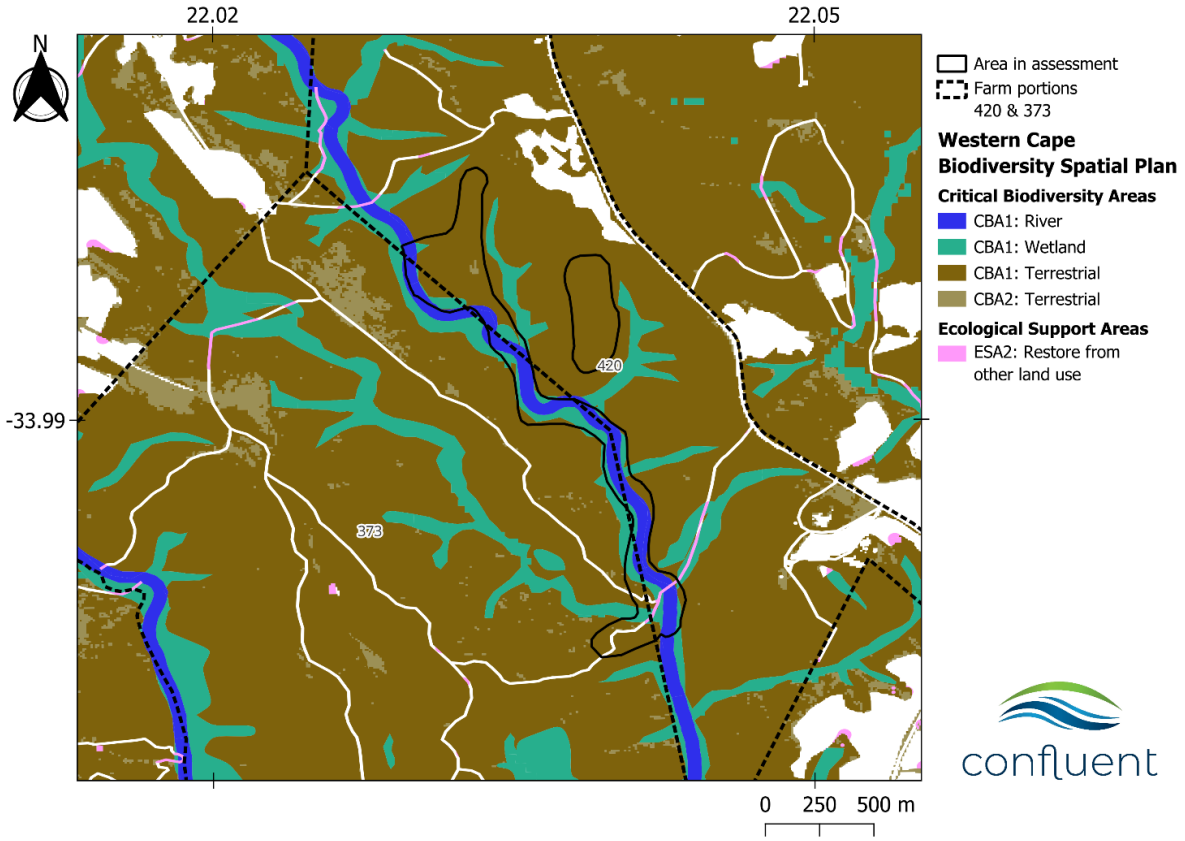
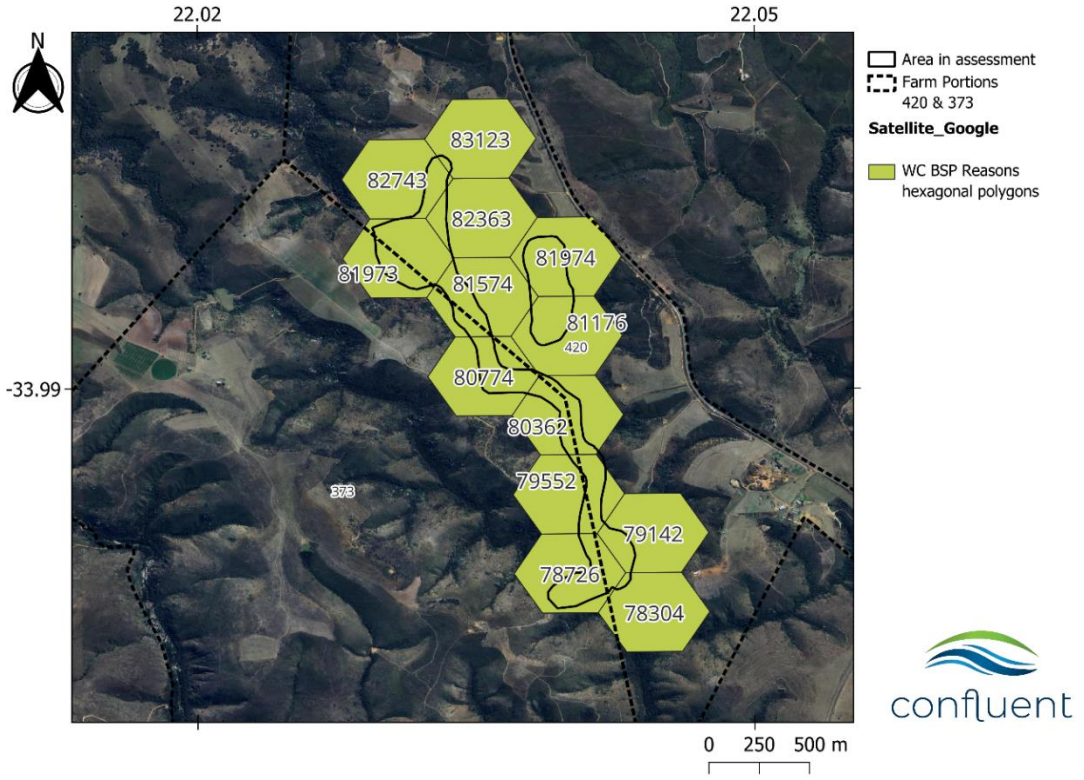


Figure 6: The mapped Western Cape Biodiversity Spatial Plan (WC BSP) categories that have been mapped for the areas assessed as well as the surrounding landscapes on Portions 420 and 373.

The majority of Portions 420 and 373 are considered first priority Terrestrial Critical Biodiversity Areas (CBA 1). River & Wetland CBA 1 areas are also mapped along the rivers, non-perennial drainage lines, and wetlands mapped here. Area 1 (defined in Fig. 2) falls entirely within a Terrestrial CBA 1 area (the meaning of this is explained in Box 1). Area 2 extending downwards along the Ruiterbos River to Area 3 is also mostly CBA 1 areas, but it includes River, Wetland, and Terrestrial CBA 1 areas, with very small patches of mapped CBA 2 areas. As described in Box 1, this means that the vegetation on Portions 420 and 373 have a high conservation value and are regarded as areas essential to meeting biodiversity targets in the Western Cape.



PU_ID	Feature_1	Feature_2	Feature_3
78304	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Garden Route Granite Fynbos (CR)
78726	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Eastern Fynbos Renosterveld Granite Fynbos Seep Wetland
79142	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Garden Route Granite Fynbos (CR)
79552	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Garden Route Granite Fynbos (CR)
80362	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Garden Route Granite Fynbos (CR)
80774	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Garden Route Granite Fynbos (CR)
81176	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Garden Route Granite Fynbos (CR)
81574	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Eastern Fynbos Renosterveld Granite Fynbos Depression Wetland
81973	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Garden Route Granite Fynbos (CR)
81974	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Garden Route Granite Fynbos (CR)
82363	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Garden Route Granite Fynbos (CR)
82743	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Channelled Valley Bottom Wetland	Eastern Fynbos Renosterveld Granite Fynbos Flat Wetland
83123	Bontebok Extended Distribution Range	Eastern Fynbos Renosterveld Granite Fynbos Flat Wetland	Garden Route Granite Fynbos (CR)

PU_ID	Feature_4	Feature_5	Feature_6
78304	Southern Coastal Belt Ephemeral Upper Foothill River	Watercourse protection- Southern Coastal Belt	
78726	Garden Route Granite Fynbos (CR)	Southern Coastal Belt Ephemeral Upper Foothill River	Watercourse protection- Southern Coastal Belt
79142	Southern Coastal Belt Ephemeral Upper Foothill River	Swellendam Silcrete Fynbos (EN)	Watercourse protection- Southern Coastal Belt
79552	Southern Coastal Belt Ephemeral Upper Foothill River	Watercourse protection- Southern Coastal Belt	
80362	Southern Coastal Belt Ephemeral Upper Foothill River	Watercourse protection- Southern Coastal Belt	
80774	Southern Coastal Belt Ephemeral Upper Foothill River	Watercourse protection- Southern Coastal Belt	
81176	Southern Coastal Belt Ephemeral Upper Foothill River	Watercourse protection- Southern Coastal Belt	
81574	Garden Route Granite Fynbos (CR)	Southern Coastal Belt Ephemeral Upper Foothill River	Watercourse protection- Southern Coastal Belt
81973	Southern Coastal Belt Ephemeral Upper Foothill River	Watercourse protection- Southern Coastal Belt	
81974	Swellendam Silcrete Fynbos (EN)	Watercourse protection- Southern Coastal Belt	
82363	Swellendam Silcrete Fynbos (EN)	Watercourse protection- Southern Coastal Belt	
82743	Garden Route Granite Fynbos (CR)	Southern Coastal Belt Ephemeral Upper Foothill River	Watercourse protection- Southern Coastal Belt
83123	Swellendam Silcrete Fynbos (EN)	Watercourse protection- Southern Coastal Belt	

Figure 7: The reasons provided for the mapping of the BSP categories are grouped by hexagonal polygons. The table below the map corresponds to the reasons provided for each polygon in the map.

BOX 1: The Biodiversity Spatial Plan

Critical Biodiversity Area 1

Definition: Areas in a natural condition. Required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure.

Objective: Maintain in a natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.

Critical Biodiversity Area 2

Definition: Areas in a degraded or secondary condition. Required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure.

Objective: Maintain in a functional, natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.

Ecological Support Area 1

Definition: Not essential for meeting biodiversity targets. An important role in supporting the functioning of PAs or CBAs. Often vital for ecosystem services.

Objective: Maintain in a functional, near-natural state. Some habitat loss is acceptable, provided underlying biodiversity objectives/ecological functioning are not compromised.

Ecological Support Area 2

Definition: Not essential for meeting biodiversity targets. Important in supporting functioning of PAs or CBAs. Often vital for ecosystem services.

Objective: Restore/minimise impact on ecological infrastructure functioning, especially soil and water-related services.

4.2 Plant Species

The plant species theme sensitivity of Medium is dependent on the presence, or likely presence, of several plant species of conservation concern (SCC). The Red List categories are discussed later in the report.

4.2.1 Species of Conservation Concern (SCC) Listed in the Screening Tool.

The plant species that were listed in the Screening Tool report under the Medium plant species sensitivity were *Agathosma microcarpa, Diosma passerinoides, Elegia squamosa, Erica unicolor* subsp. *Mutica*, *Euchaetis albertiniana*, *Freesia fergusoniae, Lampranthus pauciflorus, Lidbeckia pinnata, Romulea jugicola,* and Sensitive species 268, 500, 516, 633, 700, 800, 980, and 1024. Additional potential SCC and protected species are assessed for their likelihood of occurrence later in this report.

5. HISTORICAL ANALYSIS & OBSERVATIONS

The historical imagery presented in this section was sourced from Google Earth. The imagery presented is divided into three sections based on the areas defined in Fig. 2 on Portions 420 and 373 of Outeniqua Game Farm. Note that several new roads have been made, some adjacent to existing roads on the site, and most of these are outside of the scope of this assessment. New roads are included in this assessment where they are nearby areas that were assessed as part of this 24G assessment.

5.1 Area 1: The Five Dwellings that Have Been Constructed on Portion 420.

Stands of invasive plants in this area are visible since 2005 (pink outlines in Fig. 8). The stand of invasive vegetation in the middle of the imagery (on a hilltop) was cleared around 2016. This stand returned to the site and once again became visible around 2020 when the northernmost dwelling was being constructed. By May of 2021, the northernmost dwelling, as well as the two southernmost dwellings had been constructed. The northernmost dwelling was partially constructed over another existing stand of invasive vegetation, likely a combination of Rooikrans (*Acacia cyclops*) and Black wattles (*Acacia mearnsii*). By 2022 all five of the dwellings were built, and only two of them were on areas where there had been existing stands of established invasions. The majority of the vegetation that was cleared represented Garden Route Granite Fynbos. A large long-term established invasion is also visible east of the second dwelling from the north. This area is still invaded.

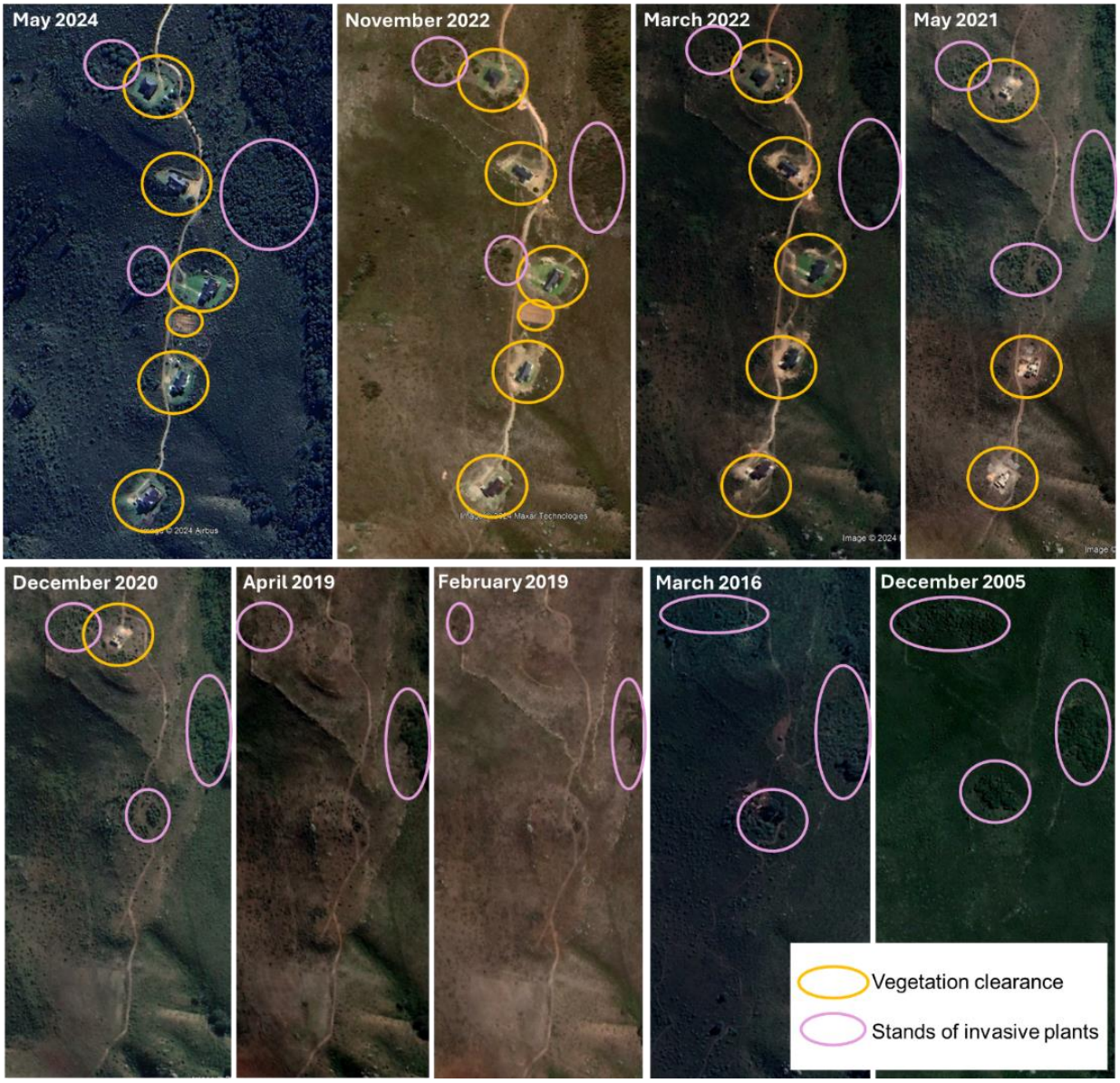


Figure 8: A series of historical imagery sourced from Google Earth for Area 1: five dwellings that have been constructed on Portion 420.

5.2 Area 2: The Two Dwellings and Illegal Road.

The two dwellings part of the 24G here are indicated in Fig. 9 with a light green outline. The most recent road clearing (yellow dotted line in the inset map of May 2024 in Fig. 9) in this section occurred sometime between the initial and second site assessments (between May and August 2024), and this is not visible in the historical imagery yet. There are also some white dotted lines indicated in Fig. 9 which indicates roads that have been made between November 2022 and May 2024. The inset map for May 2024 indicates two small connection roads that have been made, presumably as shortcuts, along the valley bottom. The road visible in the more recent imagery along the south facing valley edge was constructed between February and April of 2019. The wide road north of the northern dwelling here has remained bare (likely due to many factors, including erosion) since it was made between Aug. 2018 and February 2019. The southern dwelling in the imagery was constructed in 2019 along the edge of fynbos and thicket vegetation, where the fynbos is representative of CR Garden Route Granite Fynbos and the thicket can likely be classified as CR Gouritz Valley Thicket.

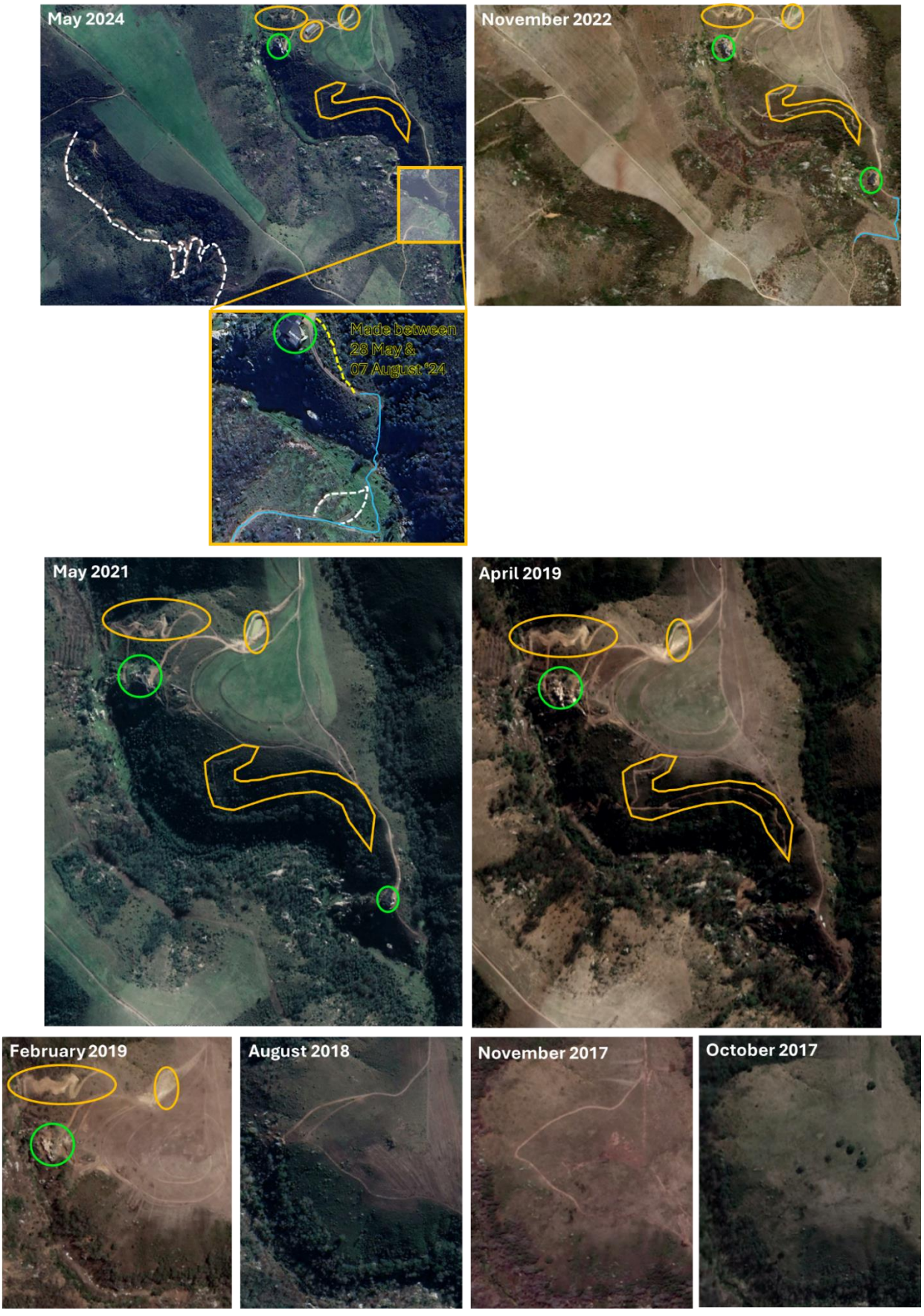


Figure 9: A series of historical imagery from Google Earth for Area 2: the two dwellings and illegal road.

5.3 Between Areas 2 and 3: Road Along the Ruiterbos River

The valley slopes along either side of the Ruiterbos River have been occupied by established long-term stands of Black wattles (*Acacia mearnsii*). The aerial imagery (Fig. 10), as well as site visited to Outeniqua Game Farm revealed that a lot of the vegetation clearance visible along the river here was done for the purposes of clearing dense stands of *A. mearnsii*. Clearing of vegetation along the valley has also resulted in the introduction and naturalisation of invasive kikuyu grass (*Cenchrus clandestinus*). Some sections of the river is also obstructed by woody slash material, and this has led to erosion along the bank of the river (see the aquatic specialist report for more detail). The jeep track road crosses the Ruiterbos River in several locations (specified in the aquatic specialist report). While this individual jeep track along the river is not impeding the flow of the river, several (mostly new) roads that connect to the jeep track from the sides of the valley cause unnecessary disturbance and erosion here.

Figure 10: A series of historical imagery compiled by Dr. James Dabrowski for the jeep track along the Ruiterbos River (between Areas 2 and 3 defined in this report).

5.4 Area 3: The Weir & Dam Area

The aquatic specialist report states that a road crossing the Ruiterbos River at the current dam location has existed since at least 2005. The river crossing and current instream dam location is first visible in 2017, as prior to this, the entire area was heavily invaded with Black wattles (*Acacia mearnsii*). The extent of the alien clearing that took place (since the 2016 image in Fig. 11) is visible in the April 2018 image. One of the roads was also altered between 2016 and 2018, as indicated in Fig. 11 with a light blue arrow. Areas that had been cleared of invasive Black wattles had been maintained this way for the most part. Recently, between

2022 and 2024, several new wide roads have been cleared / excavated (see the yellow outlines indicating these areas in the May 2024 imagery in Fig. 11). These new roads fall outside of the scope of this assessment, however they are significant enough to warrant mention in this report.

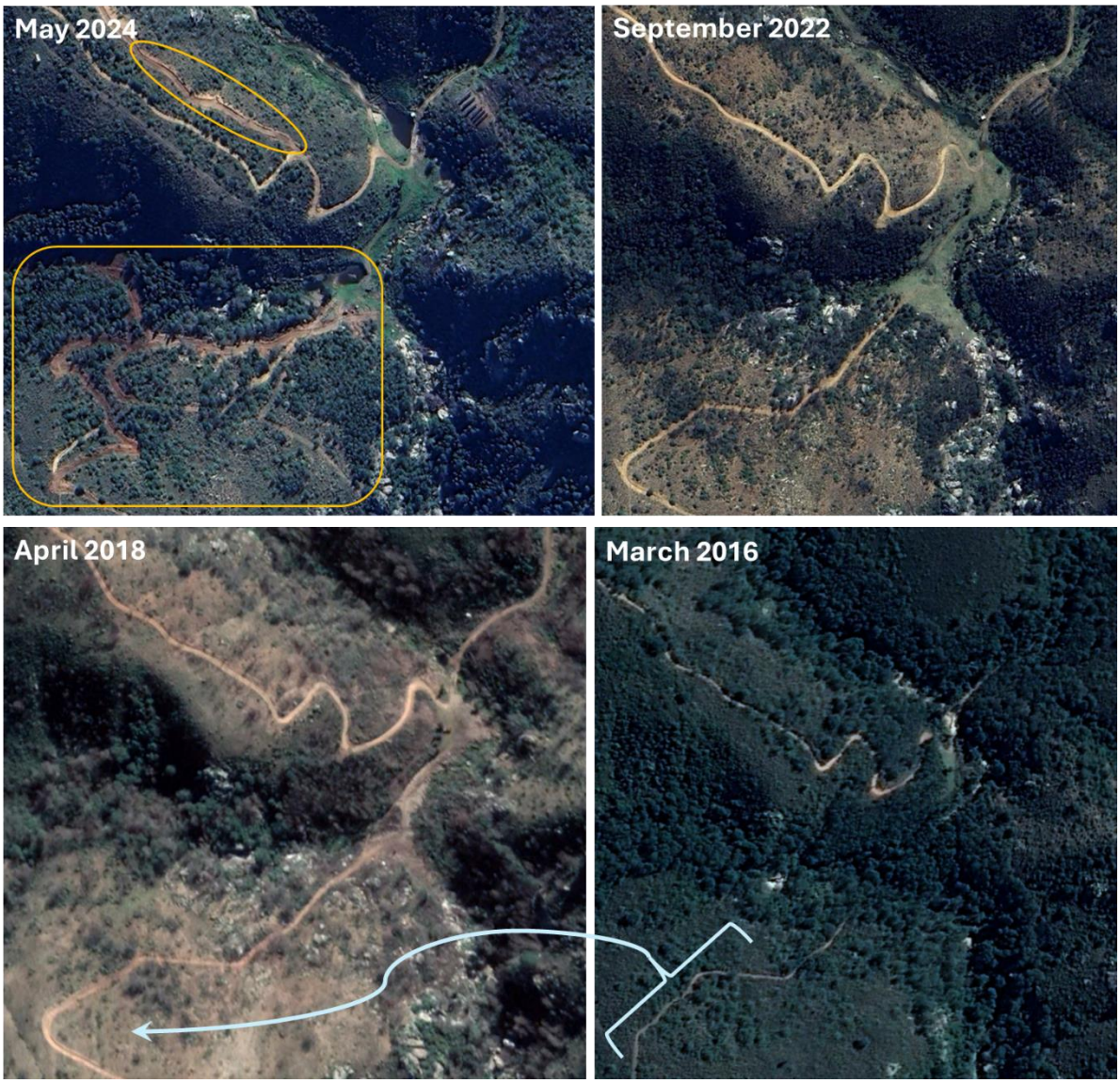


Figure 11: A series of historical imagery sourced from Google Earth for Area 3: the weir & dam area.

The aquatic report by Dr. James Dabrowski stated that:

> "*In 2017 it appears as if a low-level concrete crossing was present. Over time the road has been maintained along its existing alignment and footprint, maintaining an inundated area upstream of the road. The river experiences significant flooding and over time it appears as if the crossing may have been damaged and replaced by a low-level dirt crossing, a section of which would become inundated during higher flow periods (e.g. 2020). A notable change occurred in 2024, when the road crossing was visibly upgraded and the inundated area upstream of the road was enlarged. The site visit confirmed the presence of a road supported by gabion baskets which essentially acts as small dam/weir. The gabion baskets are porous and together with pipes through the road, water does pass through the road, maintaining flow below the road. The gabion baskets had experienced damage during recent flood events and will most likely require*

maintenance in the near future. Sediment that had been excavated from upstream of the road (to enlarge the dam basin) had been deposited in the river downstream of the road. General disturbance to the bed and banks and widening of the channel immediately downstream of the road was visible."

Furthermore, debris and slash material was visible south of the dam between large granite boulders (Fig. 12). Slash material was also observed further upstream; however the volume was greatest south of the small dam in Area 3.

Figure 12: Images of the slash and debris material in the riverbed south of the small dam.

6. RESULTS: FIELD ASSESSMENT

6.1 Refined Vegetation Map.

The vegetation that was assessed as part of this study is illustrated by the outline in Fig. 13. All of the vegetation on Outeniqua Game Farm was not assessed, as this fell outside of the scope of this study. The vegetation classification in Fig. 13 is based on observations that were made during the site assessments. The vegetation on Outeniqua Game Farm can be divided into three main categories, regardless of the level of alien infestation that was observed, namely: Fynbos, Thicket, and Aquatic / Riparian. The “Black wattle thicket” defined in Fig. 13 is considered to be part of the Thicket. The only reason these invaded areas are mapped differently is due to the significant negative effect established stands of invasive alien plants have had on the landscape biodiversity here.

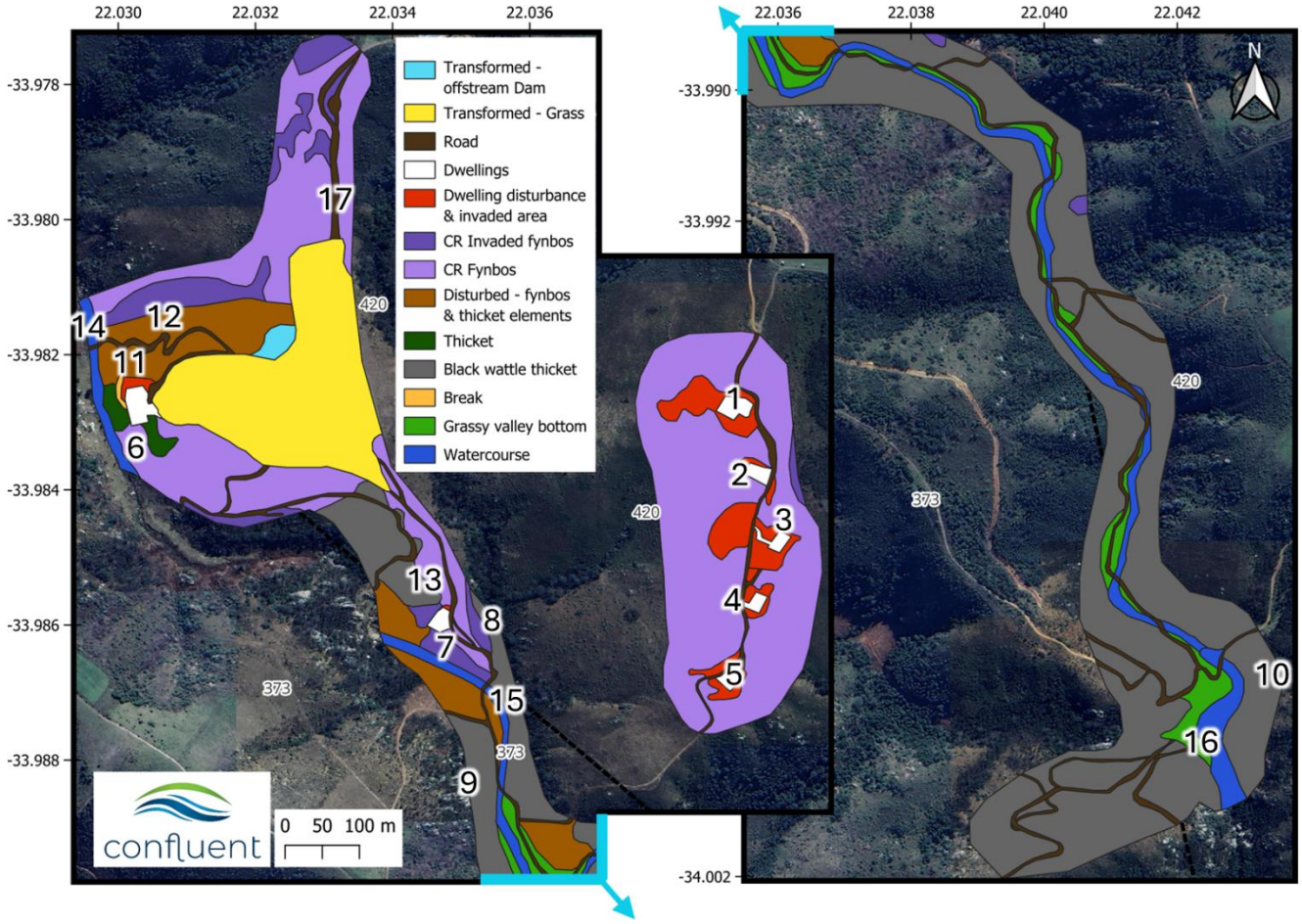
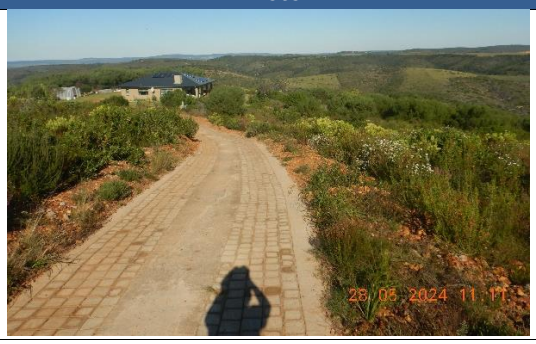


Figure 13: Images of the vegetation / ecosystems observed on the site. Numbers on the map correspond with the images shown in Tables 2 to 6.

6.1.1 Fynbos Vegetation

Table 2 below presents a discussion of the fynbos vegetation that was observed during the site assessment. The 24G activities that need to be assessed are also indicated in Table 2. The information provided for each image includes a short discussion on the relevance / importance of the image.

Table 2: Images of the CR Garden Route Granite Fynbos vegetation observed around dwellings and roads on Outeniqua Game Farm.

Map	Photo	Information
1		AREA 1 Northernmost dwelling (no.1) The fynbos surrounding the dwelling is in a natural condition, with stands of invasive Rooikrans (*Acacia cyclops*) only becoming dominant nearby the dwelling itself. This stand of invasive Rooikrans has existed prior to the construction of the dwelling.
2		AREA 1 Dwelling no. 2 Rooikrans is also visibly dominant around the dwelling here, with more pristine fynbos further away from the dwelling. A large established invasion exists east of this dwelling, and it is essential that this invasion be monotored to ensure it does not spread into natural fynbos remnants. A large stand of EN *Erica unicolor mutica* is visible just before the Rooikrans.
3		AREA 1 Dwelling no. 3 A large lawn and a mature Rooikrans bush is visible adjacent to this dwelling. The surrounding fynbos is in very good condition, and may require a fire soon. The lawn around this dwelling is too large, especially given that the dwelling id in the middle of a CBA 1 and critically endangered Garden Route Granite Fynbos.
4		AREA 1 Dwelling no. 4 Dwelling four has a large fenced off area around it. This fence should be taken down in order to minimise the area of influence of this dwelling in CR fynbos vegetation.
5		AREA 1 Southernmost dwelling (no. 5) Pristine fynbos is visible all the way between dwelling 4 and five. The disturbance footprint, as with all four the other dwellings above, must be minimised around the dwelling.

6		AREA 2 Northernmost dwelling (no. 6) A small senescent patch of fynbos is present south of this dwelling.
7		AREA 2 Southernmost dwelling (no. 7) A highly sensitive invaded patch of fynbos is present south of this dwelling. This is also where Sensitive species 142 was observed. The image on the left illustrates *Leucadendron salignum*.

6.1.2 Thicket & Black Wattle Invaded Areas

Table 3 below presents a discussion of the thicket and Black wattle invaded sections that was observed during the site assessment.

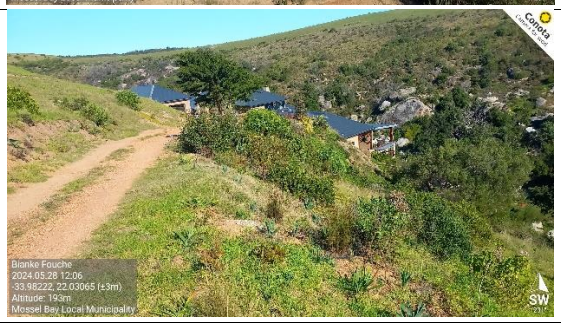
Table 3: Images of the thicket and black wattle invaded areas observed.

Map	Photo	Information
8		AREA 2 Southernmost dwelling (no. 7) This image shows a small piece of the most recently cleared road (made between May and August 2024) leading towards the valley from the dwelling. South of the excavated road is a Black wattle invasion, and north of the road fynbos if visible.
9		Ruiterbos River between AREAS 2 & 3 A recently cleared section of black wattles. In the background is another stand of Black wattles that mut still be cleared. The cleared slash material will be set alight as it is on the slope. The owners must ensure compliance with the SCFPA and relevant fire regulations.
10		AREA 3 A slope that has been maintained clear of black wattles for a few years – fynbos is starting to recover due to ongoing clearing effort here.

6.1.3 Disturbed Vegetation With Fynbos and Thicket

Table 4 below presents a discussion of the thicket and Black wattle invaded sections that was observed during the site assessment.

Table 4: Images of the disturbed vegetation sections that may be approaching a tipping point soon.

Map	Photo	Information
11		AREA 2 Northernmost dwelling (no. 6) The dominance & composition of species here has shifted. The area here is dominated by graminoids, with only a few fynbos and thicket elements persisting north of the dwelling.
12		AREA 2 Illegal wide meandering road This road was flagged as part of the 24G process. Eroded sections are present, and the surrounding vegetation is disturbed and modified. Long-term planning should consider the rehabilitation of this road, as it is not a necessary access road.
13		AREA 2 Southernmost dwelling (no. 7) Disturbed vegetation north of the dwelling. Creeping edge effects and new potential invasive plants are visibly spreading from the garden here. Alien clearing is required here as soon as possible, especially given the close proximity of Sensitive species 142.

6.1.4 Aquatic & Riparian Vegetation

Table 5 below presents a discussion of the river crossings in Areas 2 and 3. Additional crossings with the Ruiterbos River between Areas 2 and 3 are discussed in more detail in the aquatic specialist report by Dr. James Dabrowski.

Table 5: Images of river crossings in Area 2 and 3 respectively

Map	Photo	Information
14		AREA 2 Flagged as crossing x1 in Aquatic report A road crossing the rocky watercourse. Kikuyu grass is visible adjacent to the River. If the illegal widened road leading to this crossing is rehabilitated, then this crossing can also be rehabilitated.
15		AREA 2 Flagged as crossing x2 in Aquatic report The road crossing leading to the southernmost dwelling in Area 2 defined in this report. The impact of the crossing is minimal, and again kikuyu grass is visible in the riparian zone.
16		AREA 3 Small dam & surrounding area A view of the valley and small instream dam. Follow the rehabilitation plan outlined in the aquatic specialist report for this area.

6.1.5 Transformed Areas (Dwellings, Grass Field, & Offstream Dam)

Table 6 below presents a discussion of transformed sections that was observed during the site assessment. Dwellings are not shown in the Table as they have already been shown in other sections above.

Table 6: A description and photo of the transformed field in Area 2.

Map	Photo	Information
17		AREA 2 Grassy Field & Offstream Dam A view of the transformed field and dam. The road here is a second road that was constructed right next to an older existing road (see bottom left of the image). This may not become standard practice.

6.2 Species Observed.

A species accumulation curve for all the species recorded on the site during the assessment are presented in Fig. 14. The species accumulation curve indicates that the fynbos vegetation that was surveyed is the most biodiverse vegetation that was found on the site, and none of the curves are flattening out for fynbos, thicket, or the aquatic environment. This means that increased sampling effort will definitely result in more plant species being added to the species lists for these vegetation types, and that the likelihood of finding more SCC on the site is very high. The next section (Section 6.3) of the report assesses the likelihood of occurrence of all the SCC and important species that have been flagged for this assessment.

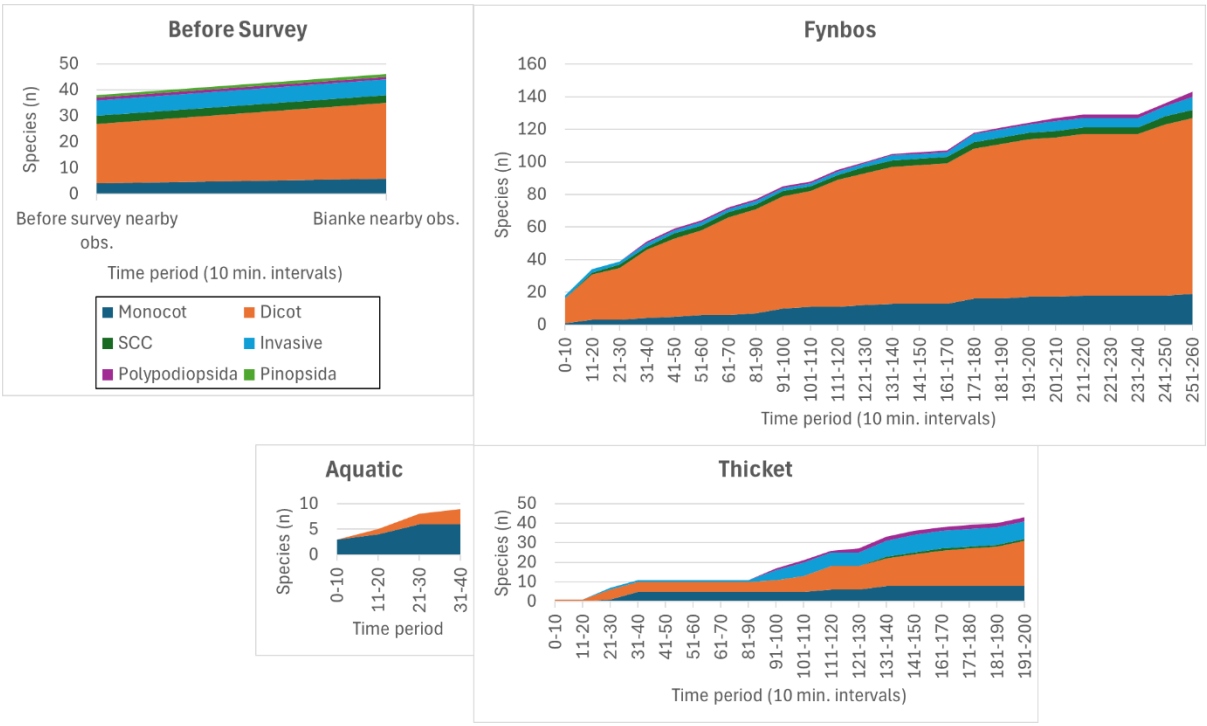


Figure 14: A plant species accumulation curve for the site assessment.

The assessment of the thicket of Portions 420 and 373 included the valleys that are invaded by Black wattles (*Acacia mearnsii*). The thicket vegetation is very disturbed with only small sections remaining intact with minimal disturbance. A species list for this vegetation type, as observed during the site assessment, is in Table 7. Two species of protected trees were observed along the valleys from Area 2 to Area 3 defined in this report (Fig. 15). The relative

sizes of the trees were recorded on a GPS, in order to give an indication of the size distribution and successional stages of the protected trees along the Ruiterbos River. The protected trees that were found here were Milkwood (*Sideroxylon inerme inerme*; no. 579) and Cheesewoods (*Pittosporum viridiflorum*; no. 139).

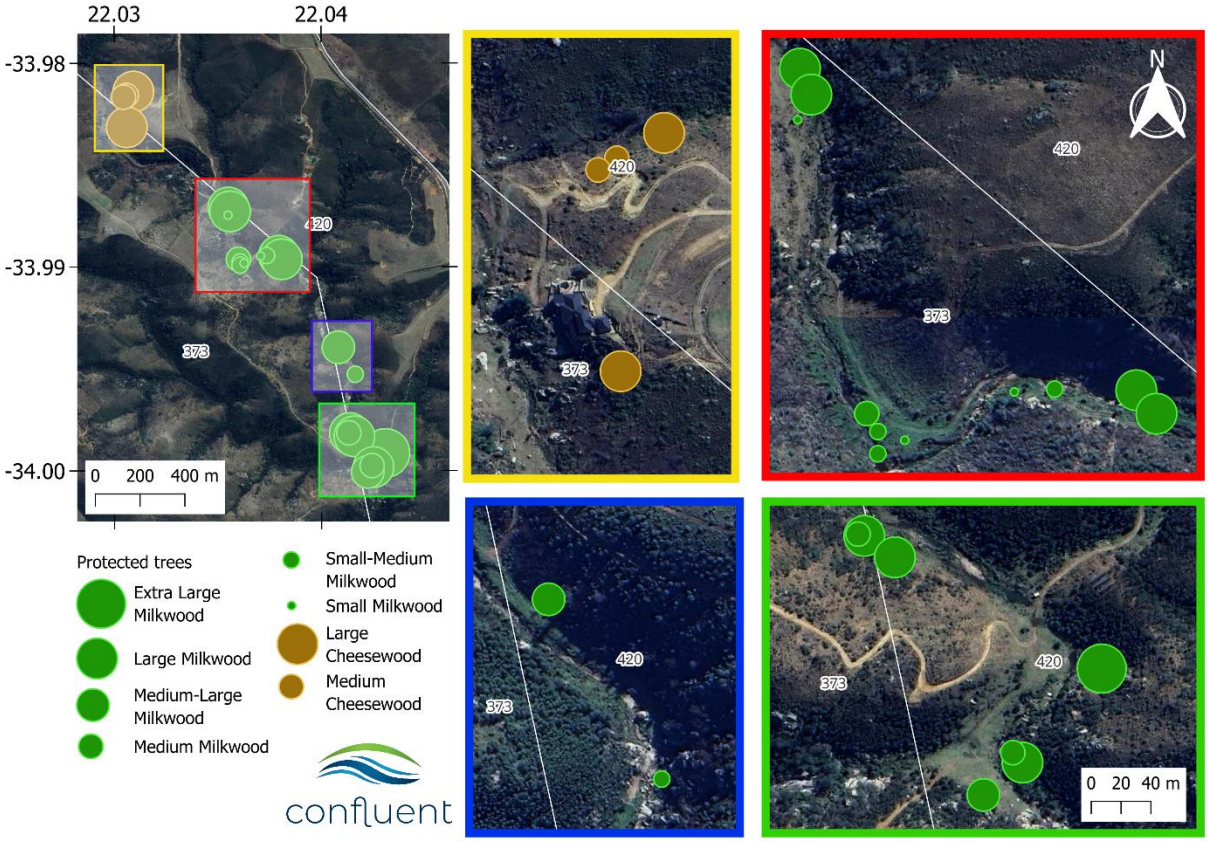


Figure 15: A map of observations of protected Milkwood and Cheesewood trees along the Ruiterbos River valley from Area 2 to Area three. Four inset maps (colour coded) are presented alongside the main map on the left. Images of these trees are presented below the map.

Table 7: A provisional species list made for plants found in thicket and valleys during the site assessments on 28 May and 07 August 2024.

THICKET			
Family	**Species**	**Common name**	**Information**
Liliopsida (Monocotyledons)			
ASPARAGACEAE	*Asparagus africanus*	Bush Asparagus	
POACEAE	*Cynodon dactylon*	Bermuda grass	
POACEAE	*Megathyrsus maximus*	guinea grass	
POACEAE	*Paspalum urvillei*	Vasey Grass	Exotic plant species from South America
Magnoliopsida (Dicotyledons)			
AIZOACEAE	*Carpobrotus deliciosus*	Delicious Sourfig	
ANACARDIACEAE	*Searsia rehmanniana*	Bluntleaf Currantrhus	
APOCYNACEAE	*Cynanchum ellipticum*	Monkeyrope Buckhorn	
APOCYNACEAE	*Secamone alpini*	Monkey Rope	
ARALIACEAE	*Cussonia spicata*	Cabbage tree	
ASTERACEAE	*Tagetes minuta*	wild marigold	Exotic plant species from South America
CELASTRACEAE	*Cassine peragua*	Cape Saffron	
CELASTRACEAE	*Pterocelastrus tricuspidatus*	Candlewood	
EBENACEAE	*Euclea undulata*	Gwarrie	
EUPHORBIACEAE	*Ricinus communis*	castor bean	
FABACEAE	*Acacia mearnsii*	black wattle	Listed invasive plant species from .NEMBA cat. 2; CARA cat. 2 from Australia
FABACEAE	*Paraserianthes lophantha*	Plume Albizia	Listed invasive plant species from .NEMBA cat. 1b; CARA cat. 1 from Australia
GERANIACEAE	*Pelargonium grossularioides*	Coconut Geranium	
GERANIACEAE	*Pelargonium papilionaceum*	butterfly pelargonium	
GERANIACEAE	*Pelargonium zonale*	horseshoe geranium	
MALVACEAE	*Abutilon sonneratianum*	Butter and cheese	Exotic species from subtropicalAmerica
MORACEAE	*Ficus burtt-davyi*	Scrambling Fig	
PENAEACEAE	*Olinia ventosa*	Hard pear	
PERACEAE	*Clutia pulchella*	Warty Clut	
PHYTOLACCACEAE	*Phytolacca octandra*	Inkweed	Listed invasive plant species from .NEMBA cat. 1b; Not listed under CARA from torpical regions of the Americas
PITTOSPORACEAE	*Pittosporum viridiflorum*	Cape Cheesewood	Least Threatened. Protected Tree no. 139
POLYGONACEAE	*Persicaria decipiens*	slender knotweed	
PRIMULACEAE	*Rapanea melanophloeos*	Cape beech	
RUBIACEAE	*Canthium inerme*	Turkeyberry	
RUTACEAE	*Zanthoxylum capense*	Small knobwood	
SALICACEAE	*Scolopia zeyheri*	Thorn Pear	
SALICACEAE	*Trimeria grandifolia*	Roundleaf Wild-Mulberry	
SAPOTACEAE	*Sideroxylon inerme inerme*	Southern White Milkwood	Least Threatened. Protected Tree no. 579
SCROPHULARIACEAE	*Hemimeris racemosa*	Monkey Yellowface	

THICKET			
Family	**Species**	**Common name**	**Information**
SCROPHULARIACEAE	*Lyperia violacea*	Pink Tearbush	
SCROPHULARIACEAE	*Nemesia floribunda*	Common Lionface	
SCROPHULARIACEAE	*Phyllopodium rustii*		
SOLANACEAE	*Datura stramonium*	jimsonweed	Listed invasive plant species from .NEMBA cat. 1b; CARA cat. 1 from Mexico
SOLANACEAE	*Nicotiana glauca*	tree tobacco	Listed invasive plant species from .NEMBA cat. 1b; CARA cat. 1 from South America
SOLANACEAE	*Solanum linnaeanum*	Yellow Bitter-apple	Exotic plant species from South America
THYMELAEACEAE	*Passerina falcifolia*	Weeping Gonna	
VERBENACEAE	*Lantana camara*	common lantana	
VERBENACEAE	*Verbena bonariensis*	purpletop vervain	Listed invasive plant species from .NEMBA cat. 1b; Not listed under CARA from South America
VITACEAE	*Rhoicissus digitata*	Baboon Grape	
Polypodiopsida			
DENNSTAEDTIACEAE	*Pteridium aquilinum*	common bracken	
DENNSTAEDTIACEAE	*Pteridium aquilinum capense*	Southern Bracken	

All of the Red Listed Plant species that were found during the site assessment were in the fynbos vegetation (Table 8). The Red List categories are briefly explained in the IUCN summary page provided in Appendix 12.3. In total six SCC were found and confirmed. One of these was the endangered (EN) *Erica unicolor mutica*, which is very abundant on Outeniqua Game Farm. Despite its abundance on the farm, this is a range restricted species which has experienced ongoing habitat loss and currently the species is under a declining population trajectory. Two of the SCC found are near threatened (NT) species, and three more are vulnerable (VU). One of the VU species is also a protected species, which means that it is targeted by poachers. It's identity can't be revealed in this report. The Sensitive Species 142 was found in Area 2 around the southernmost dwelling there. It is highly likely that construction of this second dwelling impacted on the population of this sensitive SCC. Refer to iNaturalist for photos of the SCC that have been recorded on the site.

Table 8: A provisional species list made for plants found in fynbos and valleys during the site assessments on 28 May and 07 August 2024.

FYNBOS			
Family	**Species**	**Common name**	**Information**
Liliopsida (Monocotyledons)			
AMARYLLIDACEAE	Sensitive species 142	NA	Vulnerable A2c; C2a(i)
ASPARAGACEAE	*Asparagus rubicundus*	Redstem Asparagus	
ASPARAGACEAE	*Drimia capensis*	Maerman Squill	
ASPARAGACEAE	*Eriospermum capense*	Cape Woolseed	
ASPHODELACEAE	*Aloe arborescens*	Candelabra Aloe	
COMMELINACEAE	*Commelina africana*	African Yellow Dayflower	
CYPERACEAE	*Ficinia nigrescens*	Black Clubrush	
HYPOXIDACEAE	*Hypoxis sp.*	Stargrasses	
IRIDACEAE	*Babiana fourcadei*	Langeberg Bobbejaantjie	
IRIDACEAE	*Bobartia robusta*	Giant Rushiris	
IRIDACEAE	*Freesia cf. fergusoniae*	Freesias	Vulnerable B1ab(i,ii,iii,iv,v)
IRIDACEAE	*Tritoniopsis caffra*	Mountain Reedpipe	
LANARIACEAE	*Lanaria lanata*	Lambstail	
ORCHIDACEAE	*Satyrium sp.*	Satyr Orchids	
POACEAE	*Cenchrus clandestinus*	Kikuyu Grass	Listed invasive plant species from .NEMBA cat. 1b; CARA cat. 1 from East Africa
POACEAE	*Chloris gayana*	Rhodes Grass	
POACEAE	*Eragrostis curvula*	African love grass	
POACEAE	*Melinis repens*	Natal grass	
RESTIONACEAE	*Restio triticeus*	Wheat Capereed	
RESTIONACEAE	*Rhodocoma sp.*	Fray Reeds	
Magnoliopsida (Dicotyledons)			
ACANTHACEAE	*Barleria pungens*		
AIZOACEAE	*Carpobrotus edulis*	sea fig	
AIZOACEAE	*Lampranthus elegans*	Elegant Brightfig	
AIZOACEAE	*Lampranthus sp.*	dewplants	
AIZOACEAE	*Lampranthus spectabilis*	Spectacular Brightfig	
ANACARDIACEAE	*Searsia incisa*	Rubrub Currantrhus	
ANACARDIACEAE	*Searsia lucida*	Glossy Currantrhus	
ANACARDIACEAE	*Searsia pallens*	Ribbed Kunirhus	
ANACARDIACEAE	*Searsia sp.*	Karees	
APOCYNACEAE	*Carissa bispinosa*	num-num	
APOCYNACEAE	*Gomphocarpus physocarpus*	balloonplant	
ASTERACEAE	*Athanasia trifurcata*	Three-tooth Kanniedood	
ASTERACEAE	*Berkheya angustifolia*	Needle Capethistle	
ASTERACEAE	*Berkheya armata*	Giant Capethistle	
ASTERACEAE	*Bidens pilosa*	Hairy Beggarticks	Exotic plant species from Central & South America
ASTERACEAE	*Cirsium vulgare*	Bull Thistle	Listed invasive plant species from .NEMBA

FYNBOS			
Family	**Species**	**Common name**	**Information**
			cat. 1b; CARA cat. 1 from Europe, Asia & North Africa
ASTERACEAE	*Cullumia aculeata*	Smallflower Snakethistle	
ASTERACEAE	*Dicerothamnus rhinocerotis*	Renosterbush	
ASTERACEAE	*Eriocephalus africanus*	Cape Snow Bush	
ASTERACEAE	*Euryops ericoides*		
ASTERACEAE	*Gerbera piloselloides*	Blacktea Gerbera	
ASTERACEAE	*Gerbera serrata*	Strap Gerbera	
ASTERACEAE	*Helichrysum odoratissimum*	Kooigoed Everlasting	
ASTERACEAE	*Helichrysum patulum*	Honey Everlasting	
ASTERACEAE	*Helichrysum petiolare*	Licorice plant	
ASTERACEAE	*Helichrysum teretifolium*	Needle Everlasting	
ASTERACEAE	*Metalasia acuta*	Pointy Blombush	
ASTERACEAE	*Metalasia densa*	Fynbos Blombush	
ASTERACEAE	*Metalasia pungens*	Stink Blombush	
ASTERACEAE	*Metalasia sp.*	Blombushes	
ASTERACEAE	*Nidorella ivifolia*	Ivy Vleiweed	
ASTERACEAE	*Osteospermum moniliferum*	Bietou	
ASTERACEAE	*Senecio crenatus*	Langeberg Ragwort	
ASTERACEAE	*Seriphium plumosum*	Bankrupt Bush	
ASTERACEAE	*Stoebe alopecuroides*	Foxy Slangbos	
ASTERACEAE	*Tarchonanthus littoralis*	Coastal Camphorbush	
ASTERACEAE	*Ursinia trifida*	Trifid Paraseed	
BRASSICACEAE	*Heliophila subulata*	Common Sunspurge	
CACTACEAE	*Opuntia ficus-indica*	Indian fig opuntia	Listed invasive plant species from .NEMBA cat. 1b; CARA cat. 1 from Mexico & Central South America
CAMPANULACEAE	*Lobelia neglecta*	Rough Lobelia	
CAMPANULACEAE	*Lobelia tomentosa*	Woolly Lobelia	
CAMPANULACEAE	*Prismatocarpus candolleanus*	Tube Shaftfruit	
CAPRIFOLIACEAE	*Scabiosa columbaria*	Small Scabious	
CELASTRACEAE	*Gymnosporia buxifolia*	Common Spikethorn	
CELASTRACEAE	*Gymnosporia nemorosa*	White Forest Spikethorn	
CRASSULACEAE	*Crassula biplanata*	Silver Stonecrop	
CRASSULACEAE	*Crassula ericoides*	Heath Stonecrop	
CRASSULACEAE	*Crassula muscosa*	lizard's-tail	
CRASSULACEAE	*Crassula nudicaulis*	Karoo Stonecrop	
CRASSULACEAE	*Crassula rubricaulis*	Redstem Stonecrop	
CRASSULACEAE	*Crassula saxifraga*	Tutu Stonecrop	
DROSERACEAE	*Drosera zeyheri*	Pale Roseflower Sundew	
EBENACEAE	*Diospyros dichrophylla*	Poison Starapple	
EBENACEAE	*Euclea crispa*	Blue Gwarrie	

FYNBOS			
Family	**Species**	**Common name**	**Information**
EBENACEAE	*Euclea polyandra*	Baboon Guarri	
EBENACEAE	*Euclea racemosa*	Dune Gwarrie	
ERICACEAE	*Erica discolor*	Discolorous Heath	
ERICACEAE	*Erica imbricata*	Salt-and-Pepper Heath	
ERICACEAE	*Erica peltata*	Shield Heath	
ERICACEAE	*Erica uberiflora*	Over Heath	
ERICACEAE	*Erica unicolor mutica*	Two Onecolour Heath	Endangered B1ab(ii,iii,v)
FABACEAE	*Acacia cyclops*	western coastal wattle	Listed invasive plant species from .NEMBA cat. 1b; CARA cat. 2 from Australia
FABACEAE	*Acacia mearnsii*	black wattle	Listed invasive plant species from .NEMBA cat. 2; CARA cat. 2 from Australia
FABACEAE	*Aspalathus asparagoides*	Asparagus Capegorse	
FABACEAE	*Aspalathus hirta*	Eina Capegorse	
FABACEAE	*Indigofera alopecuroides*	Foxy Indigo	
FABACEAE	*Indigofera heterophylla*	Diverse Indigo	
FABACEAE	*Psoralea arborea*	Tree Fountainbush	
FABACEAE	*Psoralea prodiens*	Pale Dottypea	
FABACEAE	*Tephrosia capensis*	Cape Hoarypea	
FABACEAE	*Vachellia karroo*	Sweet Thorn	
GERANIACEAE	*Pelargonium citronellum*	Lemonbalm Storksbill	
GERANIACEAE	*Pelargonium fruticosum*	Fernleaf Storksbill	
LAMIACEAE	*Leonotis ocymifolia*	Rock Lionspaw	
LAMIACEAE	*Stachys aethiopica*	African Stachys	
MALVACEAE	*Grewia occidentalis*	Crossberry	
MALVACEAE	*Hermannia angularis*	Angular Dollsrose	
MALVACEAE	*Hermannia flammea*	Flaming Dollsrose	
MALVACEAE	*Hermannia holosericea*	Kwaaiman Dollsrose	
MALVACEAE	*Hermannia lavandulifolia*	Lavender Dollsrose	Vulnerable A2c
MALVACEAE	*Hermannia saccifera*	cumin hermannia	
MALVACEAE	*Hermannia salviifolia*	Sage Dollsrose	
MONTINIACEAE	*Montinia caryophyllacea*	Pepperbush	
MORACEAE	*Ficus burkei*	Common Wild Fig	
MYRICACEAE	*Morella humilis*	Shy Waxberry	
MYRICACEAE	*Morella quercifolia*	Oak Waxberry	
OLEACEAE	*Olea europaea*	Olive	
OXALIDACEAE	*Oxalis ciliaris*	Fringe Sorrel	
OXALIDACEAE	*Oxalis polyphylla*	Manyleaf Sorrel	
OXALIDACEAE	*Oxalis sp.*	woodsorrels	
PERACEAE	*Clutia laxa*	Twiggy Clut	
POLYGALACEAE	*Muraltia alopecuroides*	Foxy Purplegorse	
POLYGALACEAE	*Muraltia ciliaris*	Spiderweb Purplegorse	
PRIMULACEAE	*Myrsine africana*	African Boxwood	

FYNBOS			
Family	**Species**	**Common name**	**Information**
PROTEACEAE	*Hakea sericea*	Bushy needlebush	Listed invasive plant species from .NEMBA cat. 1b; CARA cat. 1 from Australia
PROTEACEAE	*Leucadendron salignum*	Common Sunshine Conebush	
PROTEACEAE	*Leucospermum cuneiforme*	Wartstem Pincushion	
PROTEACEAE	*Protea nitida*	Wagon Tree	
RHAMNACEAE	*Phylica purpurea*	Purple Hardleaf	
RHAMNACEAE	*Phylica velutina*	Fluffy Hardleaf	Near Threatened A2c; B1ab(ii,iii,iv,v)
ROSACEAE	*Cliffortia stricta*	Staid Caperose	
RUBIACEAE	*Anthospermum aethiopicum*	Tall Flowerseed	
RUBIACEAE	*Anthospermum galioides*	Common Flowerseed	
RUBIACEAE	*Anthospermum spathulatum*	Spoon Flowerseed	
RUTACEAE	*Agathosma capensis*	Cape Buchu	
RUTACEAE	*Agathosma ovata*	False Buchu	
SANTALACEAE	*Thesium spicatum*	Spike Rootthug	
SCROPHULARIACEAE	*Chaenostoma revolutum*	Fineleaf Skunkbush	
SCROPHULARIACEAE	*Jamesbrittenia calciphila*	Lime Jaybee	Near Threatened B1ab(iii)
SCROPHULARIACEAE	*Selago corymbosa*	Stiff Bitterbush	
SCROPHULARIACEAE	*Selago dolosa*	Ball Bitterbush	
SOLANACEAE	*Physalis peruviana*	Cape gooseberry	Exotic plant species from tropical regions of the Americas
SOLANACEAE	*Solanum mauritianum*	bugweed	Listed invasive plant species from .NEMBA cat. 1b; CARA cat. 1
STILBACEAE	*Nuxia floribunda*	Forest Elder	
THYMELAEACEAE	*Gnidia laxa*	Lax Capesaffron	
THYMELAEACEAE	*Gnidia sericea*	Silky Capesaffron	
THYMELAEACEAE	*Passerina corymbosa*	Common Gonna	
THYMELAEACEAE	*Struthiola argentea*	Evening Capespray	
THYMELAEACEAE	*Struthiola parviflora*	Poor Capespray	
Polypodiopsida			
ANEMIACEAE	*Anemia caffrorum*	Scented Fern	
PTERIDACEAE	*Cheilanthes viridis*	Green Cliff Brake	
PTERIDACEAE	*Pteris tremula*	Shaking Brake	

A thorough assessment of the aquatic plant biodiversity was not essential to this 24G assessment. A short species list is provided in Table 9 to indicate species that occurred nearby road crossings with the Ruiterbos River between Areas 2 and 3. The aquatic report by Dr. James Dabrowski contains some images of the vegetation observed. What is clear from the species list, however, is that the aquatic environment in the Ruiterbos River channel is home to a variety of different plant species, which is positive. It was good to see that Kikuyu grass (*Cenchrus clandestinus*) had not taken over the channel, and that more natural aquatic diversity prevails.

Table 9: A provisional species list made for plants found in thicket and valleys (Ruiterbos River channel) during the site assessments on 28 May and 07 August 2024.

AQUATIC			
Family	**Species**	**Common name**	**Information**
Liliopsida (Monocotyledons)			
CYPERACEAE	*Cyperus polystachyos*	Bunchy flat-sedge	
CYPERACEAE	*Cyperus textilis*	Mat Sedge	
CYPERACEAE	*Cyperus thunbergii*	Sedge species	
CYPERACEAE	*Isolepis prolifera*	Budding Club-Rush	
JUNCACEAE	*Juncus effusus*	Soft Rush	
JUNCACEAE	*Juncus lymatophyllus*	Small rush	
RESTIONACEAE	*Restio paniculatus*	Broom Anglereed	
TYPHACEAE	*Typha capensis*	Cape Bulrush	
Magnoliopsida (Dicotyledons)			
APIACEAE	*Berula thunbergii*	cutleaf waterparsnip	
ASTERACEAE	*Cotula laxa*	Little Buttons	
EUPHORBIACEAE	*Acalypha capensis*		

BOX 2: NEMBA categories for listed invasive alien plants.

Category 1b

Species which must be controlled.

- Property owners and organs of state must control the listed invasive species within their properties.
- If an Invasive Species Management Programme has been developed, a person must control the listed invasive species in accordance with such programme.
- Authorised officials must be permitted to enter properties to monitor, assist with or implement the control of listed species.
- Any Category 2 listed species (where permits are applicable) which fall outside of containment and control, revert to Category 1b and must be controlled.
- Any Category 3 listed species which occur within a Protected Area or Riparian (wetland) revert to Category 1b and must be controlled.
- The Minister may require any person to develop a Category 1b Control Plan for one or more Category 1b species occurring on a property.

Category 2

Any species listed under Category 2 requires a permit issued by the Department of Forestry, Fisheries and the Environment (DFFE) to carry out a restricted activity (See Permit Applications.)

- A permit is required to carry out any restricted activity.
- No person may carry out a restricted activity in respect of a Category 2 listed invasive species without a permit.
- A person in control of a Category 2 listed species must take all necessary measures to ensure that specimens of the species do not spread outside of the land or area, such as an aviary) specified in the permit.

6.3 Additional SCC That May be Found

All SCC that may be present on the site have been identified using the screening tool report for the site, iNaturalist nearby observations, and the POSA database (Table 10).

Table 10: All plant SCC and protected species flagged for the site and nearby surroundings, and their probability of occurrence (colour coded) in the aquatic, thicket, and fynbos habitats assessed. Blue species entries indicate species that were not included in the initial Screening Tool Report.

Species	Family	Status	Probability of occurrence: Fynbos	Probability of occurrence: Thicket	Probability of occurrence: Aquatic freshwater
Drosanthemum striatum	AIZOACEAE	VU	Low	Very Low	Very Low
Lampranthus pauciflorus	AIZOACEAE	EN	Low	Low	Very Low
Sensitive species 142	AMARYLLIDACEAE	VU	Confirmed	Moderate	Very Low
Sensitive species 268	ASPHODELACEAE	EN	Very High	Very High	Very Low
Sensitive species 516	ASPHODELACEAE	EN	High	Moderate	Very Low
Sensitive species 633	ASPHODELACEAE	CR	High	Low	Very Low
Lidbeckia pinnata	ASTERACEAE	EN	Low	Very Low	Very Low
Dioscorea mundii	DIOSCOREACEAE	NT	Very Low	Moderate	Very Low
Erica unicolor subsp. mutica	ERICACEAE	EN	Confirmed	Low	Very Low
Euphorbia globosa	EUPHORBIACEAE	CR	Very Low	Very Low	Very Low
Pelargonium denticulatum	GERANIACEAE	Rare	Very Low	Very Low	Low
Sensitive species 980	HYACINTHACEAE	EN	Moderate	Very Low	Very Low
Freesia caryophyllacea	IRIDACEAE	NT	Moderate	Low	Very Low
Freesia fergusoniae	IRIDACEAE	VU	Likely Confirmed	Moderate	Very Low
Geissorhiza outeniquensis	IRIDACEAE	NT	Low	Very Low	Very Low
Romulea jugicola	IRIDACEAE	VU	Moderate	Very Low	Very Low
Ruellia pilosa	IRIDACEAE	VU	Low	Very Low	Very Low
Sensitive species 700	IRIDACEAE	VU	Very High	Very Low	Very Low
Sensitive species 800	IRIDACEAE	VU	Moderate	Very Low	Very Low
Watsonia aletroides	IRIDACEAE	NT	Moderate	Very Low	Very Low
Ocotea bullata	LAURACEAE	EN; Protected tree no. 118	Very Low	Moderate	Very Low
Hermannia lavandulifolia	MALVACEAE	VU	Confirmed	High	Very Low
Eulophia (Acrolophia) barbata	ORCHIDACEAE	EN	Low	Very Low	Very Low
Eulophia (Acrolophia) ustulata	ORCHIDACEAE	VU	Low	Very Low	Very Low
Holothrix pilosa	ORCHIDACEAE	NT	High	Moderate	Very Low
Sensitive species 1024	ORCHIDACEAE	EN	High	Low	Very Low

Species	Family	Status	Probability of occurrence: Fynbos	Probability of occurrence: Thicket	Probability of occurrence: Aquatic freshwater
Sensitive species 500	ORCHIDACEAE	EN	High	Moderate	Very Low
Oxalis pendulifolia	OXALIDACEAE	NT	Moderate	Moderate	Very Low
Pittosporum viridiflorum	PITTOSPORACEAE	LC; Protected tree no. 139	Moderate	Confirmed	Very Low
Leucadendron pubibracteolatum	PROTEACEAE	NT	Low	Very Low	Very Low
Leucospermum formosum	PROTEACEAE	EN	Low	Very Low	Very Low
Elegia squamosa	RESTIONACEAE	EN	Very High	Low	Very Low
Phylica velutina	RHAMNACEAE	NT	Confirmed	Low	Very Low
Acmadenia rupicola	RUTACEAE	VU	Low	Very Low	Very Low
Acmadenia tetragona	RUTACEAE	NT	Moderate	Very Low	Very Low
Agathosma microcarpa	RUTACEAE	VU	Moderate	Moderate	Very Low
Agathosma muirii	RUTACEAE	VU	Low	Very Low	Very Low
Diosma passerinoides	RUTACEAE	VU	Low	Very Low	Very Low
Euchaetis albertiniana	RUTACEAE	EN	Low	Very Low	Very Low
Sideroxylon inerme inerme	SAPOTACEAE	LC; Protected tree no. 579	Moderate	Confirmed	Very Low
Jamesbritennia calciphilla	SCROPHULARIACEAE	NT	Confirmed	High	Very Low
Selago burchellii	SCROPHULARIACEAE	VU	Low	Very Low	Very Low
Gnidia chrysophylla	THYMELAEACEAE	NT	High	Moderate	Very Low

7. SITE SENSITIVITY VERIFICATION

7.1 Terrestrial Biodiversity

The terrestrial biodiversity theme sensitivity is confirmed to be **Very High** as CR ecosystems and sensitive aquatic features are present in the landscapes around the dwellings, roads, and dams on the properties. This sensitivity applies to all areas included in this study.

7.2 Botanical Diversity

Several SCC are present, as well as protected tree species. Several additional SCC are also likely present in the fynbos and thicket vegetation here.

- Fynbos and thicket both have a **High** botanical sensitivity.
- The Ruiterbos River watercourse is the only area with a **Low** botanical sensitivity (no SCC are confirmed or likely to occur here).

8. SITE ECOLOGICAL IMPORTANCE

The site ecological importance (SEI) assessment is a function of biodiversity importance (BI) and receptor resilience (RR), which is defined as:

> *"The intrinsic capacity of the receptor (i.e., habitat type in question) to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention."*

The function is as follows: SEI = BI + RR. BI is a function of conservation importance (CI) and habitat functional integrity (FI), so that BI = CI + FI. The definition of CI given by the Species Environmental Assessment Guideline of 2022 is:

> *"The importance of a site for supporting biodiversity features of conservation concern present, e.g., populations of IUCN threatened and Near Threatened species (CR, EN, VU and NT), Rare species, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes."*

Most features included in CI are provided by the screening tool but needs to be evaluated at a finer scale from the field work assessment. FI is defined as:

> *"A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts."*

The criteria for defining RR, CI and FI are provided in the Species Environmental Assessment Guidelines of 2022. BI can be derived from a simple matrix of CI and FI, as illustrated in Table 11 below.

Table 11: The matrix that defines the biodiversity importance (BI) of a given habitat type, as identified from a desktop and field assessment.

Biodiversity Importance		**Conservation Importance**				
		Very High	High	Medium	Low	Very Low
Functional Integrity	Very High	Very High	Very High	High	Medium	Low
	High	Very High	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very Low
	Low	Medium	Medium	Low	Low	Very Low
	Very Low	Medium	Low	Very Low	Very Low	Very Low

SEI can then be derived from a second matrix, as depicted in Table 12. SEI is specific to the proposed development and can therefore only be compared between alternative layouts for the same proposed development, but not between developments.

Table 12: The matrix that defines the site ecological importance (SEI) of a given habitat type, as identified from a desktop and field assessment.

Site Ecological Importance		**Biodiversity Importance**				
		Very High	High	Medium	Low	Very Low
Receptor Resilience	Very High	Very High	Very High	High	Medium	Low
	High	Very High	Very High	High	Medium	Very Low
	Medium	Very High	High	Medium	Low	Very Low
	Low	High	Medium	Low	Very Low	Very Low
	Very Low	Medium	Low	Very Low	Very Low	Very Low

The overall SEI score is intended to provide a more refined overview of the sensitivity of the various habitats that have been identified on the site. The benchmark for "fully natural" vegetation is defined according to the Vegetation Assets, States, and Transitions (VAST) framework, which considers natural vegetation to be the state pre-European conditions (i.e., period prior to the 1700s or 1600s). The habitats and ecosystems of the property are therefore defined according to the VAST framework, which acts as an aid for the SEI calculation, especially in determining the appropriate RR to assign. The VAST framework categories are summarised in Appendix 12.4, and is an aid for the SEI calculation as it helps to (Thackway & Lesslie, 2006):

- Describe and accounts for changes in the condition and status of vegetation.
- Make explicit links between land management (current) and vegetation modification.
- Provide a mechanism for describing the consequences of certain land management on vegetation.
- Contribute to the analysis of terrestrial ecosystem services that are provided by vegetation, including comparison between various land-use

The SEI map for Portions 420 and 373 only includes landscapes and areas around the activities that are assessed in this report (Fig. 16). Table 13 below describes the recommended mitigation for each SEI category based on the Species Environmental Guidelines (Verburgt et al., 2020). The reasoning behind the map is provided in Table 14.

Table 13: The mitigation guidelines for interpreting the various SEI categories for the proposed development activities (Verburgt et al., 2020).

Site Ecological Importance	Recommendation for activities based on the mitigation hierarchy
Very High	Avoidance mitigation – no destructive development activities should be considered. Offset mitigation not acceptable/not possible (i.e. last remaining populations of species, last remaining good condition patches of ecosystems/unique species assemblages). Destructive impacts for species/ecosystems where persistence target remains.
High	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted; limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.
Medium	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Low	Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Very Low	Minimisation mitigation – development activities of medium to high impact acceptable and restoration activities may not be required.

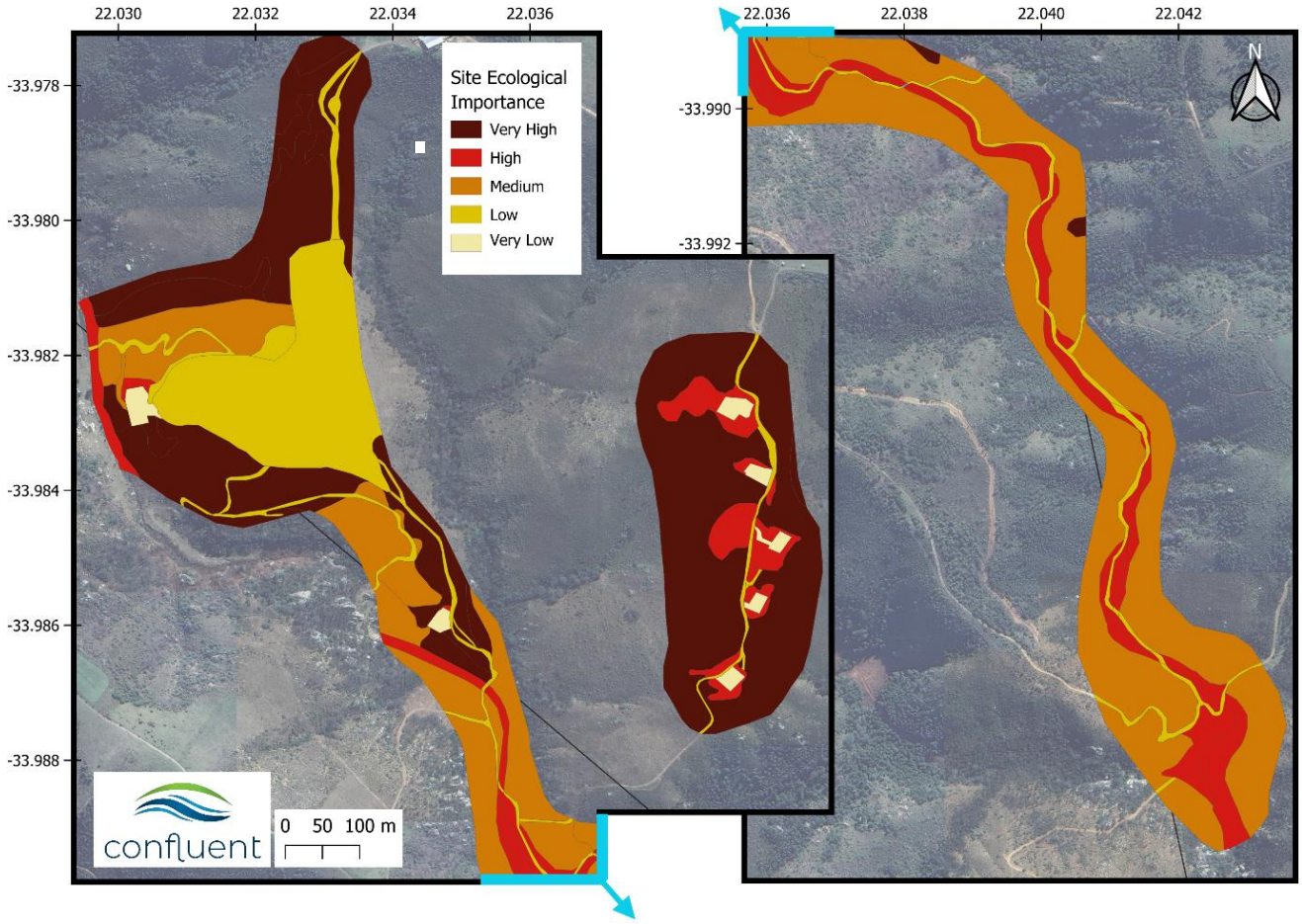


Figure 16: The SEI map for the assessed sections of Portions 420 and 373.

Table 14: The evaluation of the SEI for the vegetation/habitats present within and surrounding the proposed development.

Land use / Land cover	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Thicket	**Very High** Thicket is likely most similar to Gouritz Valley Thicket, which is CR. Confirmed presence of Milkwood (*Sideroxylon inerme inerme*) and Cheesewood (*Pittosporum viridiflorum*) protected trees.	**High** Good habitat connectivity with potentially functional ecological corridors. Good rehabilitation potential, however, thicket patches that are still relatively intact are fragmented.	**Low** VAST class II: Modified The thicket habitat is unlikely to recover fully if it becomes invaded or if any other form of clearing and fragmentation negatively affects these already small fragments.	**Very High** BI: Very High RR: Low
Invaded Fynbos	**Very High**	**High**	**Medium**	**Very High**

Land use / Land cover	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
	Critically Endangered Garden Route Granite Fynbos with several confirmed and likely to occur SCC.	Only minor current negative ecological impacts relating to spreading invasive plant stands. Good rehabilitation potential.	VAST class II: Modified It is easy to transform the original CR fynbos, and here that has happened as the receptor is losing biodiversity via established invasive plants. The habitat will recover slowly, and some species might be lost from these patches forever.	BI: Very High RR: Medium
Garden Route Granite Fynbos	**Very High** Critically Endangered Garden Route Granite Fynbos with several confirmed and likely to occur SCC.	**Very High** > 5 ha of a CR vegetation type. High habitat connectivity serving as functional ecological corridors and minimal past disturbance	**Low** VAST class I: Residual It is easy to transform this CR fynbos. Many species are at risk of being lost forever with various anthropogenic disturbances. This is especially concerning given the high risk of extinction for this vegetation type.	**Very High** BI: Very High RR: Low
Ruiterbos River	**High** In a sensitive drainage line surrounded by black wattle invasions. However, the invaded areas are still representative of EN (Swellendam Silcrete Fynbos) and CR (Garden Route Granite Fynbos; Gouritz Valley Thicket) ecosystems. Confirmed presence of Milkwood (*Sideroxylon inerme inerme*) and Cheesewood (*Pittosporum viridiflorum*) protected trees.	**High** Only minor current negative ecological impacts relating to spreading invasive plant stands. Good rehabilitation potential.	**Medium** VAST class III: Transformed The vegetation here will likely remain slightly disturbed and will recover slowly following disturbances	**High** BI: High RR: Medium
Dwelling disturbance & invaded area	**Medium** > 50% of receptor contains natural habitat with potential to support SCC. It might be very invaded and seem	**High** Good rehabilitation potential with connectivity to pristine fynbos.	**Low** VAST class II: Modified With alien clearing effort, the current invaded	**High** BI: Medium RR: Low

Land use / Land cover	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
	unnatural, however this vegetation could easily be restored.	There are nearby roads between intact habitat patches.	receptor can be restored back to fynbos.	
Break – cleared maintained & **Disturbed – Fynbos & Thicket elements**	**Medium** > 50% of receptor contains natural habitat with potential to support SCC, especially if restored. Confirmed presence of Milkwood (*Sideroxylon inerme inerme*) and Cheesewood (*Pittosporum viridiflorum*) protected trees.	**Medium** Mostly minor current negative ecological impacts with some major impacts relating to vegetation clearance, edge effects, invasions, and a shift in dominant species cover. Moderate rehabilitation potential	**Medium** VAST class III: Transformed This receptor is not completely transformed yet, but the natural species composition has been significantly altered. The vegetation here will, over time, either become more transformed (with ongoing disturbances) or can slowly restore back to fynbos and thicket.	**Medium** BI: Medium RR: Medium
Black wattle thicket – active clearing in some places & **Grassy Valley Bottom**	**Medium** Severe and established invasions, however clearing is occurring in some places and there is evidence of the natural fynbos and thicket returning on some places. Therefore, there is still a good likelihood this section could support SCC if alien clearing continues in the long term, however it is uncertain if restoration can be passive only. Some ongoing active restoration will be required. Confirmed presence of Milkwood (*Sideroxylon inerme inerme*) and Cheesewood (*Pittosporum viridiflorum*) protected trees.	**Medium** A semi-intact area for any conservation status. Moderate rehabilitation potential with long-term commitment and funds for alien clearing & restoration.	**Medium** VAST class III: Transformed The black wattle receptor will only be altered with active alien clearing (already started, according to a management plan) that occurs over decades. Therefore the black wattles will recover slowly with concerted effort, but the affected fynbos and thicket will also recover slowly over time, with care.	**Medium** BI: Medium RR: Medium
Transformed – Grass &	**Low** < 50% of receptor contains natural habitat	**Medium** Only narrow corridors of	**Medium** VAST class V: Replaced - managed	**Low** BI: Low

Land use / Land cover	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience (RR)	Site Ecological Importance (SEI)
Transformed – Off stream Dam	with limited potential to support SCC.	good habitat connectivity or larger areas of poor habitat connectivity and a busy used road network between intact habitat patches.	The grassy field & off stream dam are likely to remain transformed and will remain areas that no longer represent the natural vegetation unless active restoration takes place. The receptor can therefore be changed to a more natural state, but it will take a long time with invested resources to achieve this.	RR: Medium
Road	**Low** < 50% of receptor contains natural habitat with limited potential to support SCC.	**Low** Several minor and major current negative ecological impacts.	**Medium** VAST class V: Replaced - managed Roads (current receptor) will likely remain roads, however some of the roads that have started to erode may recover, but slowly.	**Low** BI: Low RR: Medium
Dwellings	**Very Low** No natural habitat remaining.	**Very Low** Dwellings do not form part of a connected natural landscape.	**Very High** VAST class VI: Removed The dwellings will remain a built environment.	**Very Low** BI: Very Low RR: Very High

9. IMPACT ASSESSMENT

The impact assessment of Portions 420 and 373 is required due to the high sensitivities of the ecosystems and vegetation here, as well as the Section 24G listed activities that have been triggered for the site. The SEI was calculated for both the Terrestrial Biodiversity, and Plant Species Themes assessed in this report, and it alludes to making use of the mitigation hierarchy (Brownlie et al., 2023; Ekstrom et al., 2015) in order to inform decision making. If mitigation measures are likely to be ineffective at minimising large impacts, then avoidance mitigation must be implemented, i.e., a rehabilitation option (Fig. 17). If an impact cannot be prevented, then minimisation is preferred. The methods used for this impact assessment is provided in Appendix 12.5.

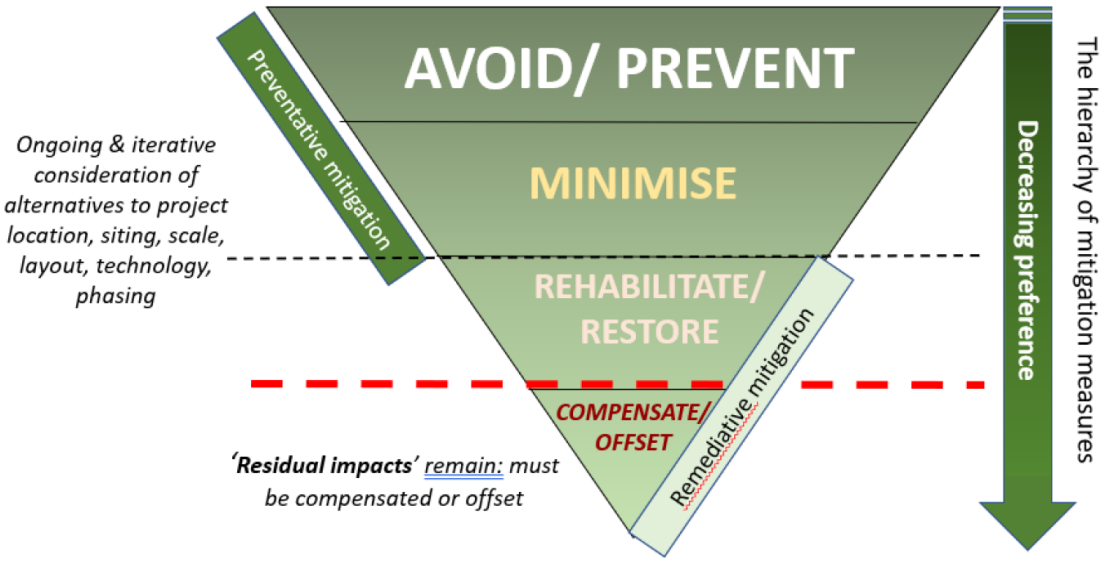


Figure 17: The mitigation hierarchy as presented in (Brownlie et al., 2023). Mitigation steps are illustrated in a hierarchy. The lower steps in the diagram should only be considered once the steps above have been duly considered.

9.1 Current Impacts

The current impacts on Portions 420 and 373 are significant and multifaceted, primarily characterized by ecological disruption / fragmentation and habitat degradation. This underpins the need for a Section 24G application. Invasive plant species, such as Black wattle (*Acacia mearnsii*) in the valleys and Rooikrans (*A. cyclops*) in fynbos areas, are dominating and outcompeting native flora, leading to a decline in biodiversity and alteration of natural ecosystems. There is ongoing effort, especially in the valleys along the Ruiterbos River, to eradicate established stands of Black wattles, however the alien clearing task on the Portions is significant. It is also understood that alien clearing on Portions 420 and 373 is occurring according to an Alien Management and Eradication Plan.

The excavation of new and illegal roads, coupled with the erosion of these roads, exacerbates the problem of biodiversity loss in critically endangered (CR) ecosystems by increasing sediment runoff and disrupting natural ecosystem processes. The construction of roads adjacent to existing ones and the proliferation of multiple, intersecting roads contribute to habitat fragmentation and further erosion. Additionally, the clearing of vegetation for new dwellings and the associated edge effects—such as increased human activity and the introduction of artificial structures—intensify the ecological pressures, compromising the integrity of the landscape and impacting both flora and fauna. The cumulative effects here highlight a pressing need for effective management. A Section 24G application is underway to address unlawful activities that have occurred here retrospectively, allowing for the assessment and mitigation of the environmental damage caused. It provides a crucial opportunity for regulatory compliance, enabling the implementation of corrective measures to restore and protect the ecological health of remaining natural areas on Portions 420 and 370.

9.2 Retrospective: Construction Phase

The main reason for the Section 24G trigger on Erf 3877 is the removal of threatened indigenous vegetation without obtaining Environmental Authorisation.

9.2.1 General Habitat Loss and Fragmentation

Description: The construction of new and illegal roads, along with the clearing of vegetation for dwellings, has led to significant habitat loss and fragmentation. This assessment therefore is focussed on areas 1 and 2, where clearing for roads and dwellings have been triggered as part of the 24G.

This destruction disrupts plant communities and reduces biodiversity by isolating habitat patches and altering ecological processes. Furthermore, excavation activities associated with the construction of dwellings and creation of roads have increased soil erosion and sediment runoff, which slows down and compromises the ability of the natural vegetation to recover in eroded areas.

Mitigation:

1. An environmental control officer (ECO) should have gone to the site to assess possible erosion indicators and to ensure compliance with regulations.
2. Prior to construction: Footprint minimisation and avoidance
    a. Dwellings should have been limited to areas that have been disturbed in the past in order to avoid irreplaceable CR habitats.
    b. The disturbance footprint (with a maximum of a 2m disturbance envelope around dwellings) of proposed developments should have been clearly defined and demarcated to prevent unnecessary damage to the surrounding environment.
    c. A search and rescue of geophytes and succulents could have occurred.
3. Prior to construction: Consider fire regimes and risk. Some dwellings would have been in different locations if this avoidance mitigation measure was implemented.
    a. Dwellings & roads on the property could have identified fire hazards (Esler et al., 2014), such as the presence of invasive flora. Contact a fire chief nearby to find out about or establish a fire risk assessment for the property & surrounding landscape. The dwellings positions should have been selected in order to maintain the ability of fynbos to burn in the future.
    b. This should also have assisted in informing the location of the proposed dwelling/s. e.g., the Dwellings in Area 1 should not have been built on a hilltop, and should have been planned for more flat areas (Esler et al., 2014)
    c. Roads should have been planned in order to avoid multiple redundant roads.
4. Prior to construction: Schedule vegetation clearance during the winter in order to minimize impact on plant life cycles & pollination.
5. During construction: No new road may be constructed directly adjacent to an eroding existing road, especially when no erosion control measures are in place.
6. Post construction: All of the mitigation measures proposed above are only meaningful if construction was properly concluded too.
    a. Construction sites must be cleared of all waste material, rubble, and debris associated with the construction phase at regular intervals during, and at the conclusion of the construction phase.
    b. Revegetation of bare soil following construction is an essential part of concluding the construction phase of the project. The plants that could have

been rescued could have been used for this purpose both in the 2m disturbance footprint, as well as in areas where alien clearing could have taken place.

Discussion of Alternatives: The impact associated with habitat loss and fragmentation resulting from construction activities likely resulted in Moderate negative impacts (Table 15) on Portions 420 and 373. Should mitigation (listed above) have been in place, this impact could have generally been reduced to a minor negative impact.

Table 15: Retrospective impact assessment of habitat loss and fragmentation, where without mitigation represents the likely impact that occurred and with mitigation represents what the impact could have been had the proposed mitigation been in place.

RETROSPECTIVE CONSTRUCTION (1)		
Impact	**Without Mitigation**	**With Mitigation**
Duration	Permanent	Permanent
Extent	Limited	Very limited
Intensity	High	Very low
Probability	Certain	Certain
SCORE	Moderate negative: -98	Minor negative: -70
Confidence	High	High
Reversibility	Low	Low
Resource irreplaceability	High	High

9.2.2 Spreading of Invasive Flora

Description: The disturbance caused by construction activities facilitates the spread of invasive plant species such as Black wattle and Rooikrans, especially in areas with highly susceptible and sensitive natural flora. These invasives outcompete native flora, leading to further ecological imbalance and loss of native plant species. This assessment therefore is focussed mainly on areas 1 and 2, where construction activities have led to spreading of invasive flora. Area 3, as well as the valley between areas 2 and 3 is already very invaded, and active alien clearing effort is underway there.

Mitigation:

1. Prior to construction: A thorough survey to identify existing invasive flora on the construction site should have been conducted. This information should have informed the development of a targeted management plan. There seems to be an existing management plan in place already.
2. During construction: Areas with new / small infestations should have been targeted for alien clearing first, gradually moving to areas with denser & more established invasions.
    a. At present, it seems the opposite has been attempted on the properties in dense established Black wattle stands. This might make long-term sustainability of cleared areas more arduous.
    b. Invasives also spread faster downhill, and therefore hilltops and upstream area should be targeted first for clearing.
3. During construction: Materials used during construction must be sourced and transported responsibly to minimise the risk new invasive plants.

a. Strict cleaning protocols for construction equipment and machinery should have been implemented to prevent the transfer of invasive seeds or plant material between sites.

b. Native plant species should have been used for site restoration and revegetation to outcompete invasive plants and restore ecological balance.

4. During construction: Combine mechanical felling, chemical control, and biological control. This measure is in place for Black wattle infestations along the valley edges where the Ruiterbos River meanders.

5. During construction: The ECO must note new invasions, and these must be cleared promptly.

Discussion of Alternatives: The impact of spreading invasive flora is pertinent given the existing stands of invasives on the properties. It is important that this problem must not be exacerbated. The construction of dwellings and excavation of roads as they are currently on Outeniqua Game Farm likely had a Moderately negative impact of the vegetation here (Table 16). Should the mitigation listed above have been in place, this impact could have been reduced to a Minor negative.

Table 16: Retrospective impact assessment for the spreading of invasive flora, where without mitigation represents the likely impact that occurred and with mitigation represents what the impact could have been had the proposed mitigation been in place.

RETROSPECTIVE CONSTRUCTION (3)		
Impact	**Without Mitigation**	**With Mitigation**
Duration	Ongoing	Medium term
Extent	Limited	Very limited
Intensity	High	Very low
Probability	Certain	Almost certain
SCORE	Moderate negative: -91	Minor negative: -42
Confidence	High	High
Reversibility	Moderate	Moderate
Resource irreplaceability	High	High

9.3 Proposed: Construction Phase

While a small dam currently exists here (see the aquatic report), the possibility of the construction of a larger dam could have impacts on protected trees and other flora in the vicinity.

9.3.1 Loss of Riparian and Thicket Habitat Due to Construction of Instream Dam.

Description: The creation of an instream dam modifies the natural river environment by impounding water, which changes the flow regime and water levels upstream and downstream. This affects the ecological balance of the riparian zone and can lead to the submersion of previously existing habitats. Plants, invertebrates, fish, and other organisms that rely on specific riverine conditions may be adversely affected or displaced.

Mitigation:

1. Protected trees must be avoided during the construction phase

   a. All protected trees identified must be demarcated prior to the commencement of the construction of the dam.
   b. If it is anticipated that protected trees will be affected by the construction of the dam, then the appropriate forestry licence must be obtained first.
2. Construction of the dam must occur during the dry season (i.e. December to January or June to July)
3. The disturbance footprint must be clearly defined and demarcated
   a. Preferably one road should be used for access (entry and exit).
   b. The access road may not be the Jeep track that extends between Areas 2 and 3 along the Ruiterbos River.
4. Should large muddy areas be created, these areas must be rehabilitated and stabilised to avoid unnecessary further reaching impacts.

Discussion of Alternatives: The impact of the construction of the dam on terrestrial biodiversity and plant species could potentially be moderately negative if the access mitigation and other mitigation proposed above not be followed (Table 17). Following these mitigation steps can reduce the impact to a Minor negative.

Table 17: An assessment of the proposed impact of loss of riparian and thicket habitat due to construction of instream dam.

PROPOSED CONSTRUCTION (1)		
Impact	**Without Mitigation**	**With Mitigation**
Duration	Permanent	Permanent
Extent	Very limited	Very limited
Intensity	High	Low
Probability	Almost certain	Likely
SCORE	Moderate negative: -78	Minor negative: -55
Confidence	High	High
Reversibility	Moderate	Moderate
Resource irreplaceability	Moderate	Moderate

9.4 Current: Operational Phase

The operational phase of the project refers to the state of the site after the construction phase has been concluded, when the proposed developments are ready for, or are in use.

9.4.1 Continued Habitat Fragmentation and SCC Loss From Edge Effects and Invasive Flora

Description: Multiple, intersecting roads and the close proximity of new roads to existing ones perpetuate habitat fragmentation. The presence of new roads and dwellings has also created negative edge effects that affect ecological dynamics. These influence plant growth, species interactions, pollinators, and biodiversity. The established invasives further alter plant community structures and reduce the resilience of the native flora, maintaining an ongoing challenge for ecological recovery.

Mitigation:

1. Road considerations

a. No more new roads are to be made along the valley slopes that lead to the Ruiterbos River.

b. Where feasible, utilize existing roads instead of constructing new ones. Upgrading and expanding current roadways can be more environmentally beneficial than creating new routes.

c. Some of the existing roads are redundant, and one path must be chosen and used. Design and implement shared access routes where possible, combining multiple access points into single, multi-use roads. This approach minimizes the total length of roads required and reduces habitat fragmentation.

d. Plan road layouts to minimize impact on sensitive areas, such as wetlands, riparian zones, and critical habitats. Ensure that the road network is as compact and direct as possible to reduce land disturbance and fragmentation.

e. Where roads are along steep inclines, ensure that the road meanders down as opposed to cutting straight down. This will minimise erosion.

2. Disturbed areas around dwellings must be cleared of invasives with the aim of rehabilitating the fynbos / thicket vegetation.

3. If gardens need to be maintained, they can be redesigned to be water wise (avoid erosion) and friendly to wildlife and the greater natural habitat. Fynbos Life in Cape Town is an inspirational indigenous landscaping project with very useful tips allowing a garden to add biodiversity value, instead of detract value.

    a. Gardens & the built environment should be planned with rainfall, slope/aspect, wind direction, & microclimates in mind. Gardens could be planned to capture rainfall & slow water loss. Create a grey-water wetland if there is a need for water filtration & absorption of extra nutrients.

    b. No garden waste may be dumped in any remaining natural area and must be disposed of in a responsible manner.

    c. Make sure not to plant NEMBA listed invasive plants (e.g., kikuyu grass) in your garden.

    d. Select locally indigenous plants for gardens, making use of as many of the rescued plant species as possible. Avoid plants that are hybrids and cultivars.

    e. Plant during the rainy season (early winter May/June) and add a 10cm thick layer of wood chip to keep in moisture.

    f. Reduce or replace lawns with water-wise groundcovers or enlarging shrub beds.

    g. Add local edible and aromatic plants to avoid water & nutrient intensive vegetable gardens

    h. Ensure soft landscaping is used as opposed to hard landscaping (Box 3)

BOX 3: Landscaping

Soft landscaping

Soft landscaping refers to natural spaces around constructed buildings that contain plants. The plants used are often trees, shrubs, and herbs that perform valuable ecosystem functions and services. Soft landscapes support biodiversity if local indigenous species are planted, or better yet, if the natural vegetation is left to recover and grow with minimal to no planting of man-made gardens. Grasses and shrubs are as effective at converting Carbon dioxide as are trees. Keeping fynbos & strandveld vegetation allows groundwater attenuation and minimisation of erosion risk.

Hard landscaping

Hard landscaping are spaces around buildings that have been transformed into impermeable surfaces, such as pavements, and concrete driveways. Hard landscapes have negative impacts on the natural environment. Hard landscaping results in the absorption and reflection of heat, which makes them hotter than the surrounding natural areas. Furthermore, they speed up the flow of rainwater. No plants can really grow on these surfaces making groundwater attenuation problematic.

4. Clearly delineate maintenance zones and employ low-impact maintenance techniques
    a. Schedule major maintenance activities to avoid critical periods such as flowering, seed dispersal, and pollination periods (for most species this is during spring between September to November).
    b. Minimize soil disturbance and compaction, such as using hand tools instead of heavy machinery. Use specialized equipment designed to reduce environmental footprint, like lightweight mowers or trimmers.
    c. When chemical treatments are necessary for the treatment of invasive plants, use targeted applications that minimize exposure to non-target species.
    d. Stabilize disturbed soils promptly with native vegetation or erosion control materials. Erosion control measures are discussed in more detail in the aquatic specialist report.

Discussion of Alternatives: Currently this impact is causing a significant moderate impact (Table 18). If the mitigation here is carefully considered and roads are better planned, the impact can be reduced to a Minor negative.

Table 18: An assessment of the current Operational Phase of the listed activities causing continued habitat fragmentation and SCC loss from edge effects and invasive flora

CURRENT OPERATIONAL (2)		
Impact	**Without Mitigation**	**With Mitigation**
Duration	Ongoing	Long term
Extent	Limited	Very limited
Intensity	Very high	Moderate
Probability	Almost certain	Almost certain
SCORE	Moderate negative: -84	Minor negative: -60
Confidence	High	High
Reversibility	Low	Low
Resource irreplaceability	High	High

9.4.2 Slash & Debris Material in the Ruiterbos River

Description: An accumulation of woody material has created physical blockages in the watercourse at several locations, disrupting the natural flow of the river (between Areas 2 and 3). The most notable blockages are downstream of the small dam that is part of this assessment in Area 3. The blockage not only affects the river's health but also impacts surrounding ecosystems that rely on a stable and unimpeded water flow for their survival. This material has presumably originated from the extensive alien clearing that has been undertaken on the farm and can be considered as an ongoing impact.

Mitigation:

1. Dedicated collection areas for slash and other debris must be set up to manage and contain waste material effectively.
2. Waste materials and slash from alien vegetation clearing must not be disposed into watercourses or be stockpiled within the floodline of the river.
    a. Buring of slash material may not take place within the watercourse or floodline of the River.
    b. After felling, manually collect and remove all slash material, especially near waterways. This is a big task, especially where large stands have been cleared. It is therefore better to clear smaller areas, and maintain those areas, instead of clearing large areas and creating the opportunity for large amounts of slash to end up in the river, and cause erosion before vegetation can re-establish along the valley slopes.
    c. Apart from burning slash material (which was observed on the site), shred the slash material on-site to create mulch when burning is not feasible / high risk.
        i. Try, as far as possible, to remove viable seeds before mulching. With biological control also active, this task should be less arduous.
        ii. This can be spread over the cleared area to prevent soil erosion and suppress any wattle regrowth.
    d. If mulching is not feasible, create windrows (long, narrow piles) of the slash material away from the river. These should be positioned on contour lines to reduce erosion and allow for natural decomposition.
3. Rehabilitate the cleared areas with native fynbos or riparian vegetation. This will stabilize the soil, reduce erosion, and create a natural barrier to prevent debris from reaching the river.
    a. Initial graminoid ground covers that could be considered include members of the families Restionaceae, Cyperaceae, and Poaceae. Examples of species that could be planted includes
    b. *Aristida diffusa, Aristida junciformis, Cynodon dactylon, Ehrharta erecta, Elegia tectorum, Eragrostis capensis, Eragrostis curvula, Ficinia truncata* (near the watercourse), *Ischyrolepis subverticillata, Pentameris macrantha, Pentameris pallida, Restio festuciformis, Restio quadratus, Schoenoxiphium lanceum* (riparian zone), *Stipa dregeana, Tetraria bromoides, Thamnochortus insignis*, and, *Themeda triandra*.
    c. No kikuyu grass may be planted. This is a listed and recognised invasive species.

d. Some of the species that could be used here include Bietou (*Osteospermum moniliferum*), Milkwood trees (*Sideroxylon inerme inerme*), Cheesewood trees (*Pittosporum viridiflorum*), *Bobartia robusta, Carissa bispinosa, Colpoon compressum, Cussonia thyrsiflora, Diospyros dichrophylla, Euclea crispa, Euclea racemosa, Grewia occidentalis, Gymnosporia buxifolia, Leonotis ocymifolia, Passerina falcifolia, Pelargonium candicans, Psoralea arborea, Psoralea prodiens, Rhoicissus digitata, Searsia glauca, Searsia lucida*, and *Searsia pallens*.

e. Regularly monitor the area. Ensure the initial ground cover is establishing well and is relatively free of erosion and aliens before moving on to clearing new stands of invaded areas.

4. Although this is an ongoing operational phase activity, construction and land-clearing activities (especially associated with dams and access roads) should be, and should have been, scheduled to avoid periods of heavy rainfall to reduce the risk of debris and sediment runoff.

Discussion of Alternatives: The impact is currently Moderate negative, and with mitigation in place, the impact could have been, and can still be further reduced to a negligible negative impact (Table 19). This is a very significant difference that can be achieved by implementing the mitigation and ensuring no slash material is dumped into the watercourse.

Table 19: Retrospective impact assessment of slash & debris material in the Ruiterbos River, where without mitigation represents the likely impact that occurred and with mitigation represents what the impact could have been had the proposed mitigation been in place.

RETROSPECTIVE CONSTRUCTION (2)		
Impact	**Without Mitigation**	**With Mitigation**
Duration	Long Term	Brief
Extent	Local	Very limited
Intensity	Moderate	Low
Probability	Certain	Likely
SCORE	Moderate negative: -84	Negligible negative: -30
Confidence	High	High
Reversibility	Moderate	Moderate
Resource irreplaceability	Moderate	Moderate

10. CONCLUSION & RECOMMENDATIONS

Please find a map of the tracks walked during the two site assessments in Appendix 12.6.

10.1 Area 1: Five dwellings

The areas identified as “dwelling disturbance and invaded areas” between the dwellings should be rehabilitated and ongoing alien clearing effort should be prioritised in these areas. Alien clearing here should be a priority. The fynbos here is very diverse, with over 100 species recorded in just one survey during the winter (i.e., the season where most plants are not flowering), and the species accumulation curve was still tending upwards, indicating more species are very likely present that were not recorded, including SCC. The construction of these dwellings and their access roads occurred without an environmental process, and therefore the mitigation mentioned in the construction phase of this project was not

implemented (it is a retrospective assessment). The current impact of the dwellings, due to their location and the fact that they are already existing and have caused a worsened state of invasive plants around the dwellings is therefore a Moderate negative impact, as stated in impacts 9.2.1, 9.2.2, and 9.4.1. Of these three impacts assessed, only one impact can be reduced to a Minor negative, and that is 9.4.1, because it is in the current Operational phase and is an ongoing impact.

10.2 Area 2: Two dwellings and an illegal wide road

Alien clearing and rehabilitation of disturbed and invaded areas around the dwellings should take place here too. The southernmost dwelling of Area 2 must be treated with care as there is a known population of Sensitive species 142 (VU) south of the dwelling, as well as a large stand of *Erica unicolor mutica* (EN). The new road that was excavated between May and August 2024 must be rehabilitated with fynbos species only, as the old road is still functional and can be upgraded to reduce the likelihood that it will become eroded.

The illegal wide road assessed north of the northernmost dwelling in Area 2 should preferably be rehabilitated. This also means that the associated river crossing should also be removed. Since the vegetation is disturbed and altered around the illegal wide meandering road, some active restoration will need to take place in order to minimise further erosion and sediment transport. Introduce hardy, fast-growing native ground cover plants that are well-adapted to local conditions. Grasses that can be considered include *Themeda triandra, Eragrostis capensis, Eragrostis curvula*, and *Stenotaphrum secundatum*. *Osteospermum moniliferum* (Bietou), *Diospyros dichrophylla*, *Searsia glauca*, *Pterocelastrus tricuspidatus* (Candlewood), *Grewia occidentalis* (Crossberry), *Carissa bispinosa*, and *Euclea racemosa* (Gwarrie) are also appropriate for this illegal road section.

As with Area 1 above, the current environmental impacts here relating to Terrestrial Biodiversity and Plant species is currently Moderate negative. Should more roads and areas of clearance be made, the cumulative impacts (including areas not assessed as part of this assessment) may become a High negative impact. However, if the mitigation and rehabilitation proposed are implemented, and no new unauthorised activities are undertaken, then impact 9.4.1 can be reduced to a Minor negative impact. Impacts 9.2.1 and 9.2.2 were assessed retrospectively, and these impacts therefore remain Moderate negative impacts according to the assessment presented.

10.3 Between Areas 2 and 3: Jeep track along Ruiterbos River

Develop a long-term monitoring plan for the kikuyu grass here to ensure that it doesn't invade into the Ruiterbos River drainage line. Periodic checks of the crossings with the watercourse is required to ensure that there is no additional new negative impact there. The impact of this jeep track is Moderately negative, and multiple access roads to the jeep track adds to the impact here, especially where the access roads cut straight down the slope. Ideally there should only be one entry and one exit point for this jeep track, with no additional intersecting roads.

10.4 Area 3: Instream dam and weir

Detailed mitigation and rehabilitation requirements for this section has been stipulated in the aquatic specialist report by Dr. James Dabrowski. The only additional recommendations

relating to the terrestrial biodiversity and plant species are that protected trees may not be impacted by the rehabilitation activities.

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12. APPENDIX

12.1 Important Taxa for Vegetation Types

The important taxa for two fynbos vegetation types, and one thicket vegetation type is provided in Tables 20, 21, and 22. Dominant species are denoted by a [d], species endemic to South Africa are denoted by an [e], and species possible endemic to the vegetation type are denoted by [et].

Table 20: Important taxa for Garden Route Granite Fynbos (FFg 5). The list is sorted first by growth form, then families, and then by species name.

Garden Route Granite Fynbos (FFg 5)			
Family	**Growth Form**	**Species**	**Dominant**
SCHIZAEACEAE	Geophytic Herb	*Schizaea pectinata*	
CYPERACEAE	Graminoids	*Ficinia nigrescens*	
CYPERACEAE	Graminoids	*Tetraria cuspidata*	[d]
POACEAE	Graminoids	*Brachiaria serrata*	
POACEAE	Graminoids	*Eragrostis capensis*	
POACEAE	Graminoids	*Heteropogon contortus*	
POACEAE	Graminoids	*Pentaschistis eriostoma*	
POACEAE	Graminoids	*Themeda triandra*	
RESTIONACEAE	Graminoids	*Restio triticeus*	
ASTERACEAE	Low Shrubs	*Cullumia bisulca*	
ASTERACEAE	Low Shrubs	*Eriocephalus africanus*	
ASTERACEAE	Low Shrubs	*Metalasia pungens*	
ASTERACEAE	Low Shrubs	*Relhania calycina*	
ASTERACEAE	Low Shrubs	*Syncarpha paniculata*	[d]
ERICACEAE	Low Shrubs	*Erica canaliculata*	
ERICACEAE	Low Shrubs	*Erica diaphana*	
ERICACEAE	Low Shrubs	*Erica discolor*	[d]
ERICACEAE	Low Shrubs	*Erica formosa*	
ERICACEAE	Low Shrubs	*Erica peltata*	[d]
FABACEAE	Low Shrubs	*Aspalathus asparagoides*	
GERANIACEAE	Low Shrubs	*Pelargonium fruticosum*	
LOBELIACEAE	Low Shrubs	*Lobelia tomentosa*	
MALVACEAE	Low Shrubs	*Hermannia angularis*	
PROTEACEAE	Low Shrubs	*Leucadendron salignum*	
PROTEACEAE	Low Shrubs	*Mimetes cucullatus*	
RHAMNACEAE	Low Shrubs	*Phylica confusa*	[d]
ROSACEAE	Low Shrubs	*Cliffortia falcata*	
RUBIACEAE	Low Shrubs	*Anthospermum prostratum*	
RUTACEAE	Low Shrubs	*Agathosma ovata*	
VISCACEAE	Semiparasitic Epiphytic Shrub	*Viscum capense*	
SANTALACEAE	Semiparasitic Shrubs	*Colpoon compressum*	
SANTALACEAE	Semiparasitic Shrubs	*Thesium virgatum*	
AIZOACEAE	Succulent Shrub	*Lampranthus sociorum*	
PROTEACEAE	Tall Shrubs	*Protea coronata*	
PROTEACEAE	Tall Shrubs	*Protea lanceolata*	
PROTEACEAE	Tall Shrubs	*Protea neriifolia*	
ROSACEAE	Tall Shrubs	*Cliffortia serpyllifolia*	
THYMELAEACEAE	Tall Shrubs	*Passerina corymbosa*	[d]

Table 21: Important taxa for Gouritz Valley Thicket (AT 37). The list is sorted first by growth form, then families, and then by species name.

Gouritz Valley Thicket (AT 37)			
Family	**Growth Form**	**Species**	**Dominant**
AMARYLLIDACEAE	Geophytic herb	*Nerine humilis*	[e]
ASPHODELACEAE	Geophytic herb	*Bulbine praemorsa*	
ASPHODELACEAE	Geophytic herb	*Mohria caffrorum*	[e]
CYANELLACEAE	Geophytic herb	*Cyanella lutea*	
IRIDACEAE	Geophytic herb	*Hesperantha acuta*	[e]
OXALIDACEAE	Geophytic herb	*Oxalis bifurca var. angustiloba*	[e]
OXALIDACEAE	Geophytic herb	*Oxalis obtusa*	
OXALIDACEAE	Geophytic herb	*Oxalis pes-caprae*	
PTERIDACEAE	Geophytic herb	*Cheilanthes hirta*	
PTERIDACEAE	Geophytic herb	*Cheilanthes multifida*	
POACEAE	Graminoid	*Cynodon dactylon*	
POACEAE	Graminoid	*Ehrharta calycina*	
POACEAE	Graminoid	*Ehrharta erecta*	[d]
POACEAE	Graminoid	*Festuca scabra*	
POACEAE	Graminoid	*Panicum maximum*	
POACEAE	Graminoid	*Stipa dregeana*	
POACEAE	Graminoid	*Tenaxia stricta*	
POACEAE	Graminoid	*Tribolium curvum*	[e]
ACANTHACEAE	Herb	*Hypoestes aristata*	
AIZOACEAE	Herb	*Sebaea ramosissima*	[e]
ASTERACEAE	Herb	*Arctotheca calendula*	
ASTERACEAE	Herb	*Berkheya heterophylla*	[e]
ASTERACEAE	Herb	*Cineraria lobata*	[e]
ASTERACEAE	Herb	*Cotula sororia*	[e]
ASTERACEAE	Herb	*Leobordea divaricata*	
BRASSICACEAE	Herb	*Erucastrum austroafricanum*	
BRASSICACEAE	Herb	*Lepidium africanum*	
BRASSICACEAE	Herb	*Sisymbrium capense*	
LAMIACEAE	Herb	*Stachys aethiopica*	
SCROPHULARIACEAE	Herb	*Nemesia fruticans*	
ASCLEPIADACEAE	Herbaceous climber	*Cynanchum obtusifolium*	
AIZOACEAE	Low shrub	*Galenia pubescens*	[e]
AIZOACEAE	Low shrub	*Garuleum latifolium*	[e]
ASPARAGACEAE	Low shrub	*Asparagus capensis var. capensis*	
ASPARAGACEAE	Low shrub	*Asparagus striatus*	
ASTERACEAE	Low shrub	*Athanasia pectinata*	[e]
ASTERACEAE	Low shrub	*Felicia filifolia*	
ASTERACEAE	Low shrub	*Lauridia tetragona*	
ASTERACEAE	Low shrub	*Oedera genistifolia*	[e]
ASTERACEAE	Low shrub	*Pentzia incana*	
ASTERACEAE	Low shrub	*Pteronia incana*	[d, e]
ASTERACEAE	Low shrub	*Stoebe muirii*	[e]
FABACEAE	Low shrub	*Aspalathus globulosa*	[e]
FABACEAE	Low shrub	*Otholobium hirtum*	[e]
LAMIACEAE	Low shrub	*Leonotis leonurus*	
POLYGALACEAE	Low shrub	*Polygala myrtifolia*	

Gouritz Valley Thicket (AT 37)			
Family	**Growth Form**	**Species**	**Dominant**
POLYGALACEAE	Low shrub	*Polygala scabra*	
RUBIACEAE	Low shrub	*Anthospermum aethiopicum*	
RUBIACEAE	Low shrub	*Anthospermum prostratum*	[e]
SCROPHULARIACEAE	Low shrub	*Chaenostoma caeruleum*	[e]
SCROPHULARIACEAE	Low shrub	*Freylinia undulata*	[e]
THYMELAEACEAE	Low shrub	*Gnidia squarrosa*	
FABACEAE	Small tree	*Schotia afra*	
FABACEAE	Small tree	*Vachellia karroo*	
SAPOTACEAE	Small tree	*Sideroxylon inerme*	[d]
AIZOACEAE	Succulent herb	*Carpobrotus edulis*	
AIZOACEAE	Succulent herb	*Carpobrotus muirii*	[e]
AIZOACEAE	Succulent herb	*Curio ficoides*	
ASPHODELACEAE	Succulent herb	*Haworthia chloracantha*	[e]
ASPHODELACEAE	Succulent herb	*Haworthia retusa*	[e]
CRASSULACEAE	Succulent herb	*Crassula muscosa*	
CRASSULACEAE	Succulent herb	*Crassula saxifraga*	[e]
PORTULACACEAE	Succulent herb	*Anacampseros telephiastrum*	[e]
GERANIACEAE	Succulent herbaceous climber	*Pelargonium peltatum*	[e]
AIZOACEAE	Succulent shrub	*Lampranthus prominulus*	[e]
AIZOACEAE	Succulent shrub	*Mesembryanthemum cordifolium*	
ASPHODELACEAE	Succulent shrub	*Aloe maculata*	
CRASSULACEAE	Succulent shrub	*Adromischus triflorus*	[e]
CRASSULACEAE	Succulent shrub	*Cotyledon eliseae*	[et]
CRASSULACEAE	Succulent shrub	*Cotyledon orbiculata var. orbiculata*	
CRASSULACEAE	Succulent shrub	*Cotyledon papillaris*	[e]
CRASSULACEAE	Succulent shrub	*Crassula cultrata*	[e]
EUPHORBIACEAE	Succulent shrub	*Euphorbia burmannii*	[e]
EUPHORBIACEAE	Succulent shrub	*Euphorbia mauritanica*	
ZYGOPHYLLACEAE	Succulent shrub	*Zygophyllum foetidum*	[e]
ASPHODELACEAE	Succulent tree	*Aloe ferox*	[d]
ANACARDIACEAE	Tall shrub	*Searsia glauca*	[e]
ANACARDIACEAE	Tall shrub	*Searsia longispina*	[e]
ANACARDIACEAE	Tall shrub	*Searsia lucida*	
APOCYNACEAE	Tall shrub	*Carissa bispinosa*	
ASTERACEAE	Tall shrub	*Osteospermum moniliferum*	[d]
ASTERACEAE	Tall shrub	*Tarchonanthus littoralis*	[d]
CELASTRACEAE	Tall shrub	*Dicerothamnus rhinocerotis*	[d]
CELASTRACEAE	Tall shrub	*Gymnosporia buxifolia*	
ELAEAGNACEAE	Tall shrub	*Euclea undulata*	
FLACOURTIACEAE	Tall shrub	*Scolopia mundii*	
MALVACEAE	Tall shrub	*Grewia occidentalis*	
OLEACEAE	Tall shrub	*Olea europaea subsp. cuspidata*	[d]
RHAMNACEAE	Tall shrub	*Putterlickia pyracantha*	[e]
RUTACEAE	Tall shrub	*Clausena anisata*	
ARALIACEAE	Woody climber	*Cussonia thyrsiflora*	[e]
ASPARAGACEAE	Woody climber	*Asparagus aethiopicus*	

Gouritz Valley Thicket (AT 37)			
Family	**Growth Form**	**Species**	**Dominant**
ASPARAGACEAE	Woody climber	*Asparagus africanus*	
ASCLEPIADACEAE	Woody succulent climber	*Cynanchum viminale*	
CRASSULACEAE	Woody succulent climber	*Crassula perforata*	[d]

Table 22: Important taxa for Swellendam Silcrete Fynbos (FFc 1). The list is sorted first by growth form, then families, and then by species name.

Swellendam Silcrete Fynbos (FFc 1)			
Family	**Growth Form**	**Species**	**Dominant**
AMARYLLIDACEAE	Geophytic Herbs	*Cyrtanthus leptosiphon*	
IRIDACEAE	Geophytic Herbs	*Bobartia macrospatha* subsp. *macrospatha*	
IRIDACEAE	Geophytic Herbs	*Geissorhiza foliosa*	
IRIDACEAE	Geophytic Herbs	*Gladiolus bilineatus*	
IRIDACEAE	Geophytic Herbs	*Gladiolus engysiphon*	
LANARIACEAE	Geophytic Herbs	*Lanaria lanata*	
CYPERACEAE	Graminoid	*Isolepis brevicaulis*	
JUNCACEAE	Graminoids	*Juncus scabriusculus*	
POACEAE	Graminoids	*Cymbopogon marginatus*	
POACEAE	Graminoids	*Cynodon dactylon*	
POACEAE	Graminoids	*Cynodon incompletus*	
POACEAE	Graminoids	*Ehrharta ramosa* subsp. *aphylla*	
POACEAE	Graminoids	*Eragrostis capensis*	
POACEAE	Graminoids	*Merxmuellera stricta*	
POACEAE	Graminoids	*Pentaschistis eriostoma*	
POACEAE	Graminoids	*Themeda triandra*	
RESTIONACEAE	Graminoids	*Ischyrolepis triflora*	
RESTIONACEAE	Graminoids	*Restio triticeus*	
LOBELIACEAE	Herbaceous Climber	*Cyphia volubilis*	
ASTERACEAE	Herbs	*Berkheya armata*	
ASTERACEAE	Herbs	*Helichrysum crispum*	
ASTERACEAE	Low Shrubs	*Chrysocoma flava*	
ASTERACEAE	Low Shrubs	*Elytropappus rhinocerotis*	
ASTERACEAE	Low Shrubs	*Oedera imbricata*	
ASTERACEAE	Low Shrubs	*Stoebe plumosa*	
CAMPANULACEAE	Low Shrubs	*Wahlenbergia effusa*	
ERICACEAE	Low Shrubs	*Erica burchelliana*	
ERICACEAE	Low Shrubs	*Erica filamentosa*	
ERICACEAE	Low Shrubs	*Erica klotzschii*	
ERICACEAE	Low Shrubs	*Erica peltata*	
ERICACEAE	Low Shrubs	*Erica physantha*	
GERANIACEAE	Low Shrubs	*Pelargonium ovale*	
LAMIACEAE	Low Shrubs	*Salvia chamelaeagnea*	
MYRICACEAE	Low Shrubs	*Morella quercifolia*	
PROTEACEAE	Low Shrubs	*Leucadendron brunioides* var. *brunioides*	
PROTEACEAE	Low Shrubs	*Leucadendron salignum*	[d]
PROTEACEAE	Low Shrubs	*Leucadendron teretifolium*	

Swellendam Silcrete Fynbos (FFc 1)			
Family	**Growth Form**	**Species**	**Dominant**
PROTEACEAE	Low Shrubs	*Leucospermum calligerum*	
PROTEACEAE	Low Shrubs	*Leucospermum cuneiforme*	
PROTEACEAE	Low Shrubs	*Protea decurrens*	
PROTEACEAE	Low Shrubs	*Serruria acrocarpa*	
ROSACEAE	Low Shrubs	*Cliffortia ruscifolia*	[d]
RUTACEAE	Low Shrubs	*Acmadenia laxa*	
RUTACEAE	Low Shrubs	*Agathosma foetidissima*	
RUTACEAE	Low Shrubs	*Euchaetis longicornis*	
THYMELAEACEAE	Low Shrubs	*Gnidia strigillosa*	
AIZOACEAE	Succulent Shrub	*Ruschia cymbifolia*	
FABACEAE	Tall Shrub	*Psoralea filifolia*	
ASTERACEAE	Tall Shrubs	*Metalasia densa*	
ERICACEAE	Tall Shrubs	*Erica prolata*	[d]
PROTEACEAE	Tall Shrubs	*Leucadendron eucalyptifolium*	
PROTEACEAE	Tall Shrubs	*Protea coronata*	
PROTEACEAE	Tall Shrubs	*Protea neriifolia*	
PROTEACEAE	Tall Shrubs	*Protea repens*	
THYMELAEACEAE	Tall Shrubs	*Passerina corymbosa*	

12.2 Land-Use Recommendations According to the WC BSP

Recommended acceptable land-uses for each BSP layer is outlined and summarised in Table 23 below.

Table 23: The land-use planning proposed by the Western Cape Biodiversity Spatial Plan. IUCN Red Listing Criteria for species

LAND USE CATEGORIES		Conservation		Agriculture		Tourism and Recreational Facilities		Rural Accomodation		Urban			Business & Industrial				Infrastructure Installations			
LAND USE SUB-CATEGORIES (Refer to table 4.7 for descriptions)		Proclaimed Protected Areas	Other Nature Areas	Intensive Agriculture	Extensive Agriculture	Low Impact Facilities	High Impact Facilities	Agri-worker Accommodation	Small holdings	Urban Development & Expansion	Community Facilities & Institutions	New Settlements	Rural Business	Non-place-bound Industry (low-moderate impact)	Non-place-bound Industry (high impact)	Extractive Industry (incl. Prospecting)	Linear - roads & rail	Linear - pipelines & canals	Linear - powerlines	Other Utilities
MAP CATEGORY	DESIRED MANAGEMENT OBJECTIVE	Y = Yes: Permissible land uses that are not likely to compromise the biodiversity objective						R = Restricted: Land uses that may compromise the biodiversity objective are only permissible under certain conditions (refer to Table 4.7 for conditions)							N = No: Land uses that will compromise the biodiversity objective and are not permissible							
Protected Area	Must be kept in a natural state, with a management plan focused on maintaining or improving the state of biodiversity.	Land use within proclaimed protected areas are subject to management plan drawn up for that specific protected area.																		
Critical Biodiversity Area 1	Keep natural, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.	Y	Y	N	R	N	N	N	N	N	N	N	N	N	N	N	N	N	R	N
Critical Biodiversity Area 2	Keep natural, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.	Y	Y	N	R	R	N	N	N	N	N	N	N	N	N	N	R	R	R	N
Ecological Support Area 1: Terrestrial	Maintain in a functional, near-natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised.	Y	Y	N	R	R	N	N	N	N	N	N	R	R	N	N	R	R	R	R
Ecological Support Area 1: Aquatic	Maintain in a functional, near-natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised.	Y	Y	N	R	R	N	N	N	N	N	N	N	N	N	N	R	R	R	N
Ecological Support Area 2	Restore and/or manage to minimise impact on ecological infrastructure functioning; especially soil and water-related services.	Y	Y	N	R	R	N	N	R	N	N	N	N	N	N	N	R	R	R	R
ONA: Natural to Near-Natural	Minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. Offers flexibility in permissible land uses, but some authorisation may still be required for high impact land uses.	Y	Y	R	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
ONA: Degraded	Minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. Offers flexibility in permissible land uses, but some authorisation may still be required for high impact land uses.	R	R	R	Y	Y	R	R	Y	R	R	R	R	R	R	R	Y	Y	Y	Y
No Natural Remaining	These areas are suitable for development but may still provide limited biodiversity and ecological infrastructure functions and should be managed in a way that minimises impacts on biodiversity and ecological infrastructure.	R	R	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

12.3 The IUCN Species Red List Criteria Summary

This section contains an extra summary explaining the very basics of the five Red List criteria used when assessing the Red List status of species. Note that this summary sheet does not provide detail on the "Near Threatened" category (sometimes also called an "Orange List" category) which comes before the "Vulnerable" category. These are the criteria that are used by the IUCN to assign the extinction threat status for individual plant species. In South Africa there are additional criteria (not shown on Fig. 18) for Rare and Critically Rare plant species.

SUMMARY OF THE FIVE CRITERIA (A-E) USED TO EVALUATE IF A TAXON BELONGS IN AN IUCN RED LIST THREATENED CATEGORY (CRITICALLY ENDANGERED, ENDANGERED OR VULNERABLE).[1]

A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%

A1 Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased.
A2 Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.
A3 Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years) *[(a) cannot be used for A3]*.
A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of the following:

(a) direct observation *[except A3]*
(b) an index of abundance appropriate to the taxon
(c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality
(d) actual or potential levels of exploitation
(e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)

	Critically Endangered	Endangered	Vulnerable
B1. Extent of occurrence (EOO)	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented **OR** Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** area, extent and/or quality of habitat; **(iv)** number of locations or subpopulations; **(v)** number of mature individuals			
(c) Extreme fluctuations in any of: **(i)** extent of occurrence; **(ii)** area of occupancy; **(iii)** number of locations or subpopulations; **(iv)** number of mature individuals			

C. Small population size and decline

	Critically Endangered	Endangered	Vulnerable
Number of mature individuals	< 250	< 2,500	< 10,000
AND at least one of C1 or C2			
C1. An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2. An observed, estimated, projected or inferred continuing decline AND at least 1 of the following 3 conditions:			
(a) **(i)** Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(ii) % of mature individuals in one subpopulation =	90–100%	95–100%	100%
(b) Extreme fluctuations in the number of mature individuals			

D. Very small or restricted population

	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	**D1.** < 1,000
D2. *Only applies to the VU category* Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.	-	-	**D2.** typically: AOO < 20 km² or number of locations ≤ 5

E. Quantitative Analysis

	Critically Endangered	Endangered	Vulnerable
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

1 Use of this summary sheet requires full understanding of the *IUCN Red List Categories and Criteria* and *Guidelines for Using the IUCN Red List Categories and Criteria*. Please refer to both documents for explanations of terms and concepts used here.

Figure 18: The IUCN summary for the five assessment criteria used during the species Red Listing process.

12.4 Vegetation Assets, States, and Transitions (VAST)

A table summarising the VAST score is presented in Table 24.

Table 24: Vegetation Assets, States, and Transitions (VAST) framework with columns representing states. Shifts between states are defined as transitions, as laid out in (Lesslie et al., 2010; Thackway & Lesslie, 2006).

Increasing modification

		Native vegetation cover Dominant plant species indigenous to the locality and spontaneous in occurrence, i.e. a vegetation community described using definitive vegetation types relative to estimated pre 1750 types				**Non-native vegetation cover** Dominant structuring plant species indigenous to the locality but cultivated; alien to the locality and cultivated; or alien to the locality and spontaneous		
Vegetation cover classes		**Class 0: RESIDUAL BARE** Areas where native vegetation does not naturally persist	**Class I: RESIDUAL** Native vegetation community structure, composition, and regenerative capacity intact—no significant perturbation from land use or land management practice. Class I forms the benchmark for classes II to VI	**Class II: MODIFIED** Native vegetation community structure, composition and regenerative capacity intact—perturbed by land use or land management practice	**Class III: TRANSFORMED** Native vegetation community structure, composition and regenerative capacity significantly altered by land use or land management practice	**Class IV: REPLACED -ADVENTIVE** Native vegetation replacement—species alien to the locality and spontaneous in occurrence	**Class V: REPLACED -MANAGED** Native vegetation replacement with cultivated vegetation	**Class VI: REMOVED** Vegetation removed
Diagnostic criteria	Current regenerative capacity	Natural regenerative capacity unmodified—ephemerals and lower plants	Natural regenerative capacity unmodified	Natural regeneration tolerates or endures under past and or current land management practices	Natural regenerative capacity limited or at risk under past and or current land use or land management practices. Rehabilitation and restoration possible through modified land management practice	Regeneration of native vegetation community has been suppressed by ongoing disturbances of the natural regenerative capacity; limited potential for restoration	Regeneration of native vegetation community lost or suppressed by intensive land management; limited potential for restoration	Nil or minimal
	Vegetation structure	Nil or minimal	Structural integrity of native vegetation community is very high	Structure is predominantly altered but intact, e.g. a layer or strata and or growth forms and or age classes removed	Dominant structuring species of native vegetation community significantly altered, e.g. a layer or strata frequently removed	Dominant structuring species of native vegetation community removed or predominantly cleared or extremely degraded	Dominant structuring species of native vegetation community removed	Vegetation absent or ornamental
	Vegetation composition	Nil or minimal	Compositional integrity of native vegetation community is very high	Composition of native vegetation community is altered but intact	Dominant structuring species present—species dominance significantly altered	Dominant structuring species of native vegetation community removed	Dominant structuring species of native vegetation community removed	Vegetation absent or ornamental

12.5 Impact Assessment Methods

Individual impacts for the construction and operational phase were identified and rated according to criteria which include their intensity, duration, and extent. The ratings were then used to calculate the consequence of the impact which can be either negative or positive. Where type is either negative (i.e., -1) or positive (i.e., 1). The significance of the impact was then calculated by applying the probability of occurrence to the consequence. The criteria and their associated ratings are shown in Table 25.

- ***Consequence*** *= type x (intensity + duration + extent)*
- ***Significance*** *= consequence x probability*

Table 25: Categorical descriptions for impacts and their associated ratings.

Rating	Intensity	Duration	Extent	Probability
1	Negligible	Immediate	Very limited	Highly unlikely
2	Very low	Brief	Limited	Rare
3	Low	Short term	Local	Unlikely
4	Moderate	Medium term	Municipal area	Probably
5	High	Long term	Regional	Likely
6	Very high	Ongoing	National	Almost certain
7	Extremely high	Permanent	International	Certain

Categories assigned to the calculated significance ratings are presented in Table 26.

Table 26: Value ranges for significance ratings, where (-) indicates a negative impact and (+) indicates a positive impact

Significance Rating	Range	
Major (-)	-147	-109
Moderate (-)	-108	-73
Minor (-)	-72	-36
Negligible (-)	-35	-1
Neutral	0	0
Negligible (+)	1	35
Minor (+)	36	72
Moderate (+)	73	108
Major (+)	109	147

Each impact was considered from the perspective of whether losses or gains would be irreversible or result in the irreplaceable loss of biodiversity of ecosystem services. The level of confidence was also determined and rated as low, medium, or high (Table 27).

Table 27: Definition of reversibility, irreplaceability, and confidence ratings.

Rating	Reversibility	Irreplaceability	Confidence
Low	Permanent modification, no recovery possible.	No irreparable damage and the resource isn't scarce.	Judgement based on intuition.
Medium	Recovery possible with significant intervention.	Irreparable damage but is represented elsewhere.	Based on common sense and general knowledge
High	Recovery likely.	Irreparable damage and is not represented elsewhere.	Substantial data supports the assessment

12.6 Tracks walked during site assessments

The assessments on Outeniqua Game Farm Portions 420 and 373 took place on two dates. The first site assessment was on the 28th of May 2024, and the second was on the 07th of August 2024. Trachs walked for each of these dates respectively are illustrated in Fig. 19 below.

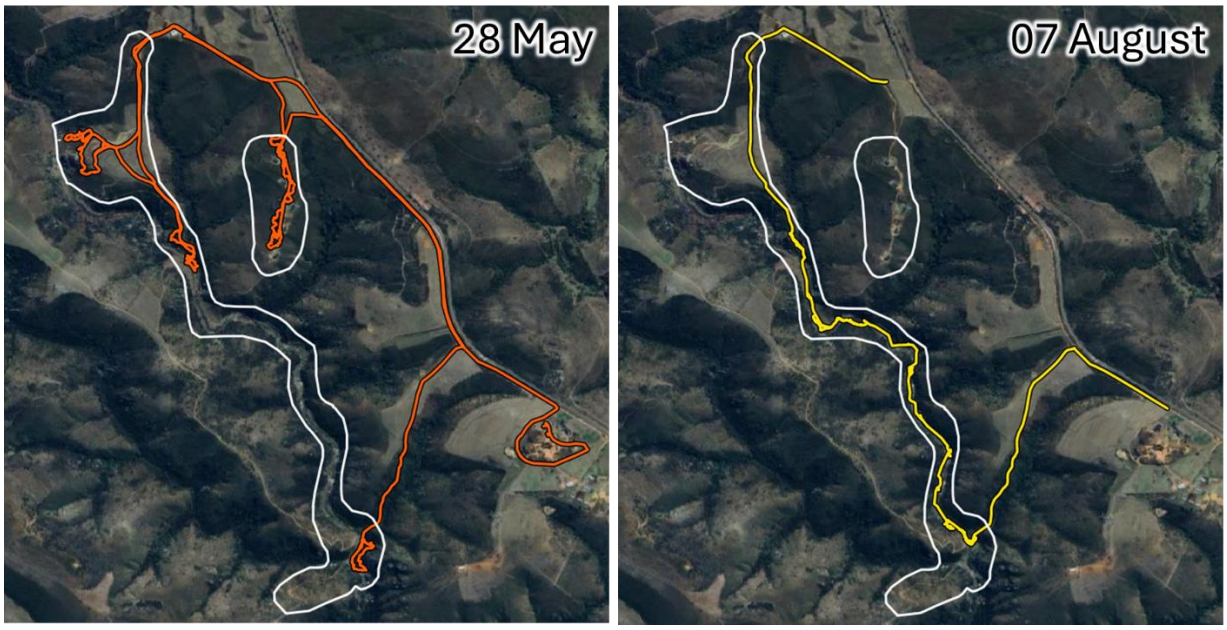

Figure 19: Two images of the tracks for each site assessment day undertaken.