Proposed Development on Portion 257 of Melkhoute fontein 480, Riethuiskraal, Hessequa Local Municipality, Western Cape

Terrestrial and Plant Species Theme Specialist Assessment:

Site Sensitivity Verification Report and Compliance Statement

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Reviewer: J. Dabrowski ()

Date: September 2024, Updated April 2025

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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;

I declare that there are no circumstances that may compromise my objectivity in performing this specialist investigation. I do not necessarily object to or endorse any proposed developments, but aim to present facts, findings and recommendations based on relevant professional experience and scientific data;

I do not have any influence over decisions made by the governing authorities;

I undertake to disclose all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by a competent authority to such a relevant authority and the applicant;

I have the necessary qualifications and guidance from professional experts in conducting specialist reports relevant to this application, including knowledge of the relevant Act, regulations and any guidelines that have relevance to the proposed activity;

All the particulars furnished by me in this document are true and correct.

Kim Daniels (MSc)

September 2024

SUMMARY OF EXPERIENCE AND ABRIDGED CV
KIM DANIELS

Core skills

- MSc. Biodiversity and Conservation Biology (University of Cape Town) and 3 years of work experience (research assistance and education) for research projects aimed at investigating invertebrate diversity, plant diversity, insect ecology, disease ecology, invasive species, plant systematics, herpetology, and climate change impacts on a variety of taxa.
- Ecological and field work experience before, during, and after postgraduate degrees across a range of environments (mesic savanna, arid savanna, fynbos, succulent karoo, and Nama karoo) and taxa (plants, invertebrates, avifauna, amphibians, and small mammals).
- My postgraduate studies have been focused on vegetation change in the fynbos and parasitic plants as thermal refugia for arid savanna birds.

Work experience

- Teaching assistant at the Organization of Tropical Studies and Roots & Shoots
- Internships in Entomology, Horticulture, and Plant Conservation
- Research assistant at the Centre for Invasion Biology
- Field assistant at Valuing Orchard and Integrated Crop Ecosystem Services Project

Qualifications

- BSc. Biodiversity and Conservation Biology (2018, University of the Western Cape)
- BSc. Hons. Biodiversity and Conservation Biology (2021, University of the Western Cape)
- MSc. Conservation Biology (2023, University of Cape Town)

References

- Dr Timm Hoffman – Academic supervisor and previous employer

  Former Director of the Plant Conservation Unit; University of Cape Town

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- Ms. Paula Strauss – Previous employer

  Research co-ordinator; Grootbos Nature Reserve

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ABBREVIATIONS AND ACCRONYMS

CBA	Critical Biodiversity Area
CD:NGI	Chief Directorate: National Geo-spatial Information
DFFE	Department of Forestry, Fisheries, and the Environment
ESA	Ecological Support Area
NEMA	National Environmental Management Act
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SDP	Site Development Plan
SSVR	Site Sensitivity Verification Report
WCBSP	Western Cape Biodiversity Spatial Plan

1. INTRODUCTION

Confluent Environmental Pty (Ltd) was appointed to undertake a specialist assessment for botanical and terrestrial sensitivity for the proposed development of a dwelling as well as the introduction of a grassed parking bay, rainwater and conservancy tank on the south-eastern extent of Portion 257 of Melkhoute Fontein 480, Riethuiskraal, Hessequa Local Municipality, Western Cape (hereafter referred to as “the site”).

1.1 General Site Location

The site is ca. 2.02 hectares in extent and is bounded on the south by the Goukou River. The property is used for agriculture and situated within an agricultural area. The site is only accessible via the road running through Portion 132 of Melkhoute Fontein 480 and Portion 257 of Melkhoute Fontein 480. The property falls within the larger Gouritz Cluster Biosphere Reserve. No rivers or wetlands are mapped for the property (Figure. 1).

Figure 1. Portion 257 of the farm Melkhoute fontein 480, Riethuiskraal (in purple), site outlined for assessment in the Screening Tool (in green), and the Site Development Plan (SDP) in red.

1.2 Development Layout

At the time of writing this report an area demarcated for the development of a dwelling and associated infrastructure was outlined in the south-eastern corner of the site area, below the 10m contour line (Figure. 2). As per the Engineering Report (2025), a three phase Eskom connection is available on-site. A conservancy tank will be constructed next to the dwelling and sewage will be collected by the Hessequa Municipality. A rainwater tank is also proposed to be introduced. Access would be obtained via the neighbouring property using the current access road and a parking bay is included in the SDP. (Figure 3). Due to its proximity to the Goukou River, the development is planned to be stilted rather than built on the ground, which reduces its footprint on vegetation.

Figure 2: The SDP outline (in red) on the site area outlined in the Screening Tool (in green) of Portion 257 of the farm Melkhoute fontein 480, 1.5m contours are included.

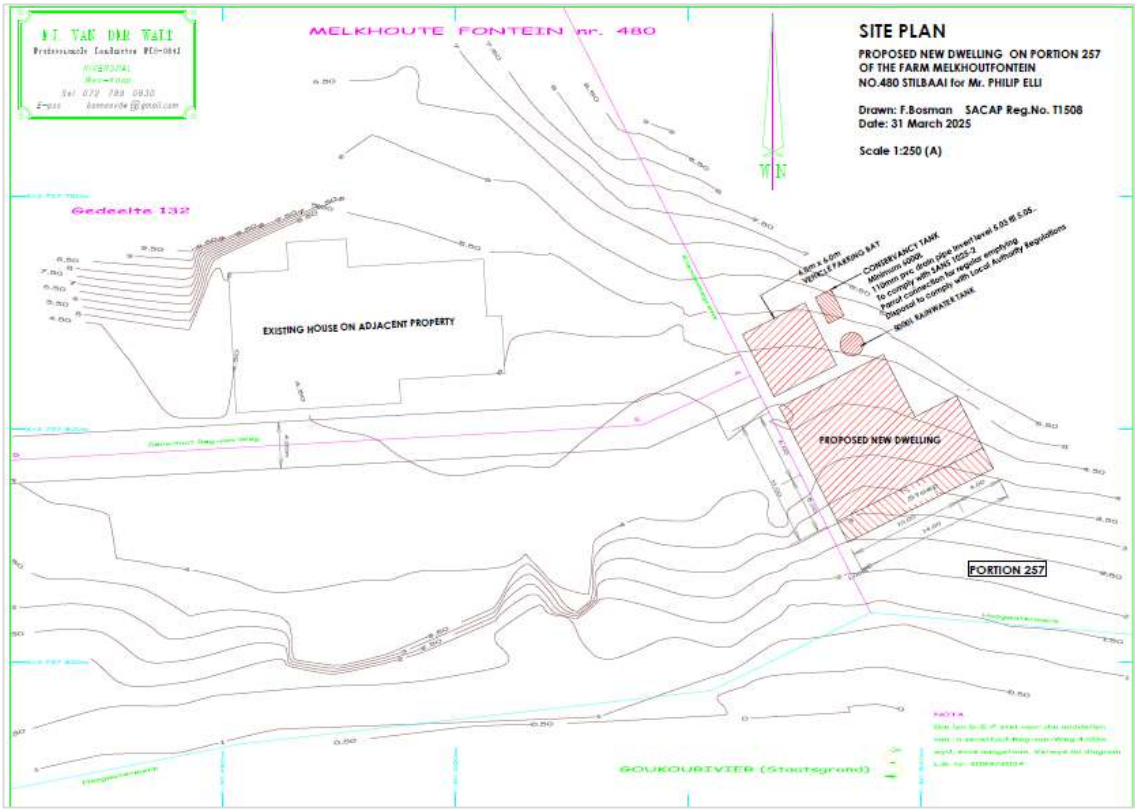

Figure 3. The location of the new dwelling and associated infrastructure relative to existing dwelling and the high-water mark for the Goukou River.

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**. The **terrestrial biodiversity theme is considered Very High sensitivity** (Figure. 4). Note that the Screening Tool plant species theme does not take Near Threatened plant populations into account. A Medium screening tool sensitivity for plants indicates that:

> *"Model-derived suitable habitat areas for threatened and/or rare species are included in the medium sensitivity level. Two types of spatial models have been included. The first is a simple rule-based habitat suitability model where habitat attributes such as vegetation type and altitude are selected for all areas where a species has been recorded to occur. The second is a species distribution model which uses species occurrence records combined with multiple environmental variables to quantify and predict areas of suitable habitat. 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." ~ (Verburgt et al., 2020)

A Very High sensitivity rating for terrestrial biodiversity according to the screening tool is triggered for all Biodiversity Priority Areas (BPAs) and other sensitive features (Stewart et al., 2021) (Figure. 3). BPAs include the various management layers of the Western Cape Biodiversity Spatial Plan (WCBSP), as well as the other sensitive features. The BPA triggered for the property is that parts of the area are mapped as Ecological Support Areas and Critical Biodiversity Areas. The property is mapped as containing Gouritz Valley Thicket (Critically Endangered).

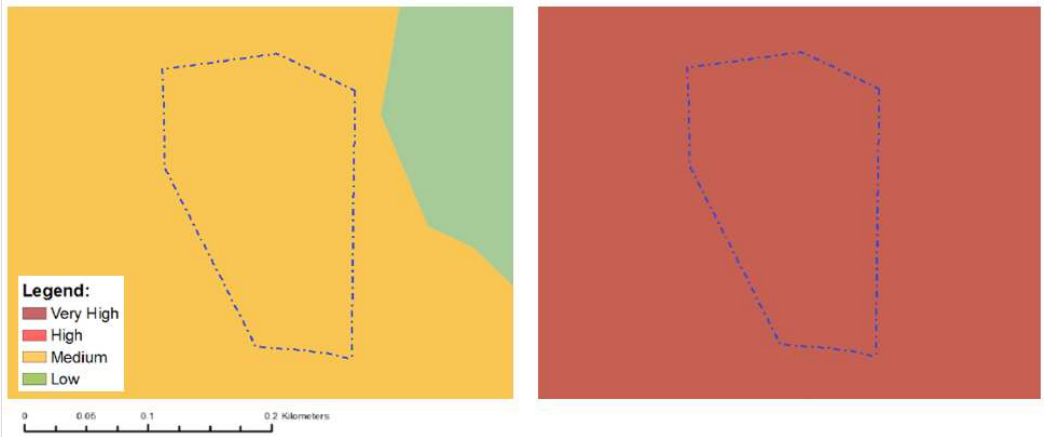

Figure 4. DFFE Online Screening Tool outcome for the plant species (Left) and terrestrial biodiversity (Right) themes for the site at Portion 257 of the farm Melkhoute fontein 480, Riethuiskraal. The site area is indicated by the blue dashed line.

Table 1. Species of Conservation Concern highlighted by the DFFE Online Screening Tool for site at Portion 257 of the farm Melkhoute fontein 480, Riethuiskraal.

Sensitivity	Feature(s)	Status*
Medium	*Agathosma eriantha*	Vulnerable
Medium	*Agathosma microcarpa*	Vulnerable
Medium	*Agathosma minuta*	Endangered
Medium	*Agathosma muirii*	Vulnerable
Medium	*Agathosma riversdalensis*	Vulnerable
Medium	*Agathosma robusta*	Vulnerable
Medium	*Argyrolobium harmsianum*	Endangered
Medium	*Aspalathus acutiflora*	Endangered
Medium	*Aspalathus arenaria*	Vulnerable
Medium	*Aspalathus calcarea*	Vulnerable
Medium	*Aspalathus odontoloba*	Endangered
Medium	*Aspalathus prostrata*	Vulnerable
Medium	*Aspalathus sanguinea* subsp. *foliosa*	Vulnerable

Medium	*Aspalathus tylodes*	Endangered
Medium	*Athanasia quinquedentata* subsp. *rigens*	Vulnerable
Medium	*Chrysocoma strigosa*	Vulnerable
Medium	*Cliffortia longifolia*	Vulnerable
Medium	*Cotula myriophylloides*	Critically Endangered
Medium	*Diosma tenella*	Endangered
Medium	Sensitive species 500	Endangered
Medium	Sensitive species 654	Vulnerable
Medium	*Drosanthemum lavisii*	Endangered
Medium	*Duvalia immaculata*	Endangered
Medium	*Erica baueri* subsp. *baueri*	Endangered
Medium	*Erica baueri* subsp. *gouriquae*	Critically Endangered
Medium	*Erica calcicola*	Endangered
Medium	*Erica viscosissima*	Vulnerable
Medium	*Euchaetis albertiniana*	Endangered
Medium	Sensitive species 784	Vulnerable
Medium	Sensitive species 764	Endangered
Medium	*Felicia ebracteata*	Vulnerable
Medium	Sensitive species 800	Vulnerable
Medium	*Heliophila linearis* var. *reticulata*	Vulnerable
Medium	*Hermannia lavandulifolia*	Vulnerable
Medium	*Indigofera mundiana*	Endangered
Medium	Sensitive species 5	Vulnerable
Medium	*Lampranthus ceriseus*	Vulnerable
Medium	*Lampranthus fergusoniae*	Rare
Medium	*Lampranthus foliosus*	Endangered
Medium	*Lampranthus pauciflorus*	Endangered
Medium	*Lebeckia gracilis*	Endangered
Medium	*Leucadendron galpinii*	Vulnerable
Medium	*Leucospermum praecox*	Vulnerable
Medium	*Lobelia valida*	Vulnerable
Medium	*Metalasia luteola*	Vulnerable
Medium	Sensitive species 335	Endangered
Medium	*Muraltia barkerae*	Endangered
Medium	*Oedera steyniae*	Vulnerable
Medium	*Otholobium* sp. nov. (Esterhuysen 33240a BOL)	-
Medium	*Pentameris calcicola* var. *hirsuta*	Vulnerable
Medium	*Phylica incurvata*	Vulnerable
Medium	*Polygala pubiflora*	Vulnerable
Medium	*Ruschia leptocalyx*	Endangered
Medium	*Selago diffusa*	Vulnerable
Medium	*Selago glandulosa*	Vulnerable
Medium	*Selago villicaulis*	Vulnerable
Medium	*Stoebe muirii*	Vulnerable
Medium	*Thamnochortus muirii*	Vulnerable
Medium	*Thamnochortus pluristachyus*	Vulnerable
Medium	*Wahlenbergia polyantha*	Vulnerable
Medium	Sensitive species 340	Vulnerable
Medium	Zostera capensis	Endangered

* Red list status as per SANBI's Red List of South African Plants (http://redlist.sanbi.org/index.php).

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 obtained 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 by using the Vegetation of South Africa, Lesotho, and Swaziland (Mucina & Rutherford, 2006).

3.2 Field Assessment

The field assessment took place during winter on the 16th of July 2024. The method for identifying species was similar to a BioBlitz, also described as a “timed meander”, where the

specialist especially keeps an eye out 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.) is low (Garrard et al., 2008; Wintle et al., 2012A). Observations of individual species and environmental characteristics were documented using both a Nikon Coolpix and Canon EOS 1200D cameras. A provisional species list (Table 5) and plant species accumulation curve (Figure. 11) is provided in the Appendix1

3.3 Assumptions and Limitations

This assessment is subject to a few assumptions, uncertainties, and limitations, as listed below. These are specific to the development footprint and surrounding area surveyed unless otherwise stated:

- Only one survey took place in late winter (26 August 2024). Season and time of day play a role in the outcome of a botanical survey. Many species were not flowering at the time of the survey, and some species are less conspicuous at certain times of the year compared to others.
- Some species may have been incorrectly identified on the site due to missing key characteristics and identifying features. This is largely applicable to species that are do not have other visible defining characteristics (eg. graminoids) and less so to charismatic species such as trees.
- Some rare and threatened plant species are difficult to locate and easily overlooked in the field (e.g., geophytes, small succulents, small shrubs, etc.). This is a general limitation but is more applicable to the densely vegetated area alongside the development area (due to poor visibility in dense vegetation) than the development area itself.
- Environmental factors such as the prevailing fire regime, successional stage of the vegetation present, previous cultivation of the land, and the level of alien infestation at the site affects the species visible at the time of assessment (Cowling et al., 2010; Privett et al., 2001). This is a general limitation which applies to all developments on open land.
- The dense thicket sections around the development footprint made it hard to gain access to most of the site.

4. RESULTS: DESKTOP ASSESSMENT

4.1 Terrestrial Biodiversity

4.1.1 Climate, Geology, and Soil

The climate in the area is considered moderate. It receives a low amount of rainfall throughout the year (31mm on average) with peak precipitation occurring in November (41mm). The coldest month of the year is July (9^0C daily minimum with 18^0C daily maximum on average) and the hottest months of the year are January and February (18^0C daily minimum with 25^0C daily maximum on average).

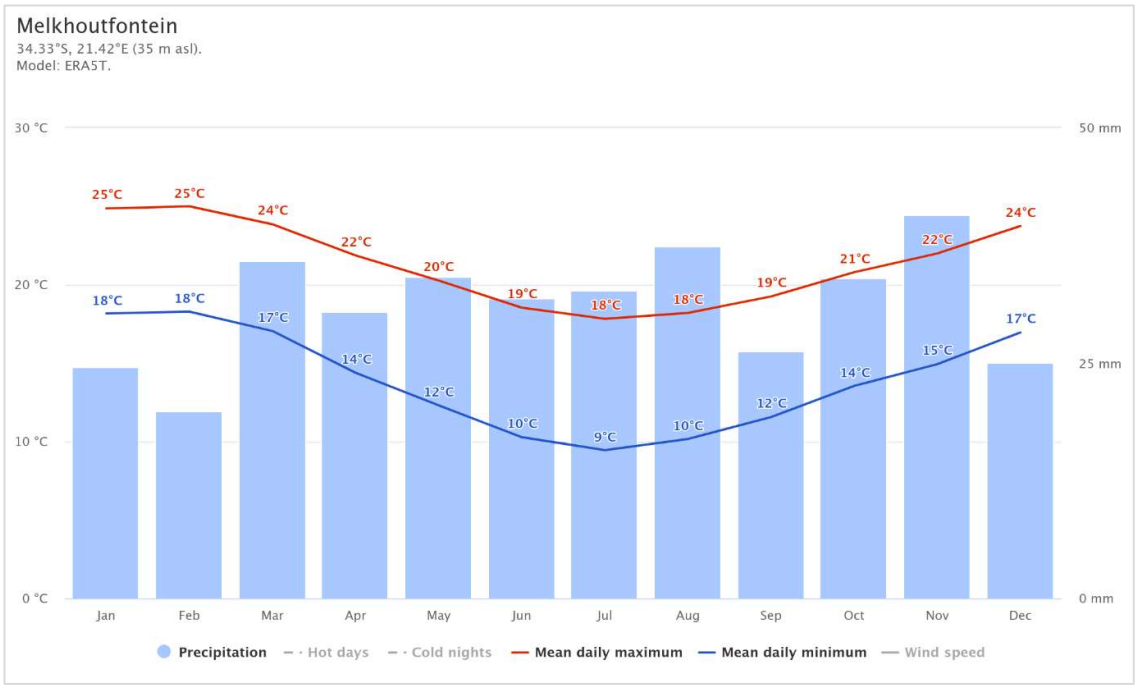

Figure 5. The climate of Melkhoutfontein indicating the mean monthly temperatures and precipitation from recent years (https://www.meteoblue.com/)

Geology of the region is the Bredasdorp Group (calcarenite and calcareous sandstone with gravel, pebble and coquinite layers, calcareous aeolianite, dunes of sand and calcareous sand, calcrete) overlying predominantly shale (as well as mudrock, siltstone, minor sandstone) of the Bokkeveld group. The latter is mapped as present at the site presumably due to weathering of rock by water, as most of the banks of the Goukou River shares this classification. Shallow, loamy-clayey soils derived from siltstone and shales is what is expected to occur at the site.

4.1.2 Vegetation Type

The vegetation of the site is mapped as **critically endangered (CR) Gouritz Valley Thicket (AT37)** (Figure. 6; Dayaram et al., 2019; Mucina & Rutherford, 2018).

Gouritz Valley Thicket is found only in the Western Cape Province primarily in the lower stretches of the Gouritz River Valley (between Herbertsdale and Gouritz Mouth), with smaller patches in the lower Goukou River Valley (between Riethuiskraal and Still Bay). The steep, rocky slopes, geomorphology and consequently poor soil development create environmental conditions very different from the surrounding renosterveld vegetation (Fynbos Biome) which typically covers the coastal plateaus of the Southern Cape. The habitats supporting Gouritz Valley Thicket are usually protected from fire that occurs in the neighbouring renosterveld. Grazing by domestic animals was (or in places still is) common (Hoare et al. 2006). On steep slopes of deeply incised valleys of rivers flowing mainly in a north-south direction and dissecting the Southern Cape coastal peneplain. Medium-sized to tall (3 – 5 m), dense thicket composed of small trees and woody shrubs (e.g. *Euclea, Grewia, Gymnosporia, Putterlickia, Searsia, Sideroxylon, Tarchonanthus*) as well as an ericoid shrub component (e.g. *Athanasia, Elytropappus, Oedera, Stoebe*). The succulent tree, *Aloe ferox* is locally dominant and the low shrub layer contains a high proportion of succulents (e.g. *Aloe, Crassula, Euphorbia, Ruschia*). Grasses are abundant in some favoured grazing areas (Mucina & Rutherford, 2018). Some of the typical plants that are associated with Gouritz Valley Thicket as described by Mucina & Rutherford (2018) include (species found during the site visit in blue; "(d)" dominant species; "(e)" South African endemic; "(en)" endemic to the vegetation type):

Small tree:	*Vachellia karroo*, *Schotia afra*, *Sideroxylon inerme* (d)
Herb:	*Arctotheca calendula*, *Berkheya heterophylla* (e), *Cineraria lobata* (e), *Cotula sororia* (e), *Erucastrum austroafricanum*, *Hypoestes aristata*, *Lepidium africanum*, *Leobordea divaricata*, *Nemesia fruticans*, *Sebaea ramosissima* (e), *Sisymbrium capense*, *Stachys aethiopica*
Succulent shrub:	*Adromischus triflorus* (e), *Aloe maculata*, *Mesembryanthemum cordifolium*, *Cotyledon orbiculata* var. *orbiculata*, *Cotyledon papillaris* (e), *Crassula cultrata* (e), *Euphorbia burmannii* (e), *Euphorbia mauritanica*, *Lampranthus prominulus* (e), *Zygophyllum foetidum* (e), *Cotyledon eliseae* (et)
Succulent herb:	*Anacampseros telephiastrum* (e), *Carpobrotus edulis*, *Carpobrotus muirii* (e), *Crassula muscosa*, *Crassula saxifraga* (e), *Curio ficoides*, *Haworthia chloracantha* (e), *Haworthia retusa* (e).
Climber:	*Pelargonium peltatum* (e).
Succulent tree:	*Aloe ferox* (d).
Geophytic herb:	*Bulbine praemorsa*, *Cheilanthes hirta*, *Cheilanthes multifida*, *Cyanella lutea*, *Hesperantha acuta* (e), *Mohria caffrorum* (e), *Nerine humilis* (e), *Oxalis bifurca* var. *angustiloba* (e), *Oxalis obtusa*, *Oxalis pes-caprae.*

Low shrub:	*Pteronia incana* (d, e), *Anthospermum aethiopicum*, *Anthospermum prostratum* (e), *Aspalathus globulosa* (e), *Asparagus capensis* var. *capensis*, *Asparagus striatus*, *Athanasia pectinata* (e), *Chaenostoma caeruleum* (e), *Felicia filifolia*, *Freylinia undulata* (e), *Galenia pubescens* (e), *Garuleum latifolium* (e), *Gnidia squarrosa*, *Lauridia tetragona*, *Leonotis leonurus*, *Oedera genistifolia* (e), *Otholobium hirtum* (e), *Pentzia incana*, *Polygala myrtifolia*, *Polygala scabra*, *Stoebe muirii* (e).
Graminoid:	*Ehrharta erecta* (d), *Cynodon dactylon*, *Ehrharta calycina*, *Festuca scabra*, *Tribolium curvum* (e), *Tenaxia stricta*, *Panicum maximum*, *Stipa dregeana.*
Tall shrub:	*Dicerothamnus rhinocerotis* (d), *Olea europaea* subsp. *cuspidata* (d), *Osteospermum moniliferum* (d), *Carissa bispinosa*, *Clausena anisata*, *Euclea undulata*, *Grewia occidentalis*, *Gymnosporia buxifolia*, *Putterlickia pyracantha* (e), *Scolopia mundii*, *Searsia glauca* (e), *Searsia longispina* (e), *Searsia lucida*, *Tarchonanthus littoralis* (d).
Woody climber:	*Asparagus africanus*, *Asparagus aethiopicus*, *Cussonia thyrsiflora* (e), *Crassula perforata* (d), *Cynanchum viminale*.
Herbaceous climber:	*Cynanchum obtusifolium.*

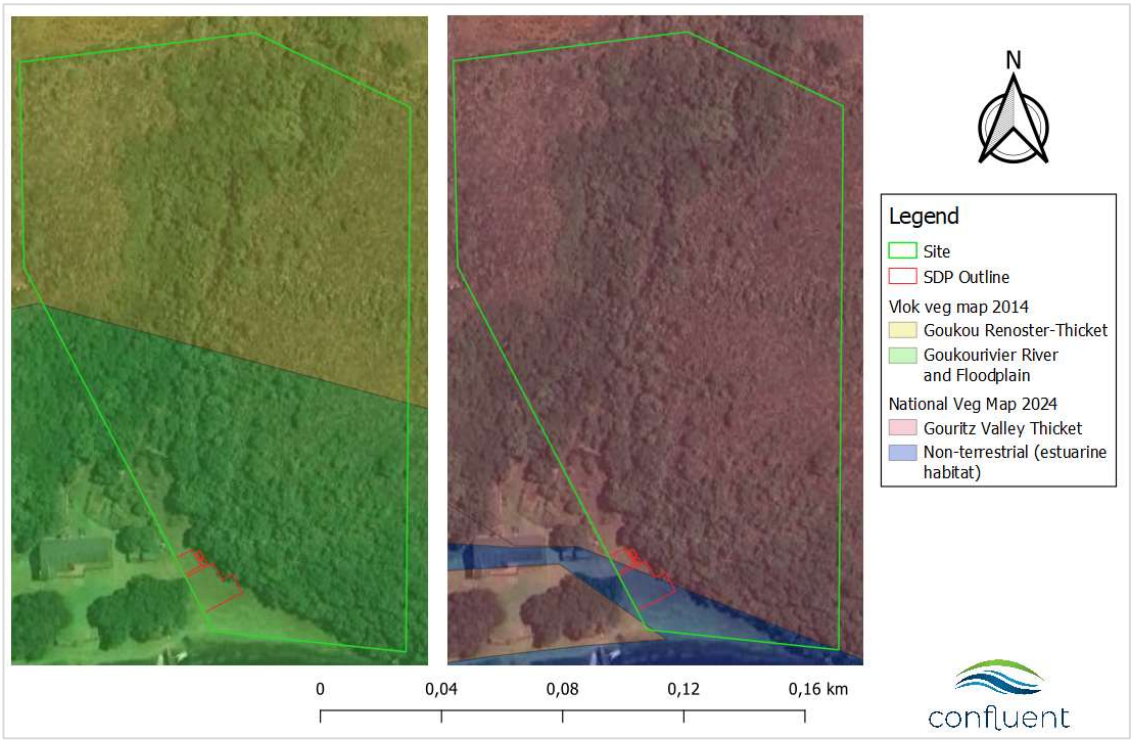

Figure 6. Vegetation mapped for the National Vegetation Map 2024 (Right) and Vlok vegetation map (Left) for the site at Portion 257 of the farm Melkhoute fontein 480, Riethuiskraal.

4.1.3 Western Cape Biodiversity Spatial Plan

The Biodiversity Spatial Plan for the Western Cape (WCBSP) contains several conservation planning layers that are used to set priority areas for conserving biodiversity. The definition and objectives of the WCBSP layer mapped on the site area of Portion 257 of the farm Melkhoute fontein 480, Riethuiskraal is given in Table 2. The development area is mapped as a CBA 1 area for terrestrial biodiversity in both the 2017 and updated 2024 versions of the map. The 2017 version shows a small portion on the western boundary mapped as ESA2 (See Table. 2; Figure. 7), whilst the 2024 update shows the north-western extent of the property as CBA2.

Table 2. WCBSP categories mapped for the property, their definitions and management objects

WCBSP Category	Definition	Management Objective
Critical Biodiversity Area 1 (CBA1)	Areas in a natural condition. Required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure.	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.
Ecological Support Area 2 (ESA 2)	Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs and are often vital for delivering ecosystem services.	Restore and/or manage to minimize impact on ecological processes and ecological infrastructure functioning, especially soil and water-related services, and to allow for faunal movement.

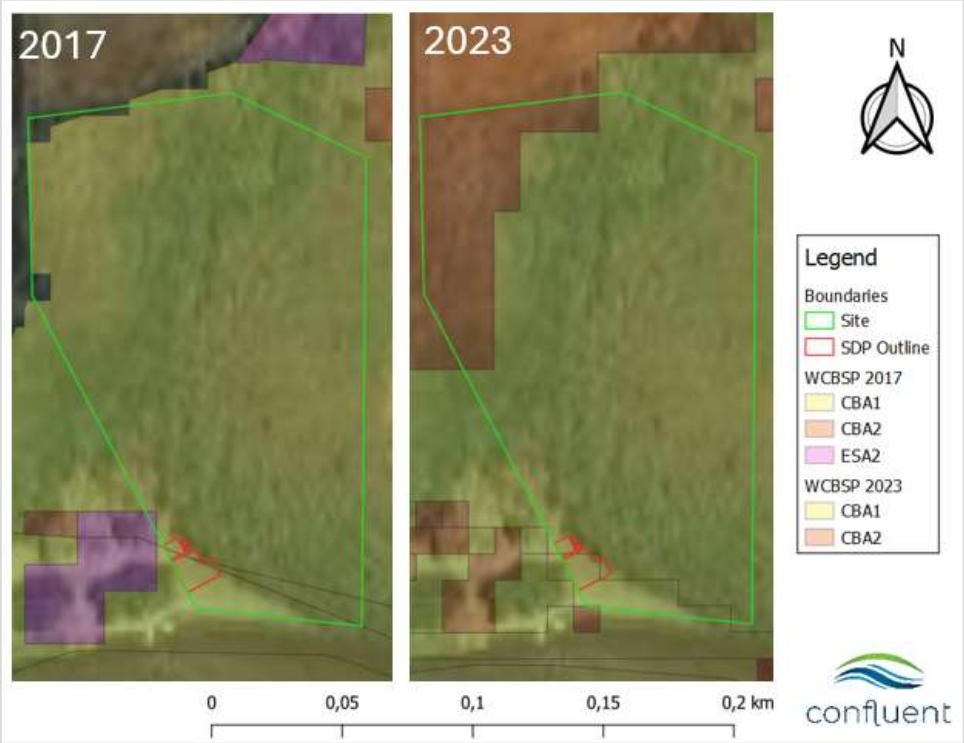

Figure 7. WCBSP layers mapped for the site of Portion 257 of the farm Melkhoute fontein 480, Riethuiskraal. Layers mapped in 2017 are presented on the left whilst the updated 2023 is presented on the right.

A BSP reasons layer for the 2024 WCBSP layers has not been released but CapeNature (pers. comm) has confirmed that the 2024 BSP reasons layer is likely have the same reasons outlined as 2017 or reflect recent changes in the National Vegetation Map. The reasons for the assignment of the 2017 WCBSP layers in this area are listed below (grey reasons either do not apply to the site or are outside of the scope of this study to comment on):

Albany Thicket Valley Channelled Valley Bottom Wetland: This trigger is outside of the scope of this report. See the Aquatic Specialist Report (J. Dabrowski- Confluent Environmental).

Bontebok Extended Distribution Range: This WCBSP trigger falls outside of the scope of this study. Refer to the Faunal Specialist Report (V. Martins- Confluent Environmental) for comment.

East Coast Shale Renosterveld Channelled Valley Bottom Wetland: See the Aquatic Specialist Report (J. Dabrowski- Confluent Environmental).

Goukou (Core) Estuary: See the Aquatic Specialist Report (J. Dabrowski- Confluent Environmental).

Southern Cape Valley Thicket (VU): This is an older (2012) classification for what is now Gouritz Valley Thicket, a Critically Endangered vegetation type. Gouritz Valley Thicket is assessed as “narrowly distributed with high rates of habitat loss from 1990 to 2018, placing the ecosystem type at risk of collapse”.

Southern Coastal Belt Permanent Lower Foothill River: This WCBSP trigger falls outside of the scope of this study.

Watercourse protection- Southern Coastal Belt: This WCBSP trigger falls outside of the scope of this study.

4.1.4 Historical Aerial Imagery

High resolution historical imagery (Figure. 8) was sourced from Google Earth and the CDNGI Geospatial Portal to look at historical changes in vegetation and land use.

The oldest aerial image obtained was of the property and surrounds in 1983. Evidence of agriculture can be seen in the north-west and east. A heavily vegetated trough runs from the north of the site to the south-west, as can be seen today. Dense vegetation can be seen in the south-east of the site expanding out in an easterly direction. The south-western corner of the site is less heavily vegetated.

In 2004 the clearer imagery shows that more land in the landscape is being used for agriculture. It also shows the establishment of dwellings at the site through which access will be gained to this development. Vegetation thickening has also occurred in the east and north-western corner of the site.

By 2006 there is increased vegetation thickening in the east of the site. A road appears in the south-western corner of the site, proposed for development.

In 2017 and 2024 show an expansion of the area cleared as a road.

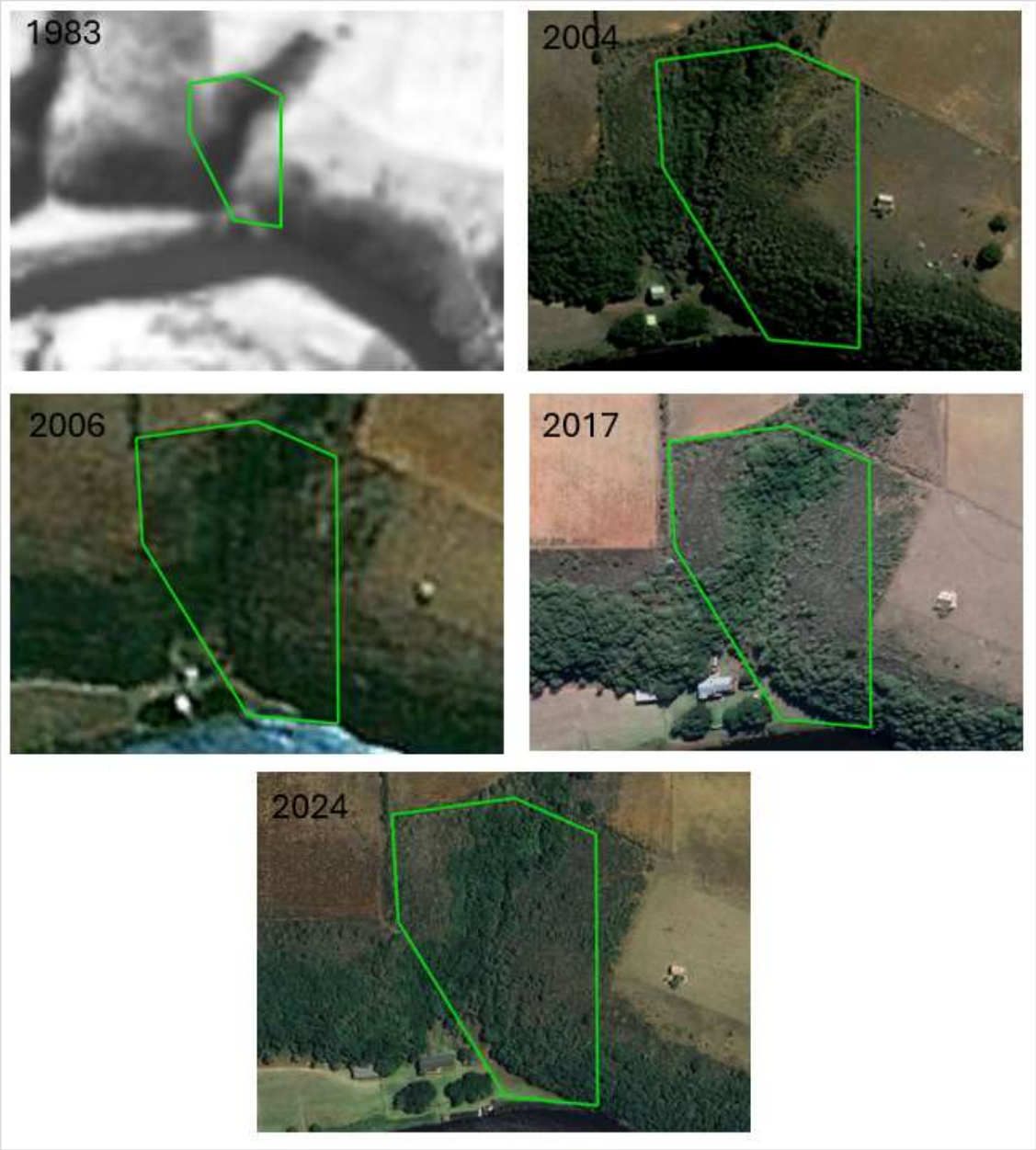

Figure 8. Historical Aerial imagery of the site area of Portion 257 of the farm Melkhoute fontein 480, Riethuiskraal (outlined in green).

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).

4.2.1 Species of conservation concern (SCC).

Several SCC have the potential to occur on the site (Table. 3). These species are sourced from the Screening tool and iNaturalist observations in the area, with status verified using the SANBI Red List.0

Table 3. SCC with the potential to occur on the site.

Species	Identified by	Red-list Status
Agathosma eriantha	Screening tool	Vulnerable
Agathosma microcarpa	Screening tool	Vulnerable
Agathosma minuta	Screening tool	Endangered
Agathosma muirii	Screening tool	Vulnerable
Agathosma riversdalensis	Screening tool	Vulnerable
Agathosma robusta	Screening tool	Vulnerable
Argyrolobium harmsianum	Screening tool	Endangered
Aspalathus acutiflora	Screening tool	Endangered
Aspalathus arenaria	Screening tool	Vulnerable
Aspalathus calcarea	Screening tool	Vulnerable
Aspalathus odontoloba	Screening tool	Endangered
Aspalathus prostrata	Screening tool	Vulnerable
Aspalathus sanguinea subsp. *foliosa*	Screening tool	Vulnerable
Aspalathus tylodes	Screening tool	Endangered
Athanasia quinquedentata subsp. *rigens*	Screening tool	Vulnerable
Chrysocoma strigosa	Screening tool	Vulnerable
Cliffortia longifolia	Screening tool	Vulnerable
Cotula myriophylloides	Screening tool	Critically Endangered
Diosma tenella	Screening tool	Endangered
Drosanthemum lavisii	Screening tool	Endangered
Duvalia immaculata	Screening tool	Endangered
Erica baueri subsp. *baueri*	Screening tool	Endangered
Erica baueri subsp. *gouriquae*	Screening tool	Critically Endangered
Erica calcicola	Screening tool	Endangered
Erica viscosissima	Screening tool	Vulnerable
Euchaetis albertiniana	Screening tool	Endangered
Felicia ebracteata	Screening tool	Vulnerable
Gnidia chrysophylla	iNaturalist	Near Threatened
Heliophila linearis var. *reticulata*	Screening tool	Vulnerable
Hermannia lavandulifolia	Screening tool; iNaturalist	Vulnerable
Indigofera mundiana	Screening tool	Endangered
Lachnaea axillaris	iNaturalist	Near Threatened
Lampranthus ceriseus	Screening tool; iNaturalist	Vulnerable
Lampranthus fergusoniae	Screening tool; iNaturalist	Rare
Lampranthus foliosus	Screening tool	Endangered
Lampranthus pauciflorus	Screening tool; iNaturalist	Endangered
Lebeckia gracilis	Screening tool	Endangered
Leucadendron galpinii	Screening tool; iNaturalist	Vulnerable
Leucospermum praecox	Screening tool; iNaturalist	Vulnerable
Lobelia valida	Screening tool	Vulnerable
Metalasia luteola	Screening tool	Vulnerable
Muraltia barkerae	Screening tool	Endangered
Oedera steyniae	Screening tool	Vulnerable
Otholobium sp. nov. (Esterhuysen 33240a BOL)	Screening tool	No assessment completed
Pentameris calcicola var. hirsuta	Screening tool	Vulnerable
Phylica incurvata	Screening tool	Vulnerable
Polygala pubiflora	Screening tool	Vulnerable

Protea obtusifolia	iNaturalist	Near Threatened
Ruschia leptocalyx	Screening tool; iNaturalist	Endangered
Selago diffusa	Screening tool	Vulnerable
Selago glandulosa	Screening tool	Vulnerable
Selago villicaulis	Screening tool	Vulnerable
Sensitive species 335	Screening tool	Endangered
Sensitive species 340	Screening tool; iNaturalist	Vulnerable
Sensitive species 5	Screening tool	Vulnerable
Sensitive species 500	Screening tool	Endangered
Sensitive species 654	Screening tool	Vulnerable
Sensitive species 764	Screening tool	Endangered
Sensitive species 784	Screening tool; iNaturalist	Vulnerable
Sensitive species 800	Screening tool	Vulnerable
Stoebe muirii	Screening tool	Vulnerable
Thamnochortus muirii	Screening tool	Vulnerable
Thamnochortus pluristachyus	Screening tool	Vulnerable
Wahlenbergia polyantha	Screening tool	Vulnerable
Zostera capensis	Screening tool	Endangered

5. RESULTS: FIELD ASSESSMENT

5.1 Refined Vegetation Map

The vegetation of most of the proposed site is dense thicket and transformed vegetation (Figure. 9). The south-western corner proposed for development, however, is maintained as lawn and does not contain any SCC (Figure. 10).

The vegetation type mapped for the site is confirmed by the presence of woody species known to occur in this vegetation type in the dense thicket (Figure. 11). Of these, the species most relevant to development plans is *Sideroxylon inerme inerme* (Southern White Milkwood) which is a protected tree species (protected tree 579). Due to the impenetrable nature of the thicket vegetation, the centre of the thicket patch could not be surveyed, although it can be confirmed as thicket based on aerial imagery of the site area, as can be done for the north for vegetation transformed by agriculture.

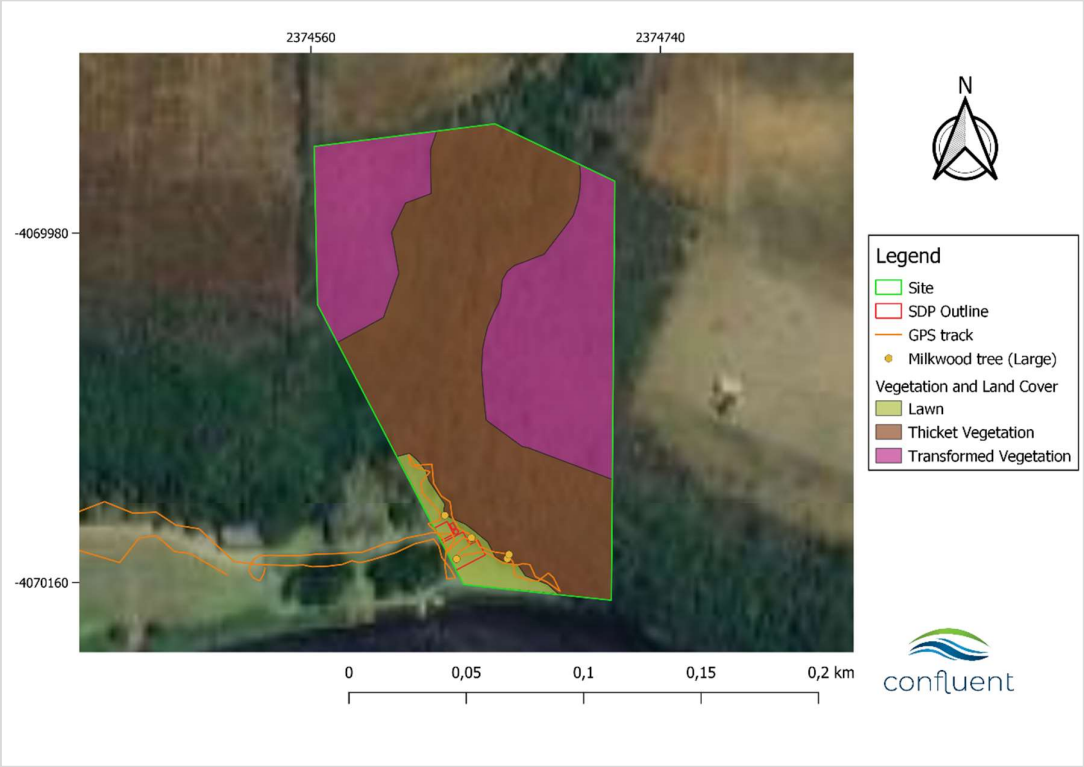

Figure 9. Vegetation map for the site outlined on Portion 257 of the farm Melkhoute fontein 480, Riethuiskraal based on field observations.

Figure 10. Area proposed for development on Portion 257 of the farm Melkhoute fontein 480, Riethuiskraal.

Figure 11. Woody species found in Dense thicket at the site: A. Southern White Milkwood (Sideroxylon inerme inerme); B. Crossberry (Grewia occidentalis); C. Bastard Spikethorn (Putterlickia pyracantha); D. Samandua (Clausena anisata); E. Num-num (Carissa bispinosa).

5.2 Plant Species on Site

The thicket vegetation alongside the outlined area (Figure. 10) included many large individuals of a protected tree species Milkwood trees *Sideroxylon inerme inerme* (protected tree 579) and more Milkwood trees were also found outside of the property alongside the access road. The area proposed for development was grassed and maintained as a lawn. No other SCC

were found but seven common species found in the vegetation type were observed (see Section 4.1.7, highlighted in blue).

5.3 Likelihood of Occurrence for SCC

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. 4). The current state of thicket vegetation at the property, not the development footprint, made it likely that numerous species were missed during the site assessment. All SCC that have been observed nearby on iNaturalist and POSA have been captured by the DFFE screening tool. The probability of occurrence that is stated in this section is a subjective assessment of SCC likelihood on the area proposed for development.

Table 4. Plant SCC flagged for the site and nearby surroundings and their likely occurrence at the site.

Species	Common name	Family	Growth Form	Source	South African Red list status	Probability of Occurrence
Agathosma eriantha	Ridged buchu	Rutaceae	Shrub	Screening tool	Vulnerable	Very Low This SCC is found at Still Bay and further north along the Goukou River. However, the area along the bank of the river in the south was surveyed extensively and no species that match the description for the SCC were found. This SCC was also also not found within 2km of the site.
Agathosma microcarpa	Buchu	Rutaceae	Dwarf shrub	Screening tool	Vulnerable	Very Low The site is primarily comprised of dense thicket and transformed lands, neither of which are preferable vegetation types for this SCC. The SCC was also not found within 2km of the site.
Agathosma minuta	Buchu	Rutaceae	Shrublet	Screening tool	Endangered	Very Low Predominantly occurs in Bredasdorp and Swellendam
Agathosma muirii	Heart buchu	Rutaceae	Shrub	Screening tool	Vulnerable	Very Low Observed mostly in Still Bay and does not seem to be associated with the Goukou River. It is typically associated with deep limestone sands.
Agathosma riversdalensis	Buchu species	Rutaceae	Shrub	Screening tool	Vulnerable	Very Low This SCC is not associated with the vegetation type (preferring sand fynbos, strandveld, and dune thicket) or its description at this site.
Agathosma robusta	Buchu	Rutaceae	Shrublet	Screening tool	Vulnerable	Very Low This SCC is not associated with the description of the vegetation (namely fynbos on dry, sandy soil overlying limestone).
Argyrolobium harmsianum	Limestone Silverpod	Fabaceae	Herbaceous perennial	Screening tool	Endangered	Very Low Individuals have generally been found within 10km of the coast.

Aspalathus acutiflora	Capegorse species	Fabaceae	Herbaceous perennial	Screening tool	Endangered	Very Low Prefers sand plain fynbos and marine sands between limestone outcrops.
Aspalathus arenaria	Sand Capegorse	Fabaceae	Shrublet	Screening tool	Vulnerable	Very Low Individuals have generally been found within 10km of the coast.
Aspalathus calcarea	Capegorse species	Fabaceae	Shrublet	Screening tool	Vulnerable	Very Low Closest individuals found in Still Bay. Associated with lowland limestone fynbos.
Aspalathus odontoloba	Capegorse species	Fabaceae	Herbaceous perennial	Screening tool	Endangered	Low Core of range at the Gouritz River mouth and Albertinia.
Aspalathus prostrata	Capegorse species	Fabaceae	Scrambling perennial	Screening tool	Vulnerable	Very Low SCC associated with lowland fynbos on sandstone.
Aspalathus sanguinea subsp. *foliosa*	Capegorse species	Fabaceae	Shrublet	Screening tool	Vulnerable	Very Low The SCC is associated with coastal fynbos.
Aspalathus tylodes	Capegorse species	Fabaceae	Shrublet	Screening tool	Endangered	Very Low Associated with limestone sands.
Athanasia quinquedentata subsp. rigens	Kanniedoods	Asteraceae	Shrublet	Screening tool	Vulnerable	Low This SCC could occur in the larger landscape, but no individuals were found within the SDP outline and no close by observations are noted.
Chrysocoma strigosa	Bitterbushes	Asteraceae	Shrublet	Screening tool	Vulnerable	Very Low Occurs on coastal limestone flats.
Cliffortia longifolia	Longleaf River Caperose	Rosaceae	Shrublet	Screening tool	Vulnerable	Low At least 1 observation falls within 2km of site although it is noted that no species were found within the SDP outline that might be mistaken for this SCC.
Cotula myriophylloides	Watergras	Asteraceae	Hydrophyte	Screening tool	Critically Endangered	Very Low Distribution is primarily in the Cape Peninsula and Plettenberg bay.
Diosma tenella	Clay Bitterbuchu	Rutaceae	Shrublet	Screening tool	Endangered	Very Low This SCC is associated with sandy soils not occurring at the site.

Drosanthemum lavisii	Scarlet dewfig	Aizoaceae	Succulent	Screening tool	Endangered	Very Low The area was not mapped as or observed to be an ecotone between renosterveld and fynbos. These are vegetation characteristics that are favoured by this SCC.
Duvalia immaculata	Succulent	Apocynaceae	Succulent	Screening tool	Endangered	Very Low Arid fynbos-renosterveld ecotone vegetation, on shale and limestone does not characterise this site.
Erica bauera subsp. *bauera*	Albertinia White Heath	Ericaceae	Shrublet	Screening tool	Endangered	Very Low Species is associated with Albertinia sand fynbos and sandy flats. These were not found at the site.
Erica baueri subsp. *gouriquae*	Gouriqua Heath	Ericaceae	Shrublet	Screening tool	Critically Endangered	Very Low Predominantly a coastal species.
Erica calcicola	Heaths	Ericaceae	Shrublet	Screening tool	Endangered	Very Low This species occupies moderate to steep, southwest- to southeast-facing slopes on limestone ridges. Observations have been made in Still Bay close to the coast.
Erica viscosissima	Heaths	Ericaceae	Shrublet	Screening tool	Vulnerable	Very Low Species is associated with Albertinia sand fynbos and sandy flats. These were not found at the site.
Euchaetis albertiniana	Albertina beardbuchu	Rutaceae	Shrub	Screening tool	Endangered	Very Low Occurs on coastal sands and limestones.
Felicia ebracteata	Hope Felicia	Asteraceae	Herbaceous perennial	Screening tool	Vulnerable	Very Low Restricted to limestone patches.
Gnidia chrysophylla	Gold capesaffron	Thymelaeaceae	Perennial	iNaturalist	Near Threatened	Very Low Species has a wide distribution but favours coastal flats.
Heliophila linearis var. *reticulata*	Hairy Needly Sunspurge	Brassicaceae	Herbaceous perennial	Screening tool	Vulnerable	Very Low Distribution is primarily coastal (coastal sands are preferred).
Hermannia lavandulifolia	Lavender-leaved dollrose	Malvaceae	Herbaceous perennial	Screening tool; iNaturalist	Vulnerable	Low Species is widespread and common but was not found in the area to be developed.

Indigofera mundiana	Scarce Limestone Indigo	Fabacaeae	Scrambling perennial	Screening tool	Endangered	Low One record was found in Still Bay and the species prefers sandy coastal plains.
Lachnaea axillaris	Teeny stripper	Thymelaeaceae	Shrub	iNaturalist	Near Threatened	Low Three records are present close to the site but fall within a different vegetation type than the site. No suitable habitat exists for this SCC at the site (fynbos was not found).
Lampranthus ceriseus	Cerise brightfig	Aizoaceae	Succulent	Screening tool; iNaturalist	Vulnerable	Low Observation with 2km of the site was made in 1985.
Lampranthus fergusoniae	Limestone brightfig	Aizoaceae	Succulent	Screening tool; iNaturalist	Rare	Low Observations were made just outside of the 2km radius of the site. However, the SCC was not found at the site nor were any species that resemble it.
Lampranthus foliosus	Dewplants	Aizoaceae	Succulent	Screening tool	Endangered	Low No records have been found for Still Bay and its surrounds.
Lampranthus pauciflorus	Beach brightfig	Aizoaceae	Succulent	Screening tool; iNaturalist	Endangered	Low Observation close by was made more than 10 years ago and the habitat is not suitable to host this species given its ecology.
Lebeckia gracilis	Slender ganna	Fabaceae	Shrub	Screening tool	Endangered	Low The habitat is not suitable: this species inhabits coastal fynbos, renosterveld and strandveld in deep, sandy soils.
Leucadendron galpinii	Hairless conebush	Proteaceae	Shrub	Screening tool; iNaturalist	Vulnerable	Low This SCC likely occupies the larger landscape but is not flagged for this vegetation type and was not observed at the site.
Leucospermum praecox	Mossel Bay pincushion	Proteaceae	Shrub	Screening tool; iNaturalist	Vulnerable	Low This SCC likely occupies the larger landscape but is not flagged for this vegetation type and was not observed at the site. The site contains no suitable habitat for this SCC although it was observed within 2km of the site.

Lobelia valida	Galjoen Lobelia	Campanulaceae	Perennial herb	Screening tool	Vulnerable	Low This SCC was observed at a close by property but is not likely to occur at the area to be developed.
Metalasia luteola	Yellow blombush	Asteraceae	Shrublet	Screening tool	Vulnerable	Low This SCC was observed at a close by property but is not likely to occur at the area to be developed.
Muraltia barkerae	Purplegorses	Polygalaceae	Shrublet	Screening tool	Endangered	Low This SCC likely occupies the larger landscape but is not flagged for this vegetation type and was not observed at the site. The area to be developed contains no suitable habitat for this SCC.
Oedera steyniae	Sharp Perdekaroo	Asteraceae	Shrublet	Screening tool	Vulnerable	Low Observations are more coastal in their distribution.
Otholobium sp. nov. (Esterhuysen 33240a BOL)	Cape dotty peas	Fabaceae		Screening tool	No assessment completed	Low No information exists for the species therefore deductions are be made based on the genus level classification. The area to be developed is botanically depauperate and unlikely to hold this genus and by extension this species.
Pentameris calcicola var. *hirsuta*	Grasses	Poaceae	Graminoid	Screening tool	Vulnerable	Low Limestone outcrops and dune thicket habitats are suitable for this SCC.
Phylica incurvata	Hardleaves	Rhamnaceae	Perennial herb	Screening tool	Vulnerable	Low Closest observations area in Still Bay East, a different vegetation type than what exists at the site and at the area proposed for development.
Polygala pubiflora	Hairyflower falsepea	Polygalaceae	Herbaceous perennial	Screening tool	Vulnerable	Low The SCC occurs on limestone and shale rocky outcrops, which does not characterise the habitat found at the site.
Protea obtusifolia	Limestone sugarbush	Proteaceae	Shrub	iNaturalist	Near Threatened	Low The SCC is unlikely to be found at the area proposed for development.

Ruschia leptocalyx	Tentfigs	Aizoaceae	Succulent	Screening tool; iNaturalist	Endangered	Low The species occurs nearby and may occur at the site but is unlikely to occur within the footprint for the proposed development.
Selago diffusa	Bitterbushes	Scrophulariaceae	Shrublet	Screening tool	Vulnerable	Low This SCC occurs on limestone flats, outcrops, slopes and hills, as well as sand dunes.
Selago glandulosa	Bitterbushes	Scrophulariaceae	Herbaceous perennial	Screening tool	Vulnerable	Low Most observations are in Mossel Bay in a different vegetation type than what exists on the site. It occurs in coastal dunes and on limestone hills and outcrops.
Selago villicaulis	Dune bitterbush	Scrophulariaceae	Herbaceous perennial	Screening tool	Vulnerable	Low No observations of this SCC were found close to the Goukou River. Additionally, it is largely restricted to fixed dunes.
Sensitive species 335				Screening tool	Endangered	Low In Still Bay this SCC exists on well-drained sand among coastal dunes far from this site.
Sensitive species 340				Screening tool; iNaturalist	Vulnerable	Low This SCC occurs in this vegetation type and has close-by observations but has no suitable habitat (shallow pockets of sandy soil between limestone boulders) within the area to be developed.
Sensitive species 5				Screening tool	Vulnerable	Low Occurs on limestone hills and flats near the coast.
Sensitive species 500				Screening tool	Endangered	Low This SCC occurs on rocky headlands, limestone and sandy soils which do not occur in the area to be developed.
Sensitive species 654				Screening tool	Vulnerable	Low May occur within the larger landscape but was not found and is not likely to be found at the area proposed for development.
Sensitive species 764				Screening tool	Endangered	Low Only occurs within the Still Bay area on limestone ridges.

Sensitive species 784				Screening tool; iNaturalist	Vulnerable	Low Occurs in coastal limestone fynbos. The habitat present at the site is unsuitable for the species.
Sensitive species 800				Screening tool	Vulnerable	Low Limestone and clay loam soil, fynbos and renosterveld on coastal lowlands are preferred by this SCC but the species has a low likelihood of occurrence in the area surveyed.
Stoebe muirii	Grey Snakebush	Asteraceae	Shrublet	Screening tool	Vulnerable	Low May occur within the larger landscape but was not found and is not likely to be found at the area proposed for development.
Thamnochortus muirii	Thatching reeds	Restionaceae	Graminoid	Screening tool	Vulnerable	Low Observations only made 20km east of Goukou River.
Thamnochortus pluristachyus	Thatching reeds	Restionaceae	Graminoid	Screening tool	Vulnerable	Low This SCC is not found within this vegetation type and is unlikely to occur in eth area proposed for development.
Wahlenbergia polyantha	Capebells	Campanulaceae	Herbaceous perennial	Screening tool	Vulnerable	Low Preferred habitat for this SCC is sandy flats which does not accord with the vegetation found at the site or mapped for the site.
Zostera capensis	Cape dwarf-eelgrass	Zosteraceae	Hydrophytic graminoid	Screening tool	Endangered	Low The species is marine/ estuarine and would not be found in a lower salinity area. Additionally, the development is not at the waterline.

6. SITE SENSITIVITY VERIFICATION

6.1 Terrestrial Biodiversity

All of the development site is mapped as a CBA1 area. The vegetation type mapped for the site (Gouritz Valley Thicket) is highlighted by the National Vegetation Map as Critically Endangered. All accessible vegetation at the site shows transformation for agriculture either historical or current and other transformation (such as maintained lawn). The dense thicket vegetation, however, is in good condition and no alien invasive species were noted. The development as proposed will not compromise the quality of the thicket vegetation and the area therefore has a **Low** site sensitivity, which differs from the **Very High** sensitivity assigned by the DFFE screening tool.

6.2 Botanical Diversity

Southern White Milkwood trees (*Sideoxylon inerme inerme*) a protected tree, although not highlighted by the screening tool or desktop search, was found during the site assessment in close proximity to the proposed development. Since the development is proposed for the grassed area of the site, no SCC have a high probability of occurrence in its direct footprint. During the site visit the landowner noted that the development will be stilted. Milkwood trees may therefore hang too far over to the proposed development area to accommodate the dwelling. Permits would need to be sought to cut back these branches or they should be avoided. Despite this, the site is given a **Low** sensitivity for the botanical theme which does not accord with the **Medium** sensitivity assigned by the DFFE screening tool.

7. COMPLIANCE STATEMENT AND RECOMMENDATIONS

Following on from the site sensitivity verification for the Terrestrial Animal Species Theme, a compliance statement is issued for the proposed filling station.

Some general recommendations for the project include:

- All recommendations made by the Botanical Specialist Report (B. Fouche, Confluent Environmental) must be applied to reduce impacts on any native vegetation and thereby associated fauna species.
- Stormwater flow in the greater landscape is compromised by litter and dense vegetation at this site and across the road (Figure. 10). This must be addressed to promote animal health in the greater landscape which may use this space for foraging (birds and mammals) or as habitat (amphibians, mammals, and invertebrates).

- General recommendations and best practice guidelines should be followed for all animal species encountered (regardless of whether they are SCC or not) during any stage of construction at the site. These are summarised in Box 1 below:

Box 1: Best practice principles for ALL fauna encounters during construction or operational phases of projects

If any animals are seen on site, a photo or a video should be taken if possible (to assist in identification) and all fauna encountered on site should be reported to the EO or ECO immediately. This is particularly important when:

- An animal is harmed or compromised in any way during construction.
- Ground-dwelling animals their nests or eggs are unearthed during construction (e.g. moles, tortoise eggs, terrapins/frogs estivating).
- Any animal with limited mobility is found on site (e.g. tortoises, moles, chameleons).
- Any potentially dangerous animal is encountered. This includes any potentially venomous animal (e.g. snakes, scorpions) or any medium-large animal that has become cornered in an enclosed area such that it cannot escape (e.g. porcupines, monkeys, baboons, antelope). It is critical in the case of snakes/ scorpions o get pictures/videos to aid in identification and appropriate treatment of anyone needing medical assistance.
- Any animal that shows a reluctance to escape or move away from the construction site thereby increasing its exposure to harm or increasing the risk of injuring people on site.

The EO or ECO should provide guidance or assistance to get all animals to safety, treating any injured animals, and issuing instructions on when to continue with construction (once they are satisfied that all animals have been removed from site) or put additional mitigation measures in place to protect animals on the site from harm.

For any injured animals or animals to be removed from site (domestic or wild):

A local SPCA or animal welfare society can collect and treat most animals and should be the first point of call for assistance. If they cannot directly assist, they will revert and notify the relevant authorities/vets.

For any assistance with snake removals/relocations, identifications, or bite treatment contact the African Snakebite Institute. The contact details of a suitably qualified snake handler can be found at the following link: https://snakeremoval.co.za/george

SNAKEBITE EMERGENCIES:	
Poisons Information Helpline	+27 861 555 777
Dr Jenna Taylor	+27 83 631 4816
Dr Christoff Bell	+27 73 174 0199
Johan Marais	+27 82 494 2039
Jason Seale	+27 82 781 8498
Arno Naude	+27 83 739 9303
Dr PJC Buys	+26 481 127 5109 (Namibia)

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APPENDIX 1: PROVISIONAL PLANT SPECIES LIST

A species accumulation curve for all the species recorded on the site during the assessment are presented in Figure. 11. All species that were observed during the site visit are in Table 5. The site assessment species list is not exhaustive.

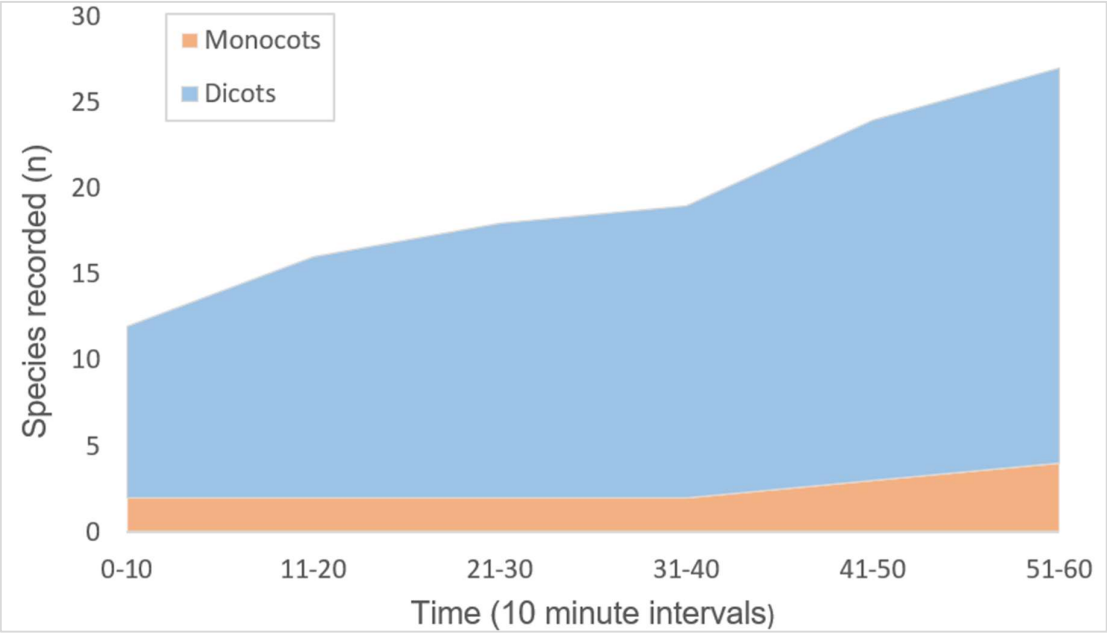

Figure 12. Plant species accumulation curve for the site assessment.

Table 5. Provisional plant species list for the site. Protected trees are in green.

Family Name	Scientific Name	Common name
Amaryllidaceae	*Agapanthus praecox*	Blue lily
Anacardiaceae	*Searsia glauca*	Blue Kunibush
Apocynaceae	*Carissa bispinosa*	Num-num
Asparagaceae	*Asparagus aethiopicus*	African Asparagus
Asparagaceae	*Asparagus suaveolens*	Catthorn Asparagus
Asphodelaceae	*Aloe arborescens*	Candelabra Aloe
Asteraceae	*Arctotheca prostrata*	Prostrate Capeweed
Asteraceae	*Cirsium vulgare*	Bull Thistle
Asteraceae	*Helichrysum*	Everlasting-flowers
Asteraceae	*Senecio*	Groundsels
Cactaceae	*Opuntia*	Prickly Pears
Celastraceae	*Putterlickia pyracantha*	Bastard Spikethorn
Ebenaceae	*Diospyros whyteana*	Bladder Nut
Lamiaceae	*Lavandula angustifolia*	Common Lavender
Lamiaceae	*Prunella vulgaris*	Common selfheal
Malvaceae	*Grewia occidentalis*	Crossberry
Meliaceae	*Ekebergia capensis*	Cape Ash
Oleaceae	*Olea exasperata*	Dune olive
Oxalidaceae	*Oxalis pes-caprae*	Bermuda buttercup

Rutaceae	*Clausena anisata*	Samandua
Rutaceae	*Zanthoxylum capense*	Small knobwood
Salvadoraceae	*Azima tetracantha*	Needle Bush
Sapotaceae	*Sideroxylon inerme inerme*	Southern White Milkwood
Scrophulariaceae	*Buddleja saligna*	False Olive
Solanaceae	*Solanum linnaeanum*	Yellow Bitter-apple
Zygophyllaceae	*Roepera morgsana*	Salad Twinleaf