Eco Route

ENVIRONMENTAL CONSULTANCY

REGISTRATION NO. 1998/031976/23

PUBLIC MEETING - 18 July 2025

NEMA and Water Use Activities

Farm Portions 420 and 373, Outeniqua Game Farm

Mossel Bay Municipality

DEADP 24G Consultation: 14/2/4/1/D6/28/0004/20

BOGMA reference: 4/10/3/K10D/Outeniqua Game 420 & 373, Mossel Bay

Welcome

Agenda

12 – 12:30

- Registrations

12:30 – 13:00

- Welcome and Introductions

13:00 onwards

- Presentation – outline current and proposed activities, related legal requirements, baseline, assessment, mitigations
- Questions and concerns during presentation
- Responses to questions and concerns during presentation

NEMA Requirements

- A Section 24G application is being undertaken in terms of the National Environmental Management Act (Act 107 of 1998) for listed activities that have commenced without the required environmental authorisation.
- While Section 24G is primarily remedial, applications are accepted which include interrelated activities which have not yet physically commenced, provided the application clearly distinguished and form part of the same development intent. This S24G application has attempted to reflect that structure. The activities that have commenced are interrelated to components not yet implemented but are in furtherance of or directly linked to the original development actions.
- A public participation process is being carried out in terms of the Regulation 41 of the EIA regulations, 2014 (as amended, 2017). The draft S24G and supporting appendices have been submitted to the CA, organs of state, surrounding landowners and registered IAPs for a 60-day comment and review. The comments and response report will be updated with all comments received and responses provided and the draft S24G application updated to address comments, where applicable, and the final S24G application submitted to the DEADP for consideration.

PAST, CURRENT AND PROPOSED ACTIVITIES

Activities have been carried out on Farm Portions RE/420 (489ha) and 373 (789ha)

Past activities carried out by previous landowner (prior to 2016) (baseline)

- Agricultural activities (197 ha) (both portions)(cattle farming, sorghum)
- Dwellings (both portions)
- Roads and crossings (both portions)
- Quarries (ptn 420)
- It is assumed that some form of water supply was in place, but no specific details are available

PAST, CURRENT AND PROPOSED ACTIVITIES

Existing activities commenced by current landowner (2016 onwards)

- Groundwater abstraction (both portions)
- Water storage facilities (both portions)
- Crop, pastures and supporting infrastructures (89ha) (both portions)
- Game farm and enclosure (remaining area Ptn 420)
- Restaurant and tourist centre (Ptn 420)
- Staff accommodation (Ptn 420)
- Roads and crossings (both portions)

PAST, CURRENT AND PROPOSED ACTIVITIES

Activities not yet commenced

- Installation of in-stream dam (12-meter height maximum; 150 000m3 capacity) and associated pipeline to provide water for existing and proposed activities
- Agricultural expansion on ptn 373 (proposed – 380 ha expansion); (preferred - 20 ha expansion on ptn 373)
- Predator enclosure expansion (ptn 420) (17 ha – proposed; 10.4 ha preferred)
- Elephant enclosure (ptn 420) (1ha – proposed and preferred)

PAST, CURRENT AND PROPOSED ACTIVITIES

Questions / Queries

NWA Section 21 Water Uses

A general authorisation has been issued to the current landowner by DWS for the following:

Portion 373 (4/5/K10D/Outeniqua)

- Section 21 a – taking ground water from a borehole for irrigation (117 819m3/annum)
- Section 21 a - taking surface water from river / stream for irrigation (80 000m3.annum)
- Section 21b – storage of water (40 000m3)

Portion 420 (4/5/6/K10D/Outeniqua)

- Section 21 a – taking ground water from a borehole for irrigation (73 425m3/annum)
- Section 21 a - taking surface water from river / stream for irrigation (80 000m3.annum)
- Section 21b – storage of water (40 000m3)

NWA Section 21 Water Uses

- The applicant is proposing to construct a dam with a 150 000 m3 capacity to sustain the existing and proposed activities on the farm portions.
- A hydrology study (February 2025) has been carried out. Based on a detailed monthly water balance based on weather data covering a 50-year period, a dam size of 150 000 m3 is expected to provide at least a 95 % assurance of supply.
- Authorisation of additional taking of water from the Ruiterbos River must be subject to the surrender of abstraction rights from boreholes on RE/420 and RE/373.

  (73 425 m3/annum + 117 819 m3/annum = 191 244 m3/annum)

NWA Section 21 Water Uses

The following NWA S21 activities will also require authorisation by DWS:

- Section 21(c) of the Act - Impeding or diverting the flow of water in a water course
- Section 21(i) of the Act- Altering the bed, banks, course or characteristics of a watercourse

    Roads and road crossings, structures within DWS regulated zone (100m watercourses ; 500 m wetlands)

NWA Section 21 Water Uses

The following NWA S21 activities will also require authorisation by DWS:

Section 21(c) of the Act - Impeding or diverting the flow of water in a water course

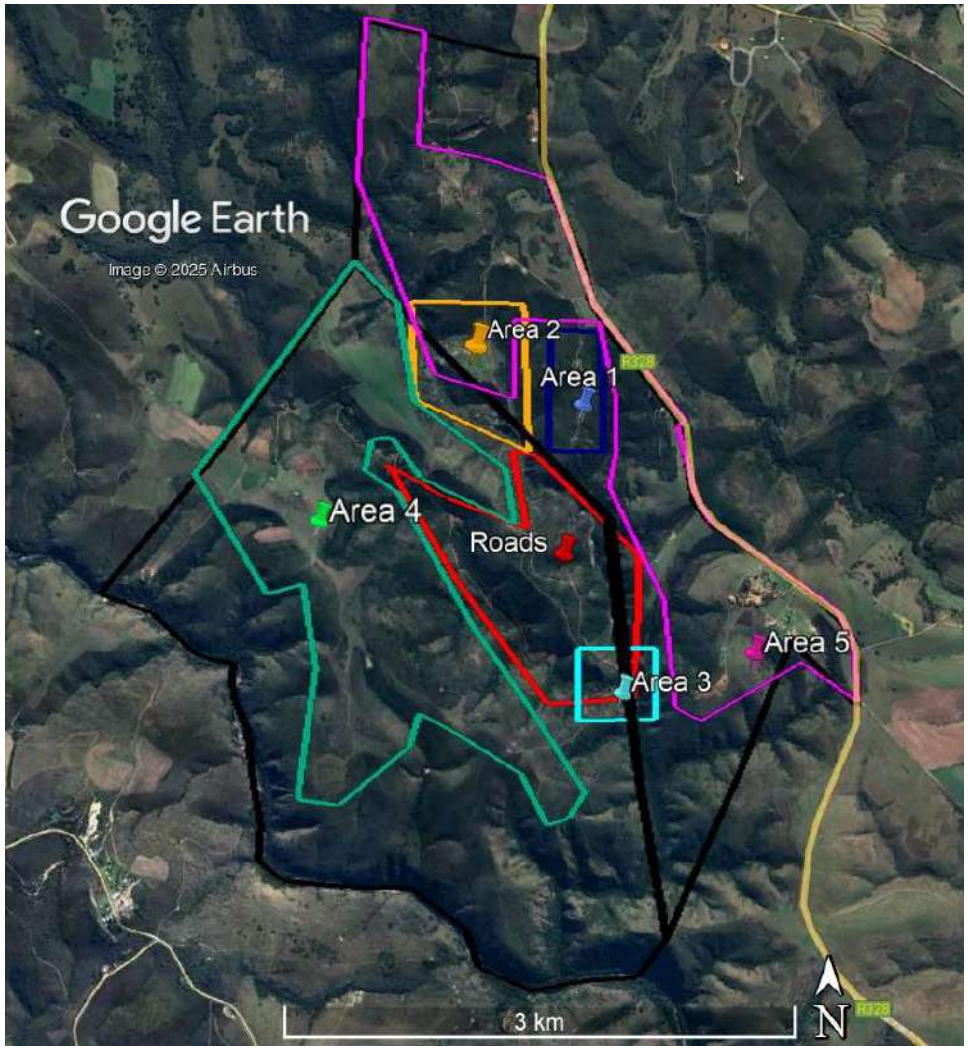
Section 21(i) of the Act- Altering the bed, banks, course or characteristics of a watercourse

- Roads and road crossings, structures within DWS regulated zone (100m watercourses ; 500 m wetlands)

NWA Section 21 Water Uses

Questions / Queries

Areas on farm assessed



Areas on farm assessed

Portion 420

Area 1 – five dwellings

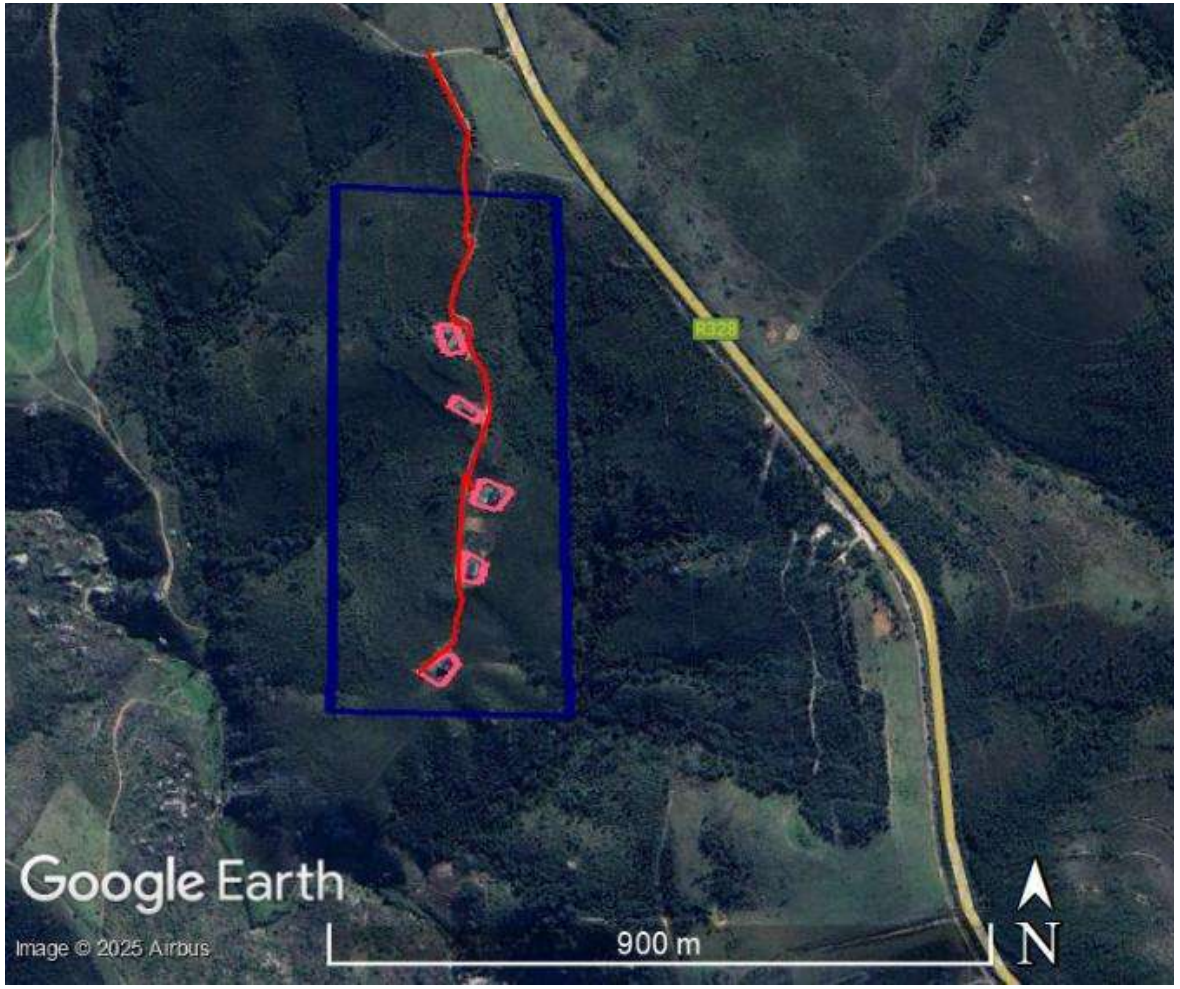
Each dwelling is approximately 1200m2

Road: 750 meters; 4 meters width

Approximately 8000m2

Developed between 2020 – 2022

Areas on farm assessed



Areas on farm assessed

Portion 420

Area 2 – dwellings, structures, water storage, roads, tracks

Dwelling: 900m2

Dwelling: 1750m2

Structure: 1300m2

Road: 5100m2

Approximately: 9000m2

Developed between 2017 to 2024

Areas on farm assessed

Areas on farm assessed

Roads between Area 2 and 3

Road 1: 1500m (alien clearing along Ruiterbos)

Road 2: 1200m (between 2 and 3)

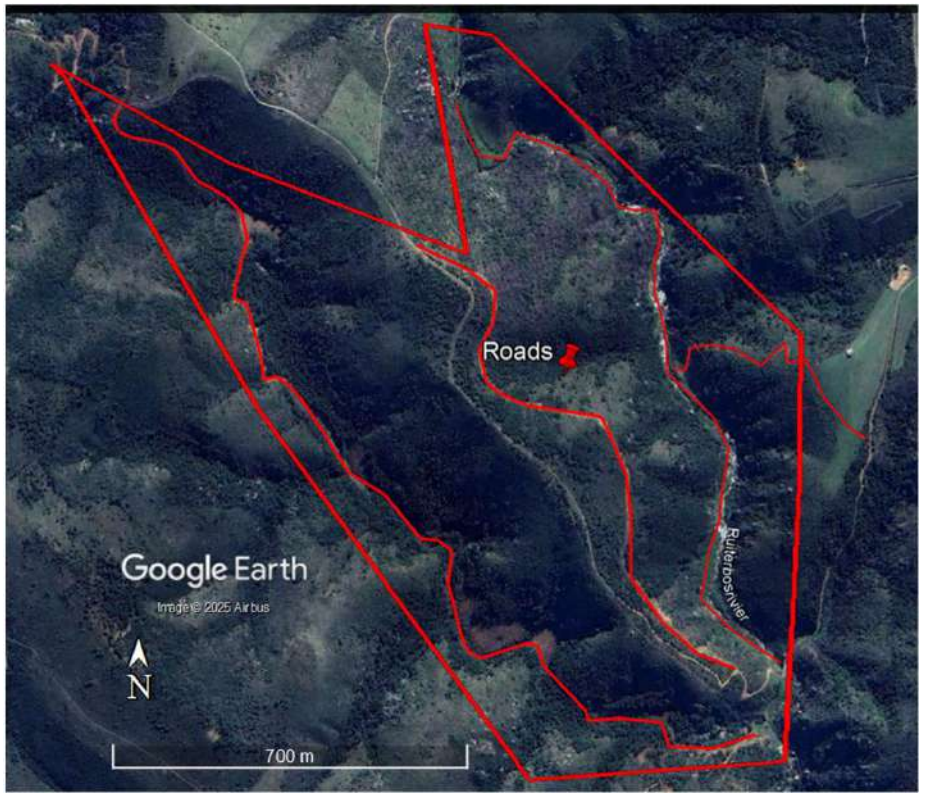
Road 3: 2300m (along non -perennial drainage line – alien clearing)

Tracks: 900m (from Area 5-2)

Estimated 5900m / 10000m2

Developed between 2017 to 2024

Areas on farm assessed



Areas on farm assessed

Area 3 – dam (existing and new dam), solar

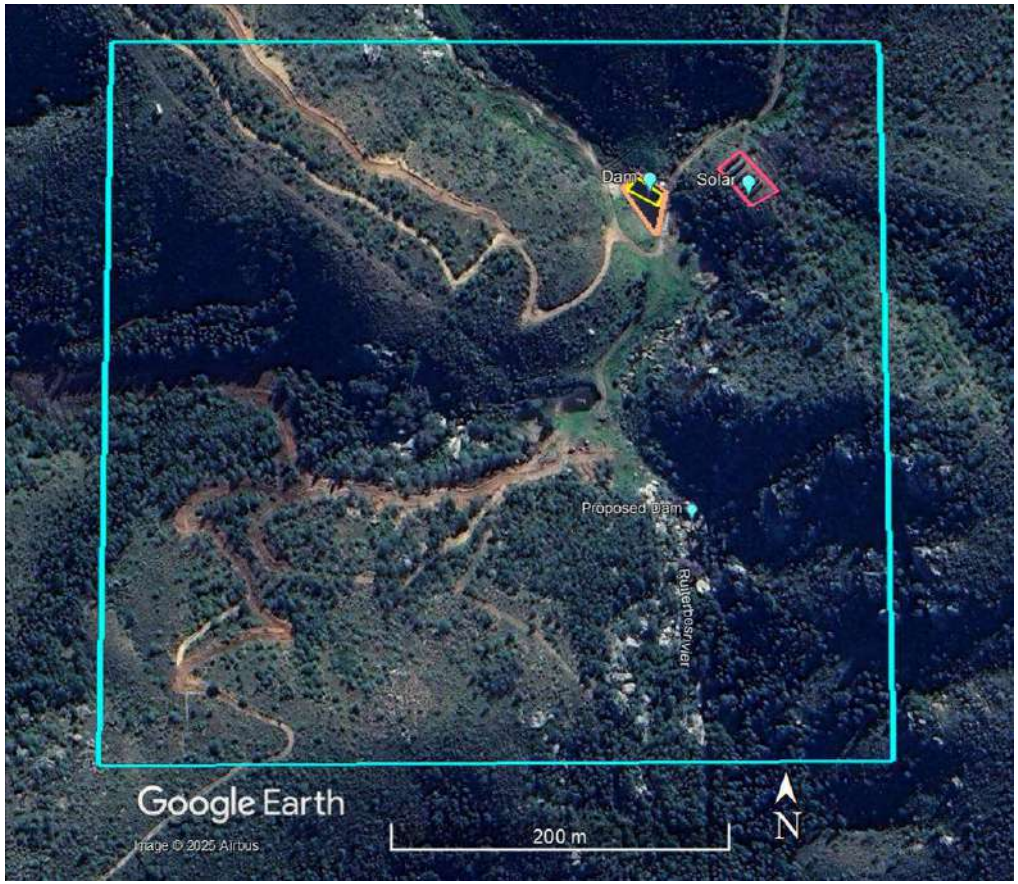
Solar panel – 500m2

Current dam expanded by approximately 300m2 / storage capacity 4000m3

A new dam is proposed with a storage capacity of 150 000 cubic meters; the dam wall is planned to be 12-meters in height.

Areas on farm assessed

Area 3 – dam (existing and new dam), solar



Areas on farm assessed

Area 4: Agricultural area and supporting activities – ptn 373

Past use areas (prior to 2005): 95,77ha

Past use agricultural areas currently in use: 43,31 ha

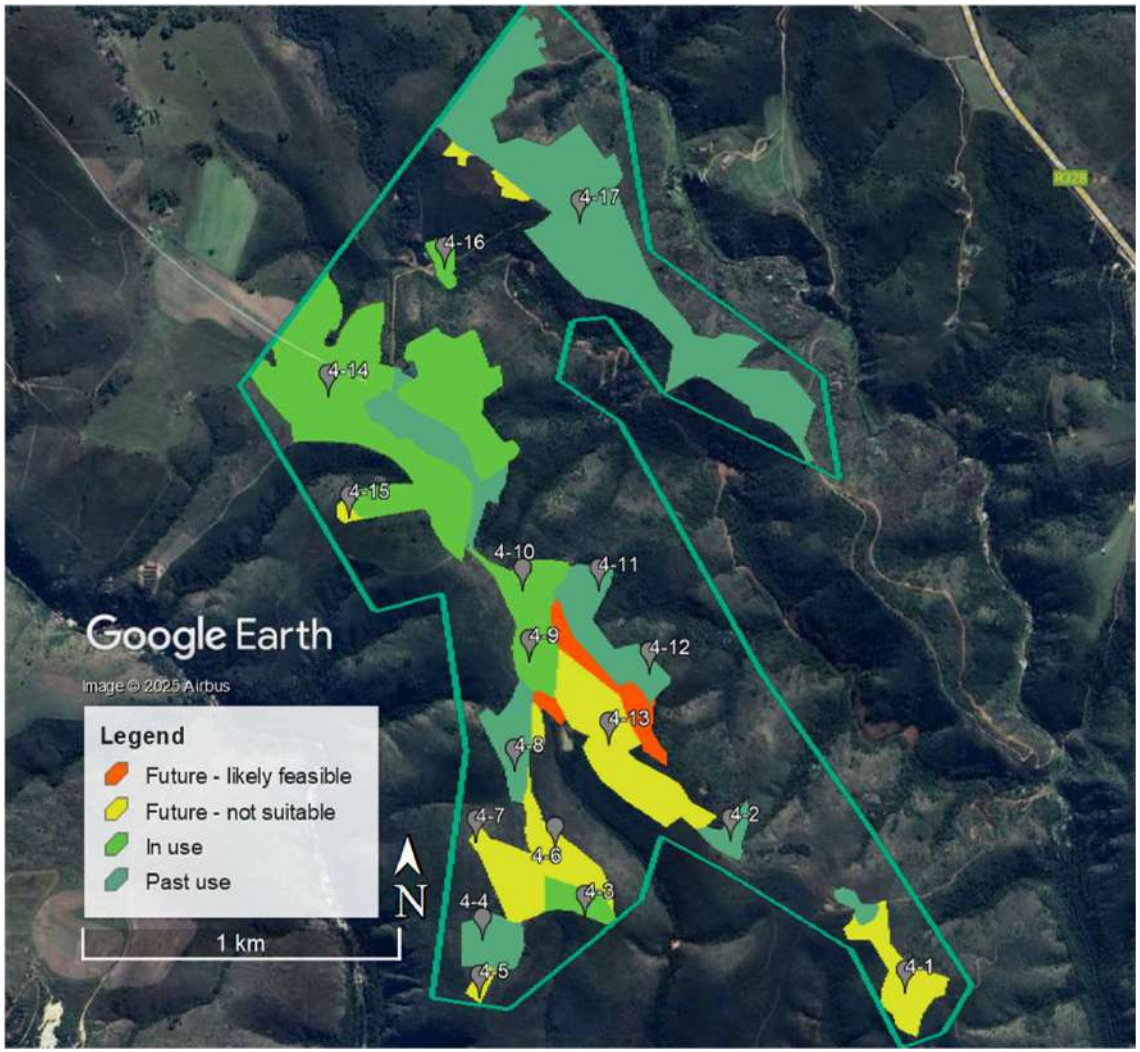
Past undisturbed area currently in use: 1 ha (Site 4-16)

An additional 380ha vegetation was initially proposed to be cleared for 200 ha maize, 150 ha lucerne and 30 ha avocado. However, following the outcome of the soil studies, vegetation assessment and hydrology report, the applicant is proposing to develop of further 20 ha for crop purposes that will be available for rotation. Area 4-17 is deemed the most suitable area for expansion.

Areas on farm assessed

Area	Size estimate	Land use	Recommendation
1	4,98ha	In use / Past use / Future use – not feasible	Not recommended
2	1.55 ha	Past use	Only dryland grazing
3	2.01 ha	In use	Preferably not be used; if used, only dryland grazing
4	2.87ha	Past use	Only dryland grazing
5	0.5 ha	Future use – not feasible Intact fynbos	Retain as fynbos; removal of dense wattles as per AIS management plan
6	6.79 ha	Past use Future use – not feasible	Retain as fynbos; removal of dense wattles as per AIS management plan
7	0.34 ha	Future use – not feasible	Retain as fynbos; removal alien trees as per AIS management plan
8	3.38 ha	Past use	Only dryland; removal alien trees in field and adjacent area as per AIS management plan
9	3.56 ha	In use	No further expansion this area. Manage agricultural area as per mitigation measures.
10	2.5ha	In use	Manage agricultural area as per mitigation measures.
11	2.48 ha	Past use - invaded	Dryland grazing Manage as per AIS management plan
12	3.14 ha	Past use - invaded	Not suitable – low potential soils. Manage as per AIS management plan
13	2.85ha / 9.2 ha	Future - likely feasible (2.85 indicate d in purple) Remaining area 13 – not feasible (9.2 ha)	Low ecological importance however soil potential is indicated as low for the corresponding area.
14	35.27 ha	In use Past use	Maintain as irrigated agricultural area; use past use area for additional irrigated area and required dwellings, storage.
15	0.33ha	Future use – not suitable	Retain as fynbos No agricultural expansion permitted.
16	0.89ha	In use	Area surrounding dam should be mulched and planted.
17	30.73 ha	Past use	Recommended for irrigated mixed cropped farming. Manage as per agricultural measures.

Areas on farm assessed



Areas on farm assessed

Area 5: Agricultural area, game farm, tourism, enclosures and supporting activities on ptn 420

Past use areas (prior to 2005): 97,05ha

Past use agricultural areas currently in use: 17.2 ha

Past disturbed area currently in use: 7200m2 restaurant adjacent to old quarry

Additional structures, roads, reservoirs in use: 1ha – developed on previously disturbed areas

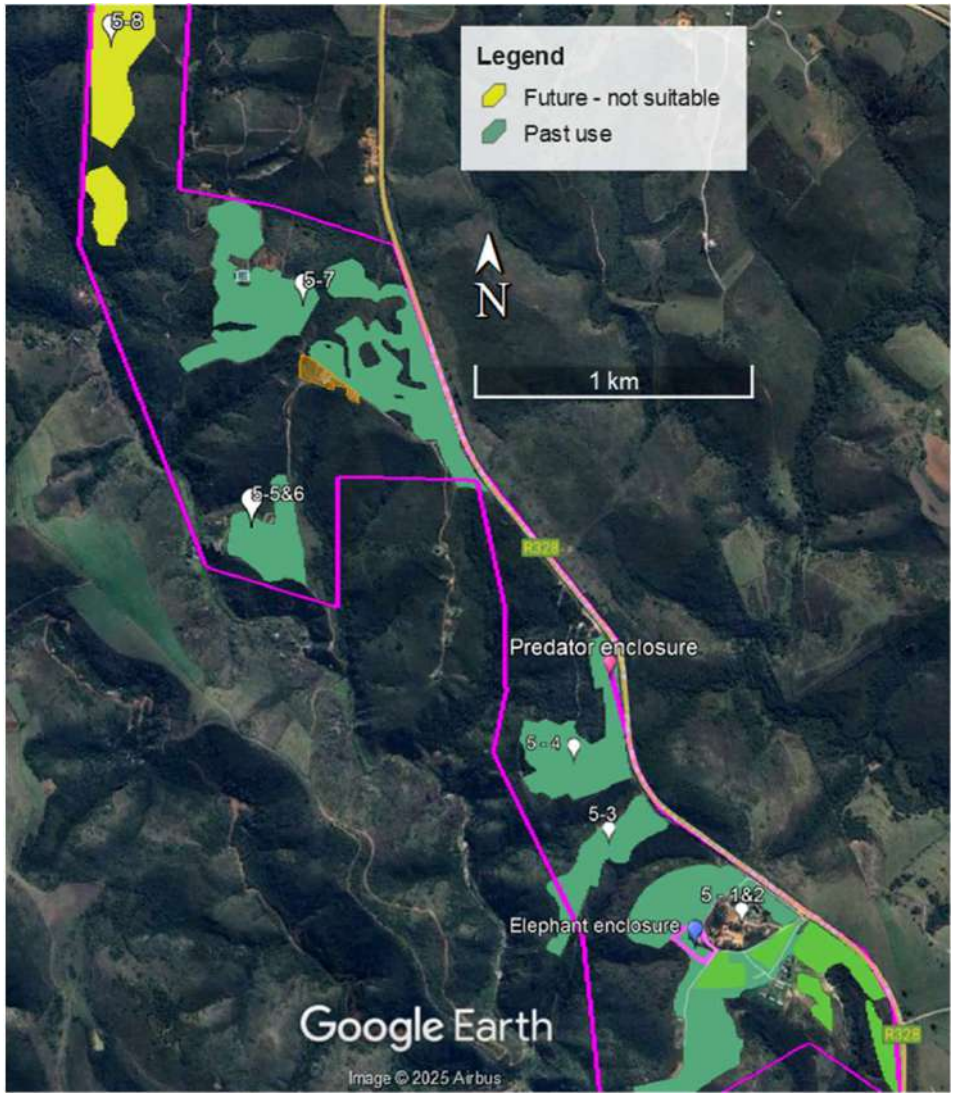
Proposed – predator enclosure: 10 ha (maximum) within previously disturbed area

Proposed – elephant night enclosure: 1 ha within previously disturbed area

Areas on farm assessed

Area	Size estimate	Land use	Recommendation
1 and 2	30 ha	In use / past use	Maintain infrastructure as required; Small scale agricultural activities permitted. Manage as per agricultural management measures. 1 ha night camp area proposed for elephant is included in this area.
Elephant enclosure	1 ha	Proposed	
3	6.5 ha	Past use / in use	Dryland – maintain for game farm animals
4 Predator enclosure	10.7 ha	Past use / Proposed	Only dryland; predator enclosure proposed for this area. Plan shows 17.6 ha and requires clearing of vegetation not mapped as past use. Retain footprint of enclosure to past use area (i.e. 10.7ha) Manage as per cheetah and lion enclosure management plan.
5 and 6	5.9 ha – corresponds to Area 2	Past use / in use	Rehabilitate roads in areas as required. Increase biodiversity in this area thorough active re-vegetation. Prioritise for AIS removal. Dryland management only. Manage as per terrestrial biodiversity, AIS and fire management measures provided.
7	28.45 ha (14.6 ha + 12 .7 ha)+ (1.15ha)	Past use / In use	Maintain dwellings, don't use and rehabilitate unnecessary roads. Manage as per AIS management plan and terrestrial biodiversity management measures.
8	11.5 ha	Past use	Not recommended – rehabilitate unnecessary roads.

Areas on farm assessed



Areas on farm assessed

Questions / Queries

NEMA Listed Activities - GN No. R. 327 LN1

13	**The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014 (5 meters high / area more than 10ha)**	Two road crossings have created dams within the watercourses. The water holding capacity of these is estimated to be 2000 m3 and 4000m3. Reservoirs are in place; GA is in place for 40 000m3 storage on each farm portion. A new dam is proposed which will have a maximum storage capacity of 150 000 cubic meters; the dam wall is planned to be a maximum of 12-meters in height.

NEMA Listed Activities - GN No. R. 327 LN1

19	**The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;**	Road crossings; dam within watercourse.

NEMA Listed Activities - GN No. R. 327 LN1

27	**The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—** **(i) the undertaking of a linear activity; or** **(ii) maintenance purposes undertaken in accordance with a maintenance management plan.**	Clearance of indigenous vegetation (not disturbed in previous 10 years) has taken place between 2016 – 2024 for development of structures, dam and roads; Area 1 – 8000m2 – 5 dwellings Area 2 – 9000m2 – dwellings, reservoir Roads – 10000m2 Area 3 – 800m2 - (existing dam) Area 4 – 10000m2 (existing dam and agricultural) Total - 3.7ha Developed on previously disturbed area: Area 5 – 7200m2 - restaurant Current agricultural activities in place developed on past used agricultural areas (disturbed within previous 10 years) Ptn 420 – 17.2 ha (irrigated) Ptn 373 – 56.31 ha (irrigated) Existing dryland – 12 ha (pastures) Total – 85 ha Proposed: Additional agricultural: 20 ha – Area 4-17 ptn 373 Elephant enclosure (1ha) - Area 5-1&2 Predator enclosure (10ha) - Area 5-4 Proposed 150 000m3 dam (2ha) - Area 3 Total – 33 ha Total footprint: 122.5 ha ***Ln 2; Activity 27 included to authorise all footprints.***

NEMA Listed Activities - GN No. R. 327 LN1

28	**Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:** **(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or** **(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;** **excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.**	Activity included in precompliance notice (14/1/1/E3/9/10/3/L1019/19 Occurs outside urban area Zoned as Agriculture 1 Properties were used for cattle farming between 1976 to current. Farmhouse was in place on ptn 420; roads were in place. Crops are currently in place (60 ha) on ptns 373 and 420 Game farm is in place on ptn 420. A restaurant is in place; however, footprint of area is 7200m2. Five new dwellings have been developed on ptn 420, supporting structures and reservoirs are in place in agricultural area. Land currently used mostly for agriculture and game farming with dwellings provided for operational staff. ***The dwellings and restaurant area developments on the property may be considered to be mixed / residential / retail (combined footprint will exceed 1 ha)***

NEMA Listed Activities - GN No. R. 325 LN2

15	**The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or**	Clearance of indigenous vegetation (not disturbed in previous 10 years) has taken place between 2016 – 2024 for development of structures, dam and roads; Area 1 – 8000m2 – 5 dwellings Area 2 – 9000m2 – dwellings, reservoir Roads – 10000m2 Area 3 – 800m2 - (existing dam) Area 4 – 10000m2 (existing dam and agricultural) Total - 3.7ha Developed on previously disturbed area: Area 5 – 7200m2 - restaurant Current agricultural activities in place developed on past used agricultural areas (disturbed within previous 10 years) Ptn 420 – 17.2 ha (irrigated) Ptn 373 – 56.31 ha (irrigated) Existing dryland – 12 ha (pastures) Total – 85 ha Proposed: Additional agricultural: 20 ha – Area 4-17 ptn 373 Elephant enclosure (1ha) - Area 5-1&2 Predator enclosure (10ha) - Area 5-4 Proposed 150 000m3 dam (2ha) - Area 3 Total – 33 ha Total footprint: 122.5 ha

NEMA Listed Activities - GN No. R. 325 LN2

16	**The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the highwater mark of the dam covers an area of 10 hectares or more.**	New dam requires a storage capacity of 150 000 cubic meters. Concept design shows 12 meter high wall (including 2 meter freeboard)
27	**The development of a road—** **Excluding a road** **(b) which is 1 kilometre or shorter; or**	Additional roads and tracks developed between 2016 and 2024; Four roads identified which exceed 1km in length; distances are 1km, 1.2km, 1.4km and 2.3km.

NEMA Listed Activities - GN No. R. 324 LN3

2	**The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres.** **i. Western Cape** **ii. In areas containing indigenous vegetation; or**	Reservoirs in place Storage of water (40 000m3) authorised on ptn 373 Storage of water (40 000m3) authorised on ptn 420
4	**The development of a road wider than 4 metres with a reserve less than 13,5 metres.** **i. Western Cape** **ii. Areas outside urban areas;** **(aa) Areas containing indigenous vegetation;**	Small sections of road on very steep terrain exceed 4 meter width

NEMA Listed Activities - GN No. R. 324 LN3

12	**The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of** **Indigenous vegetation is required for Maintenance purposes undertaken in accordance with a maintenance management plan.** **i. Western Cape** **i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;** **ii. Within critical biodiversity areas identified in bioregional plans;**	Vegetation on the study area is Swellendam Silcrete Fynbos (endangered) and Garden Route Granite Fynbos (critically Endangered) Clearance of indigenous vegetation (not disturbed in previous 10 years) has taken place between 2016 – 2024 for development of structures, dam and roads; Area 1 – 8000m2 – 5 dwellings Area 2 – 9000m2 – dwellings, reservoir Roads – 10000m2 Area 3 – 800m2 - (existing dam) Area 4 – 10000m2 (existing dam and agricultural) Total - 3.7ha

NEMA Listed Activities - GN No. R. 324 LN1

14	**The development of—** **(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or** **(ii) infrastructure or structures with a Physical footprint of 10 square metres or more;** **where such development occurs—** **(a) within a watercourse;** **(b) in front of a development setback; or** **(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;** **Western Cape** **Outside urban areas** **(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;**	According to the WCBSP for Mossel Bay, the entire length of the Ruiterbos River running through both properties is mapped as an aquatic Critical Biodiversity Area (CBA1); The majority of Portions 420 and 373 are considered first priority Terrestrial Critical Biodiversity Areas (CBA 1). Road crossings Area 3 – 20 000m2 - proposed 150 000m3 dam (existing dam – expanded); Area 4 – 10 000m2 (existing dam and agricultural)

NEMA Listed Activities - GN No. R. 324 LN1

23	**The expansion of—** **(i) dams or weirs where the dam or weir is expanded by 10 square metres or more; or** **(ii) infrastructure or structures where the Physical footprint is expanded by 10 square metres or more;** **where such expansion occurs—** **a) within a watercourse;** **c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;** **i. Western Cape** **i. Outside urban areas:** **(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;**	According to the WCBSP, entire length of the Ruiter Bos River running through both properties is mapped as an aquatic Critical Biodiversity Area (CBA1); The majority of Portions 420 and 373 are Terrestrial CBA1. Dam (OGF1)within watercourse was expanded (2019 / 2020) by 10 m2 or more.

NEMA Listed Actvities

Questions / Queries

Break time

Summary of assessment - Planning and economic impact

Commencing without required approvals leads to unnecessary economic costs

Commencement without required environmental authorisation can lead to prosecution

High economic impacts which are difficult to mitigate.

Summary of assessment - Heritage, paleontology, archaeology

STR – Low Sensitivity

Following in place - old quarry is in place on ptn 420, Structures (dwellings, restaurant etc), agricultural areas (past and current), roads are in place.

Description of impacts

Past quarrying activities may have unearthed resources.

Existing activities are expected to have had negligible impact on heritage, archaeological and palaeontological resources.

Any further activities in the future (which are carried out with required approvals in place) should put the chance find procedure in place as best practice.

Summary of assessment - Terrestrial Biodiversity

STR – Very High sensitivity

NatVEG Map –

(CR) Garden Route Granite Fynbos; (EN) Swellendam Silcrete;

valley vegetation found to be more representative of thicket - most consistent with Gouritz Valley Thicket (CR).

Vlok vegetation map - Hartenbos River And Flood plain - watercourse areas,

Leeukloof Fynbos Renoster Thicket is mapped on the majority of the site

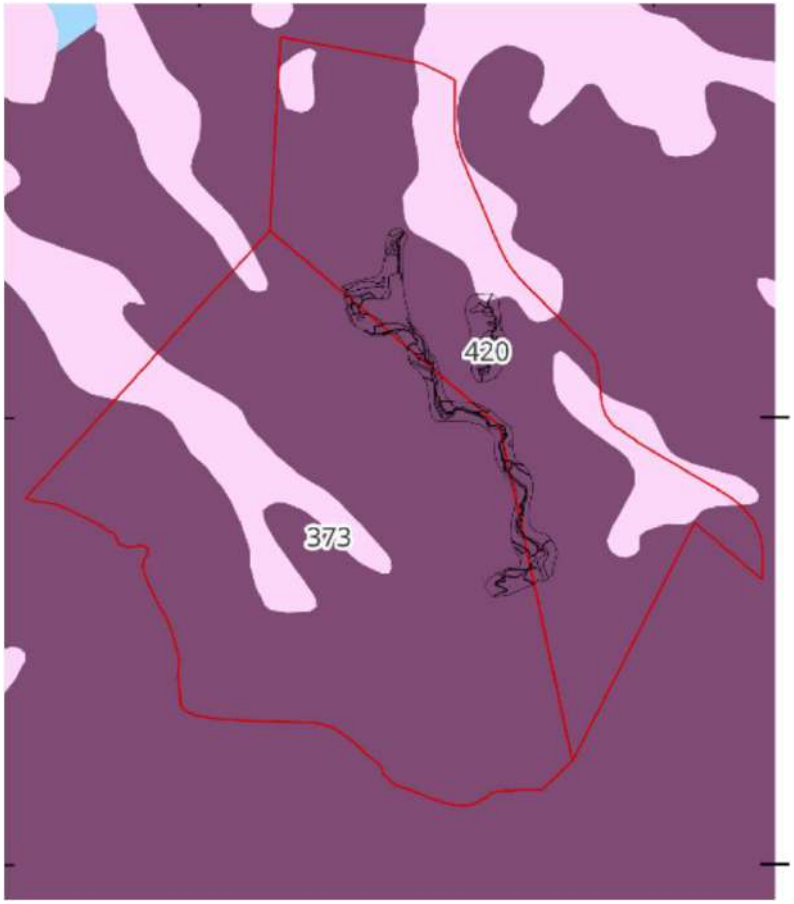
Wolwedans Grass Fynbos mapped in the south eastern corner of the site

WC BSP - entire site is mapped as a Terrestrial CBA 1 with small sections mapped as a Terrestrial CBA 2.

The rivers and non-perennial drainage lines are mapped as Rivers and Wetland CBA1

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.

Summary of assessment - Terrestrial Biodiversity



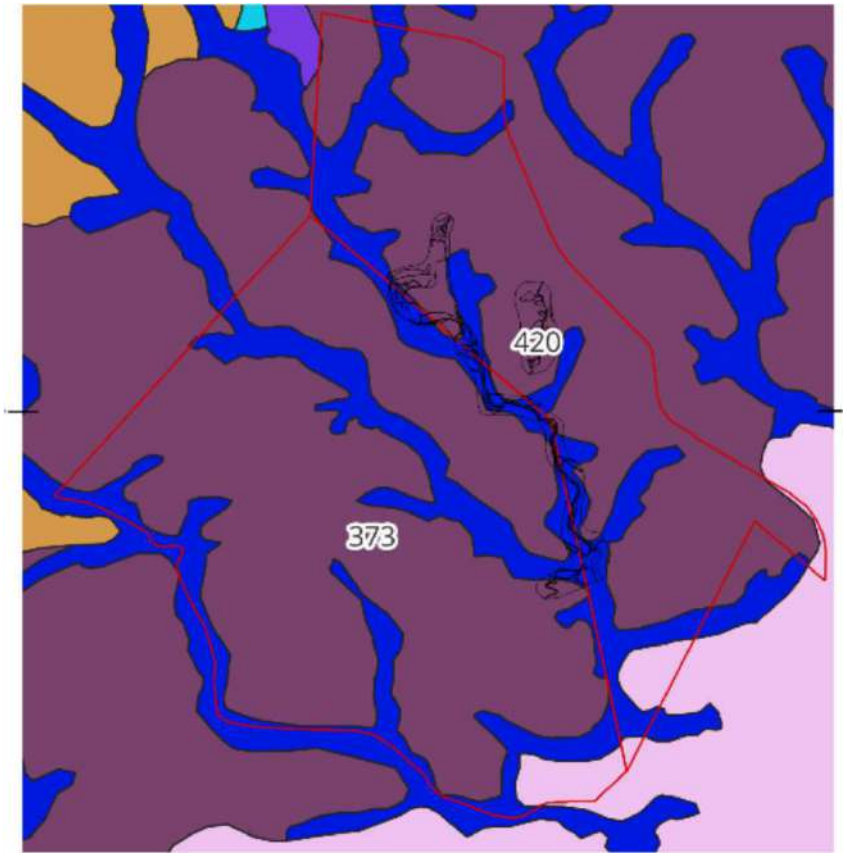
Portions 420 and 373

Vegetation_Maps

2024 Beta National Vegetation Map

- FFc 1 Swellendam Silcrete Fynbos (EN)
- FFg 5 Garden Route Granite Fynbos (CR)
- FFh 9 Garden Route Shale Fynbos (EN)
- FRs 14 Mossel Bay Shale Renosterveld (CR)

Summary of assessment - Terrestrial Biodiversity



2014 Vlok Vegetation Map

- Brandwag Fynbos-Renoster-Thicket
- Haelkraal Thicket-Renosterveld
- Hartenbos River and Floodplain
- Leeukloof Fynbos-Renoster-Thicket
- Moordkuils Perennial Stream
- Wolwedans Grassy Fynbos
- Wolwedans Thicket-Forest

Summary of assessment - Terrestrial Biodiversity

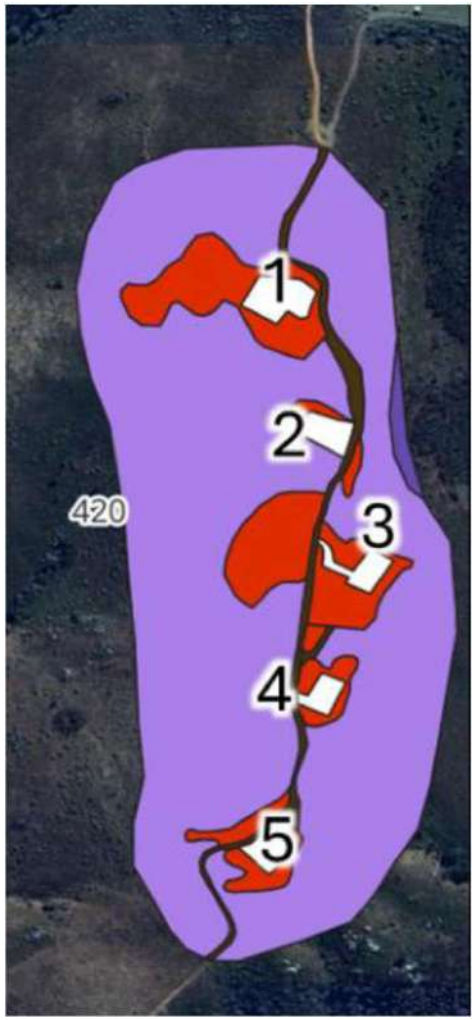
Summary of assessment - Terrestrial Biodiversity

Area 1: Construction of five dwellings

Five dwellings were constructed between 2020 and 2022; an accompanying access road was created. Approximately 8000m2 vegetation was cleared in this area. Two dwellings were built on areas of established invaded areas; the majority of the vegetation that was cleared represented Garden Route Granite Fynbos. Stands of invasive plants in this area are visible since 2005 (pink on image below).

Summary of assessment - Terrestrial Biodiversity

Area 1: Construction of five dwellings



- Transformed - offstream Dam
- Transformed - Grass
- Road
- Dwellings
- Dwelling disturbance & invaded area
- CR Invaded fynbos
- CR Fynbos
- Disturbed - fynbos & thicket elements
- Thicket
- Black wattle thicket
- Break
- Grassy valley bottom
- Watercourse

Summary of assessment - Terrestrial Biodiversity

Area 1: Construction of five dwellings

CR Garden Route Granite Fynbos vegetation observed around dwellings and roads on Outeniqua Game Farm.

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 - 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 monitored to ensure it does not spread into natural fynbos remnants. A large stand of EN Erica unicolor mutica is visible just before the Rooikrans.

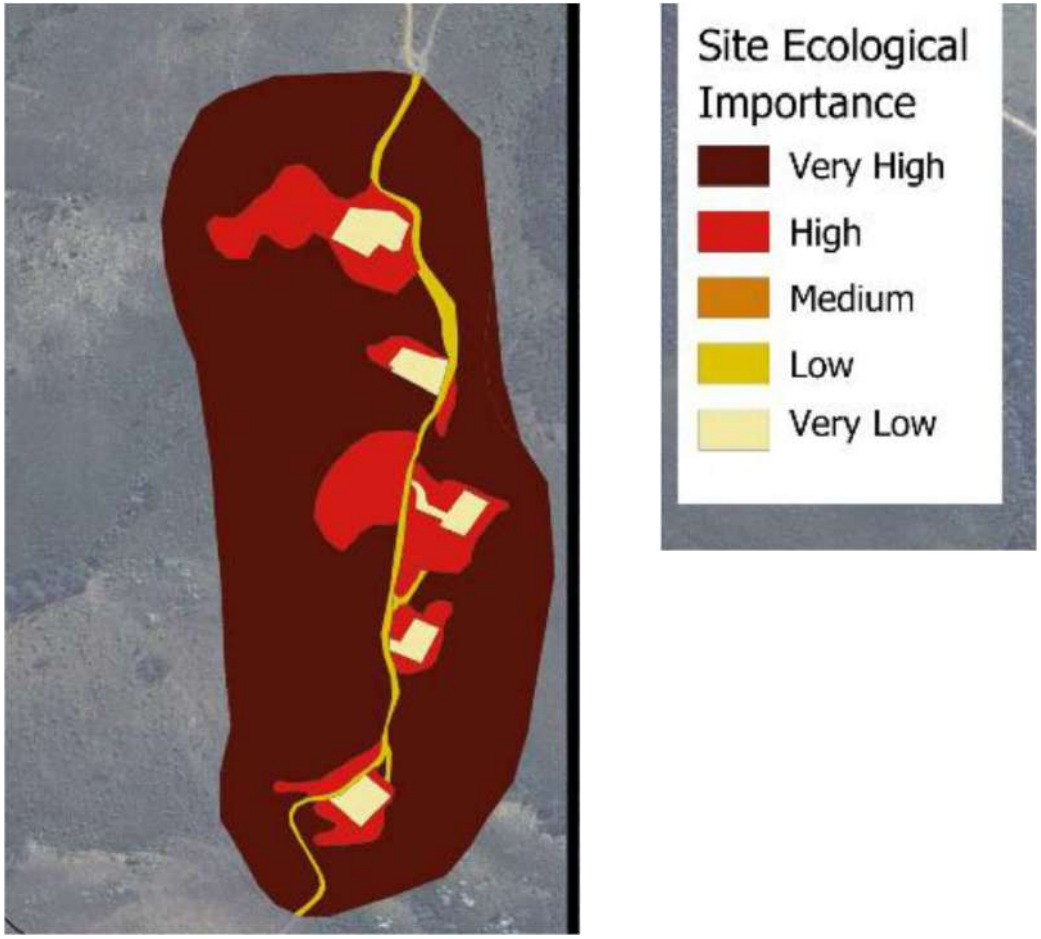
3 - A large lawn and a mature Rooikrans bush is visible adjacent to this dwelling. The surrounding fynbos is in very good condition, and may require a fire soon. The lawn around this dwelling is too large, especially given that the dwelling is in the middle of a CBA 1 and critically endangered Garden Route Granite Fynbos.

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 - Pristine fynbos is visible all the way between dwelling 4 and five. The disturbance footprint, as with all four of the other dwellings above, must be minimised around the dwelling.

Summary of assessment - Terrestrial Biodiversity

Area 1: Construction of five dwellings



Summary of assessment - Terrestrial Biodiversity

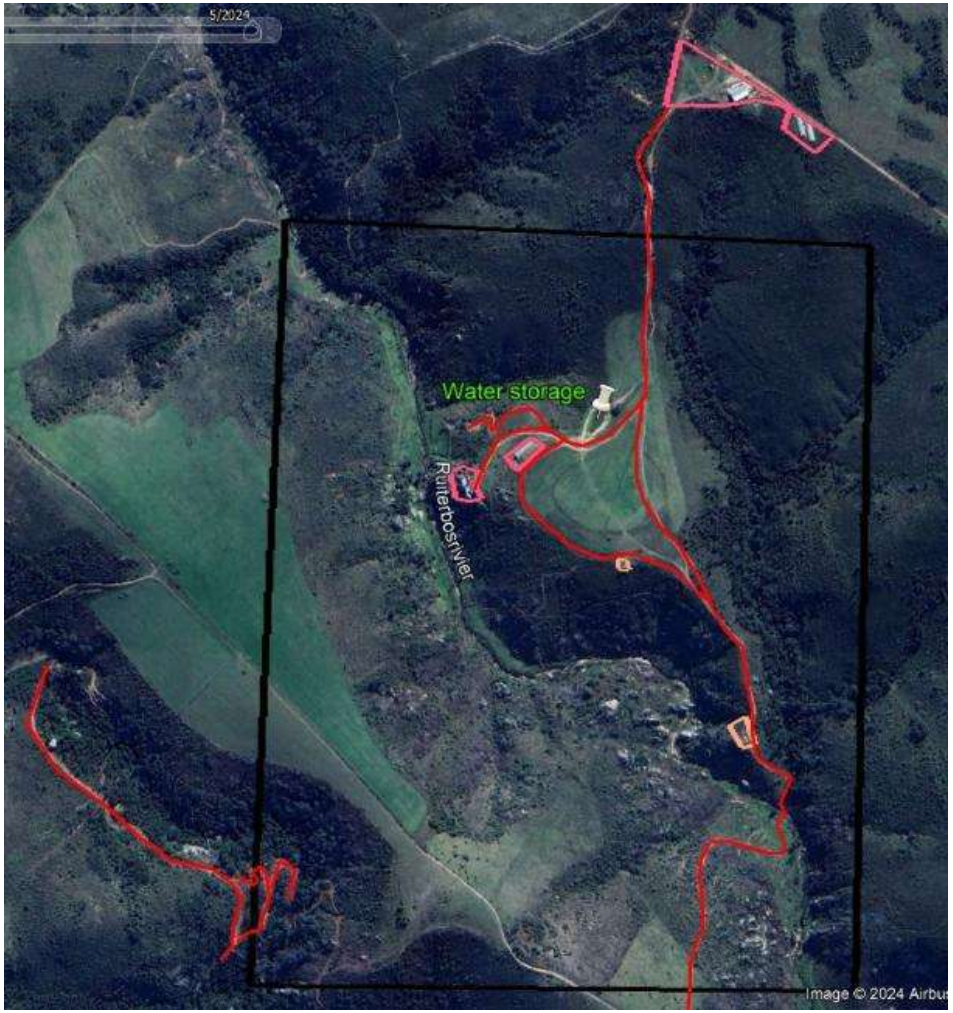
Area 2: Dwellings, structures, transformed field, off stream dam, roads

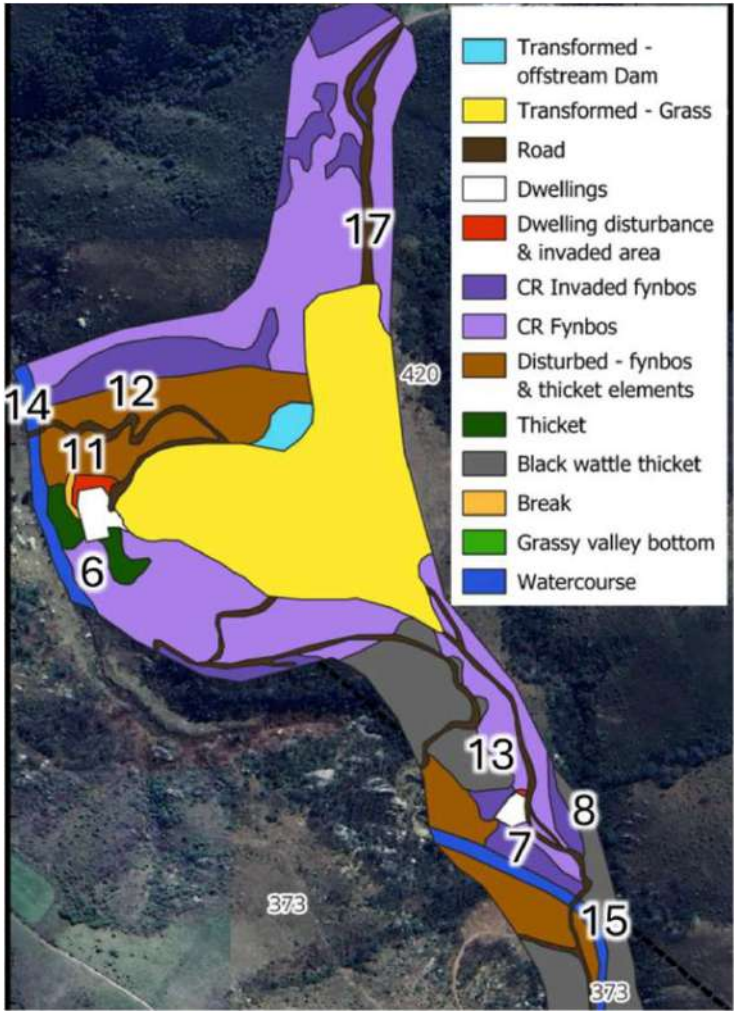
Dwellings, structures, a water storage area and accompanying roads and tracks have been constructed in this area between 2017 and 2024; the most recent road clearing occurred between May and August 2024. Approximately 4000m2 (structures / dwellings) and 5000m2 (using estimated road width of 2m) of vegetation was cleared in this area. The southern dwelling is located on the edge of fynbos and thicket vegetation, where the fynbos is representative of Garden Route Granite Fynbos (CR) and the thicket representative of Gouritz Valley Thicket (CR).

There is also an area north of area 2 which has been cleared (note – this area was also included in Botanical Assessment, Vlok, 2019).

Summary of assessment - Terrestrial Biodiversity

Area 2: Dwellings, structures, transformed field, off stream dam, roads





Summary of assessment - Terrestrial Biodiversity

Area 2: Dwellings, structures, transformed field, off stream dam, roads

6 – Northernmost dwelling, Area 2 - A small senescent patch of fynbos is present south of this dwelling.

CR Garden Route Granite Fynbos vegetation observed around dwellings and roads on Outeniqua Game Farm.

7 - Southernmost dwelling, area 2 -
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.

CR Garden Route Granite Fynbos vegetation observed around dwellings and roads on Outeniqua Game Farm.

8 - Southernmost dwelling, area 2 -
small section of the most recently cleared road (May -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.

thicket and Black wattle invaded sections

Summary of assessment - Terrestrial Biodiversity

Area 2: Dwellings, structures, transformed field, off stream dam, roads

11 - AREA 2 - Northernmost dwelling

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.

Disturbed vegetation sections that may be approaching a tipping point soon (Vlok, 2019)

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.

Disturbed vegetation sections that may be approaching a tipping point soon (Vlok, 2019)

13 - AREA 2 Southernmost dwelling

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.

Disturbed vegetation sections that may be approaching a tipping point soon (Vlok, 2019)

Summary of assessment - Terrestrial Biodiversity

Area 2: Dwellings, structures, transformed field, off stream dam, roads

14 - AREA 2 - 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.

river crossings

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.

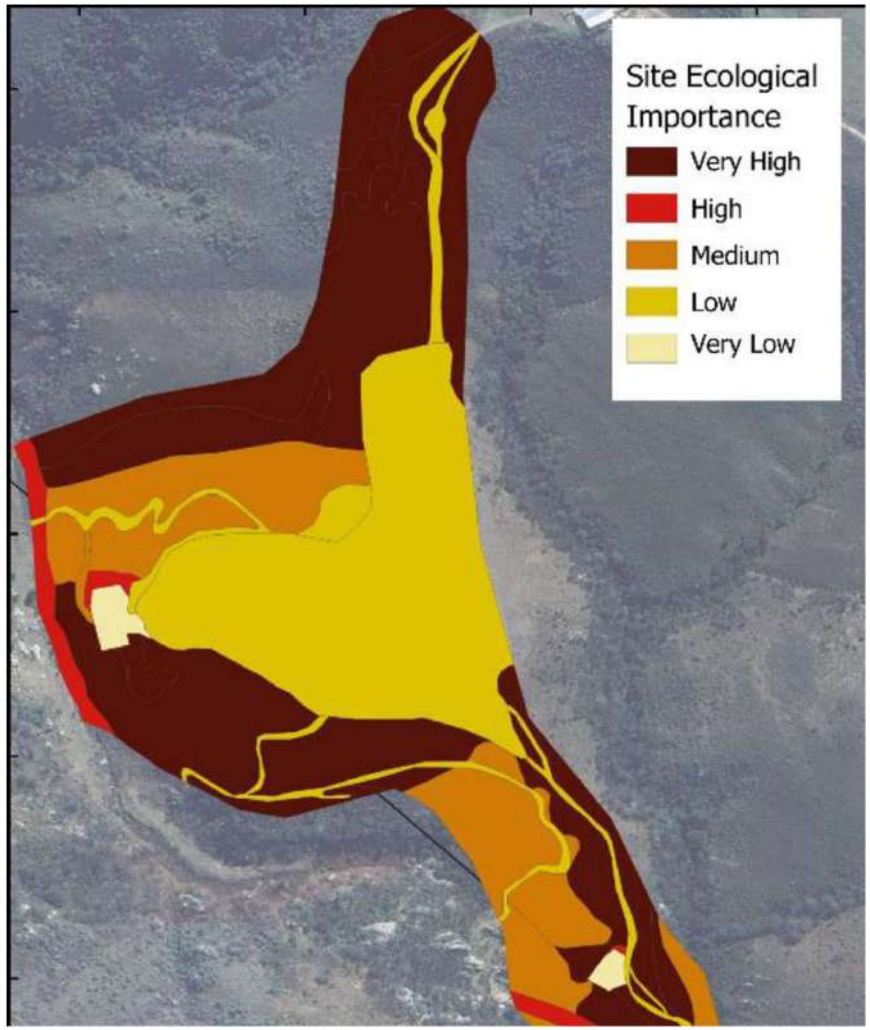
river crossings

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.

transformed field in Area 2

Summary of assessment - Terrestrial Biodiversity

Area 2: Dwellings, structures, transformed field, off stream dam, roads



Summary of assessment - Terrestrial Biodiversity

Roads between Areas 2 and 3

Roads have been created between Areas 2 and 3; this includes estimated 2300-meter road along Albertyn non perennial watercourse; new 1200 meters road on ridge and 1500-meter road along perennial Ruiterbos River and associated jeep tracks (800-meter length).

The valley slopes along either side of the Ruiterbos River and the Albertyn non perennial river have been occupied by established long-term stands of Black wattles (Acacia mearnsii). Most of the vegetation cleared along the watercourses was done for the purposes of clearing dense stands of *A. mearnsii*.

Clearing of vegetation along the valley has resulted in the introduction and naturalisation of invasive kikuyu grass (*Cenchrus clandestinus*).

Some sections of the Ruiterbos river was found to be obstructed by woody slash material leading to erosion along the bank of the river.

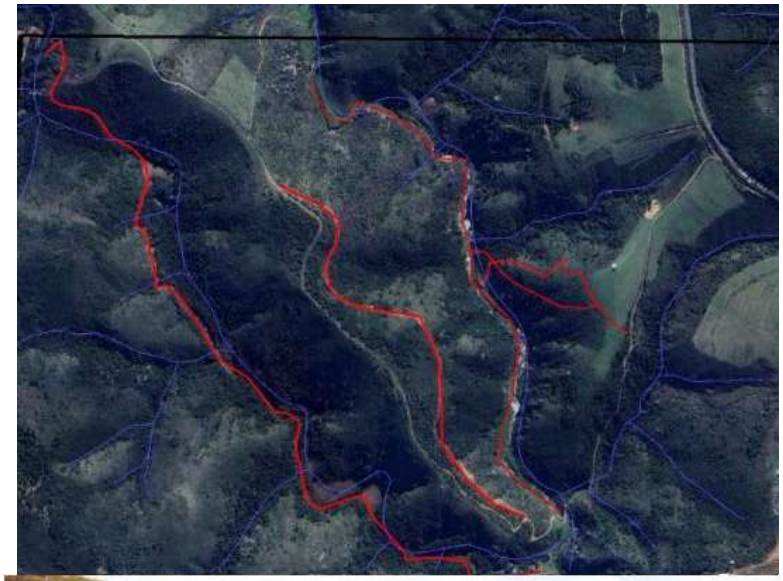
A jeep track road crosses the Ruiterbos River in several locations.

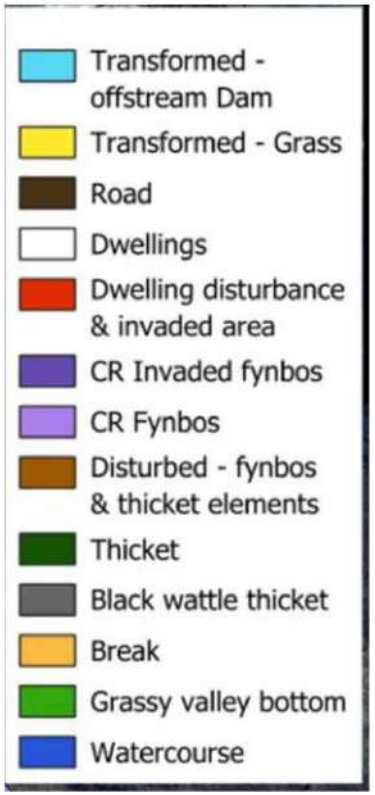
The individual jeep track along the river is not impeding the flow of the river.

Several news tracks connecting to the jeep track from the sides of the valley have been found to have caused unnecessary disturbance and erosion.

Summary of assessment - Terrestrial Biodiversity

Roads between Areas 2 and 3





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. thicket and Black wattle invaded sections

Summary of assessment - Terrestrial Biodiversity

Area 3: Weir and dam

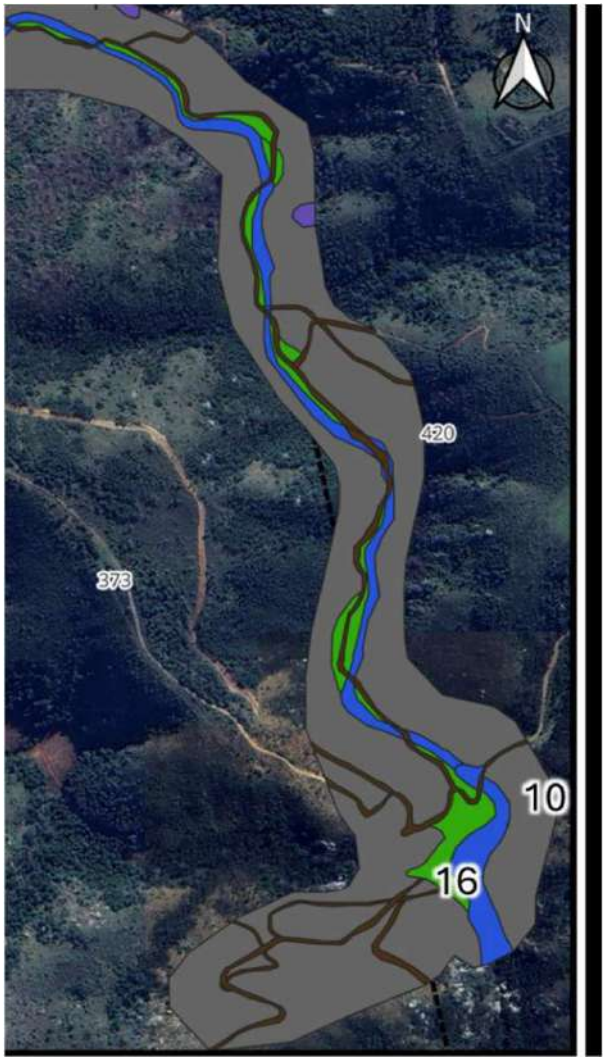
The road crossing the Ruiterbos River at the current dam location has existed since at least 2005.

The current instream dam location is first visible in 2017. One of the roads was also altered between 2016 and 2018. Prior to this, the entire area was heavily invaded with Black wattles (*Acacia mearnsii*) and have been maintained this way. Several new roads were noted to be cleared in this area between 2022 and 2024.

Summary of assessment - Terrestrial Biodiversity

Area 3: Weir and dam

Weir and dam area; existing roads (prior to 2005) show in green providing indication of disturbances in the area (2016 onwards)



- Transformed - offstream Dam
- Transformed - Grass
- Road
- Dwellings
- Dwelling disturbance & invaded area
- CR Invaded fynbos
- CR Fynbos
- Disturbed - fynbos & thicket elements
- Thicket
- Black wattle thicket
- Break
- Grassy valley bottom
- Watercourse

Summary of assessment - Terrestrial Biodiversity

Area 3: Weir and dam

10 - AREA 3 - A slope that has been maintained clear of black wattles for a few years – ynbos is starting to recover due to ongoing clearing effort here.

hicket and Black wattle invaded sections

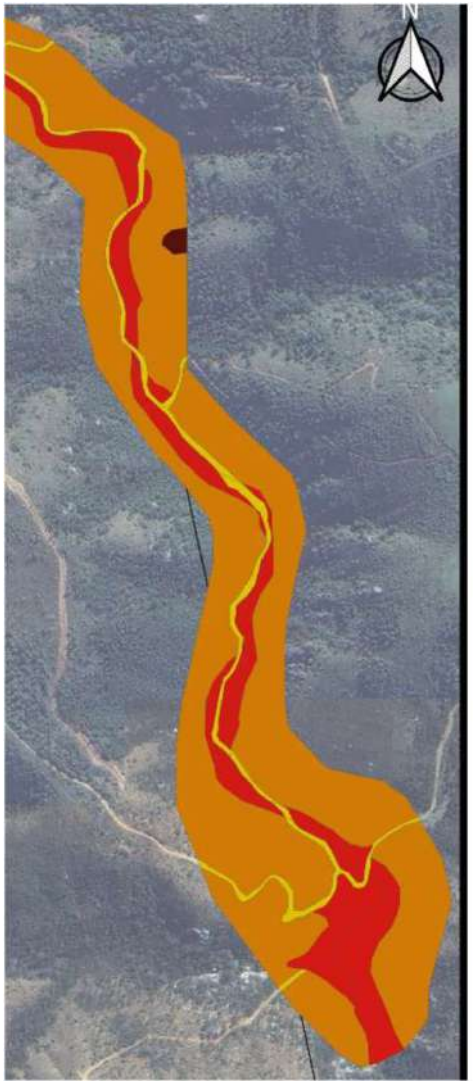
16 - AREA 3 - Small dam & surrounding area

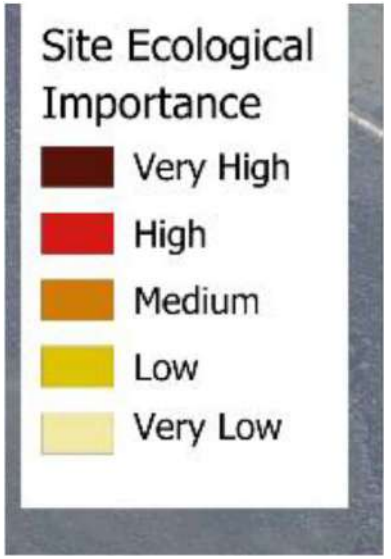
A view of the valley and small instream dam. Follow the rehabilitation plan outlined in he aquatic specialist report for this area.

iver crossings

Summary of assessment - Terrestrial Biodiversity

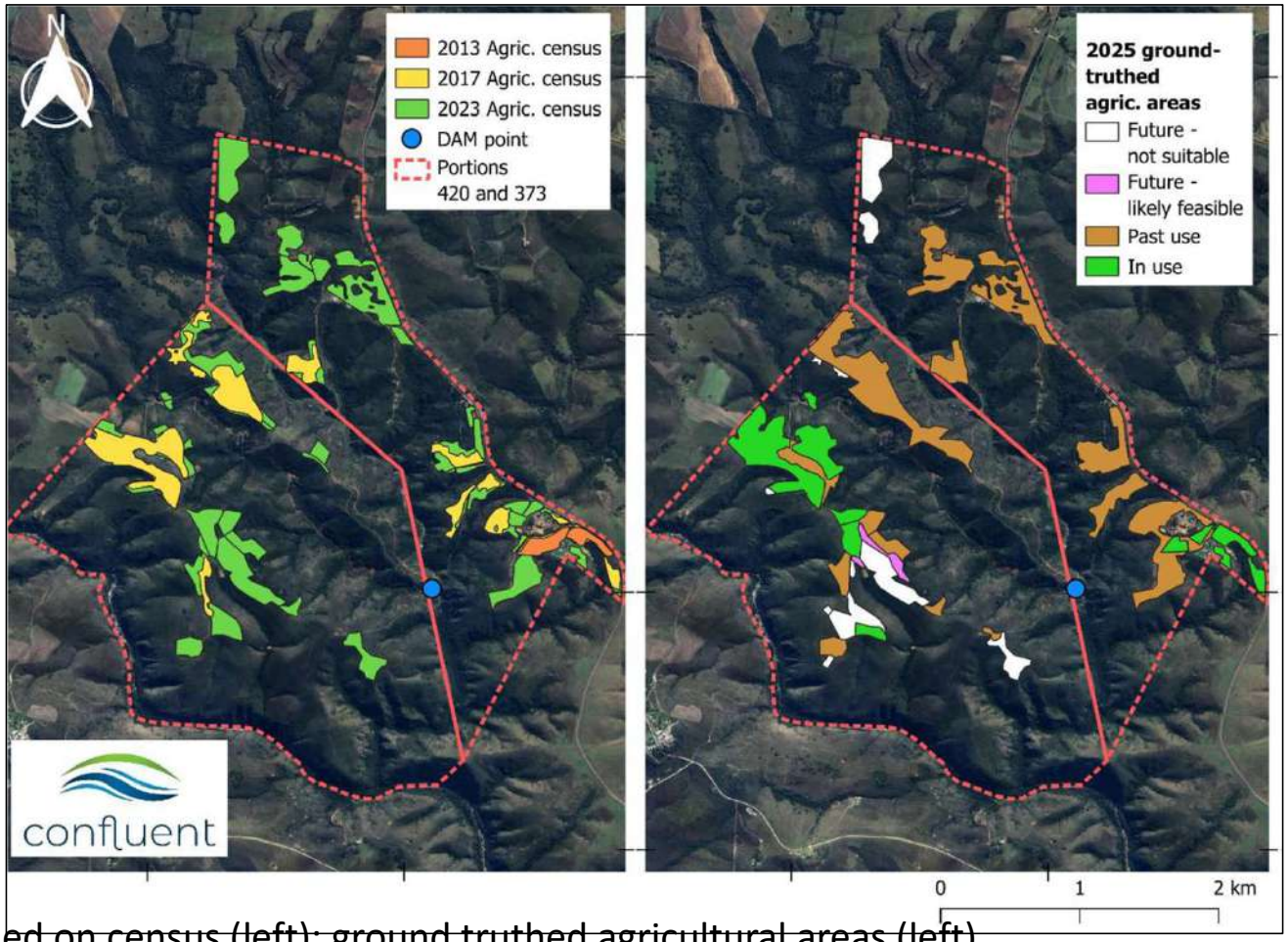
Area 3: Weir and dam





Summary of assessment - Terrestrial Biodiversity

Agricultural Areas

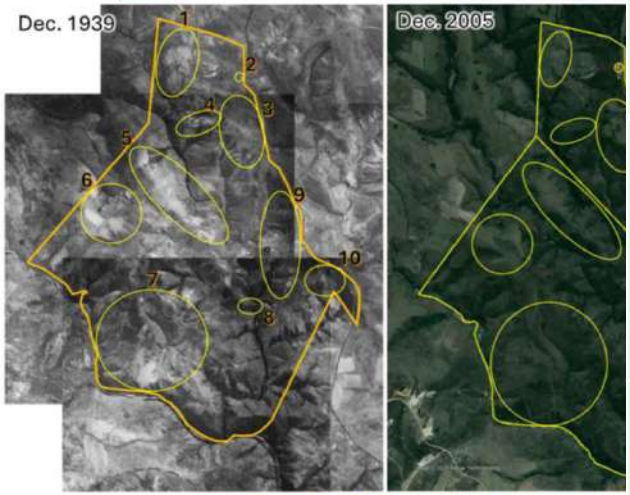


Agricultural areas based on census (left); ground truthed agricultural areas (left)

Historical imagery was used to determine the past agricultural areas. Imagery sources used includes Google Earth and CD NGI Geospatial Portal.

Summary of assessment - Terrestrial Biodiversity

Indication of agricultural activities (1939 – current)



1 - The north-western corner of OGF seems to have been transformed to some extent in the 1939 imagery and was still transformed as a dryland pasture in 2005. Technically, this area can be identified as a Past-use area, but instead it was classified as an unsuitable area for agricultural expansion as irrigation from the proposed dam is likely not feasible here, and there may be good rehabilitation potential for this land, given the extent of transformation elsewhere on OGF.

Area 2 indicates a quarry area on OGF, which is clearly visible in the 2005 and 2024 imagery. In the 1939 imagery, it is only visible as a small clearing.
Area 3 was untransformed in 1939, however over at least the last two decades (i.e., since 2005), this area has been utilised largely as a dryland pasture on Portion 420.
Area 4, west of area 3 there is another area which seemed to have some kind of cleared vegetation in the 1939 image. In 2005, the vegetation seems to have recovered, with the beginning of wattle invasion visible in the valley. The 2024 imagery indicates that some vegetation clearing has likely taken place, with additional roads made and a proliferation of invasive wattle. However, the vegetation can likely still recover to fynbos if alien clearing is done here.

Area five has been farmed and maintained as a transformed dryland field since at least 1939. This is likely the largest historical farmed piece of land on OGF, and presents an excellent opportunity for agricultural expansion. This area is currently classified as a Past-use area, as no irrigation or active crop planting is occurring here, and it is a good option for the future given its transformed status (i.e., it does not represent natural fynbos vegetation). Although a lot of this agricultural area is further than 1km away from the proposed dam, it is relatively straightforward to lead water to here compared to other areas that are a similar distance away (because only one “ridge” need be followed, and multiple valleys and hills need not be traversed to get to this area).
Area 6 is also an agricultural area that is visible in all the historical images going back to 1939. The majority of this area is active agriculture, with a large portion being planted with maize, and smaller areas planted with avocados. Currently this area is being irrigated from the Palmiet River. It is assumed that irrigation from the proposed dam in the Ruiterbos River might therefore not be required for these lands. Furthermore, although it is a similar distance away from the transformed fields of the area labelled 5, the path water would need to follow to arrive here from the Ruiterbos River seems potentially more convoluted.

7 - An old dam near the Palmiet River (still in use) and some transformed areas are visible since the 1939 imagery in area 7. The transformed areas visible have mostly recovered, apart from two remaining agricultural fields that are still visibly transformed in 2025.

8 - This area is simply highlighted as it is the proposed location of the dam in the Ruiterbos River.
9 - Currently this area contains several dryland fields, which are not visible in earlier imagery from 2005 and 1939. These areas are considered transformed Past-use agricultural fields, given that they are transformed, but not irrigated.
10 - The last area highlighted in the historical imagery is where the current OGF lodge is located, as well as the surrounding transformed gardens. An increase in the amount of built area and surrounding agricultural fields is visible from 1939 to 2024.

Summary of assessment - Terrestrial Biodiversity

Agricultural Areas

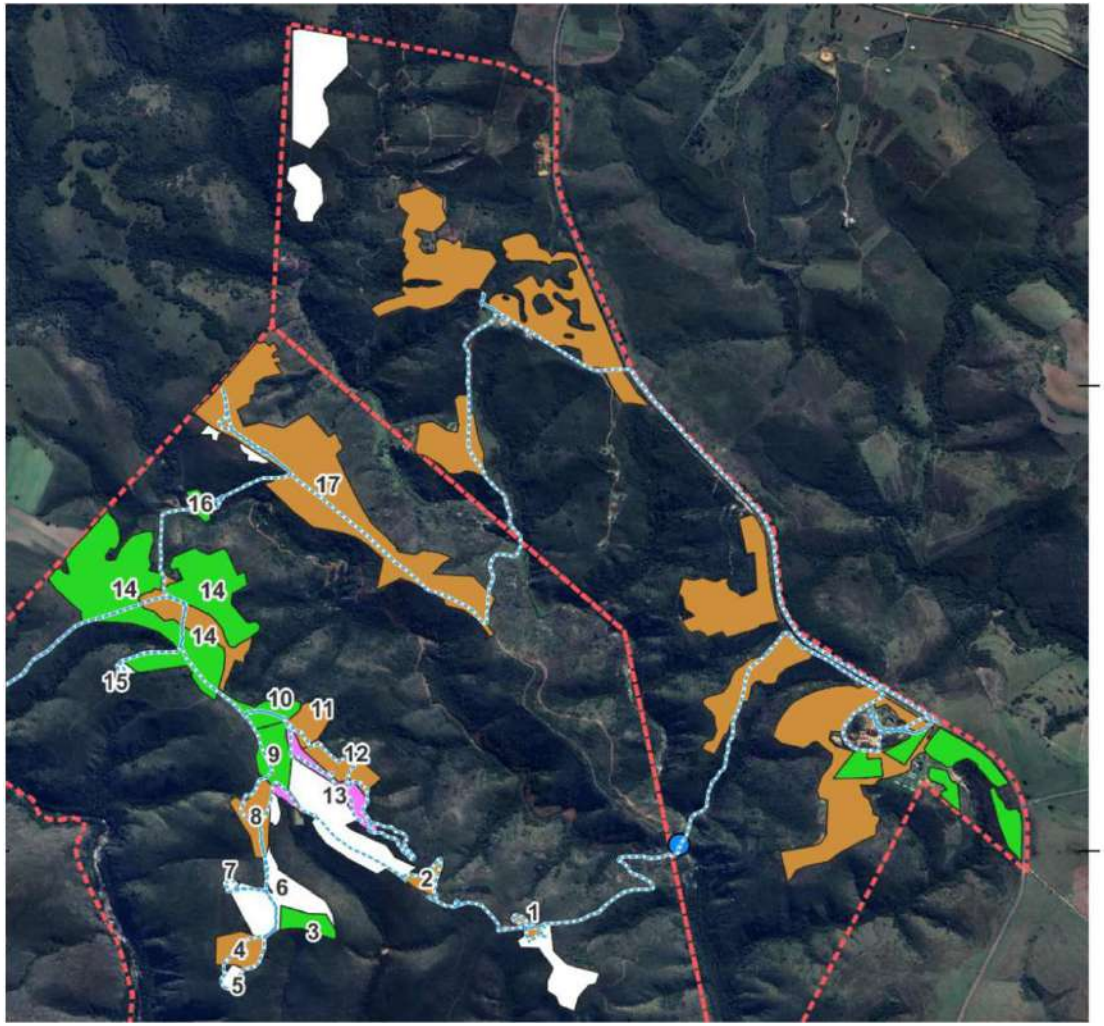
The main aim of this assessment was to understand which areas of land are transformed due to agriculture, and to help identify any additional agriculturally transformed areas that may contribute towards the existing agricultural areas on OGF. This assessment was also used to determine the preferred areas for the proposed predator enclosure and elephant enclosure. The botanical assessment carried out in 2019 was also referred to for this purpose as well as site visits carried out by the EAP.

The area calculation for identified agricultural areas confirms that there is more than 80 ha available for irrigation farming on OGF (including current area of 48.75 ha). Despite this finding, it is important to consider the practicality of pumping water to some of these areas, particularly those situated on steep slopes or located far from the proposed instream dam along the Ruiterbos River. It is generally recognized that pumping water over significant distances and elevation changes requires substantial infrastructure, including high-capacity pumps, energy sources, and potentially reinforced pipelines to manage pressure fluctuations. The feasibility will depend on factors such as elevation gain, energy costs, and water demand. Careful planning and technical consultation would be necessary to determine whether the cost and technical challenges do not outweigh agricultural benefits

Area	Currently in use (ha)	Transformed dryland - past use (ha)	Potential for agriculture - not suitable (ha)	Potential for agriculture - likely feasible (ha)
OGF (Portions 420 & 373)	48.75	119.09	34.71	3.33

Summary of assessment - Terrestrial Biodiversity

Area 4: Agricultural area and supporting activities – ptn 373



N

tracks

2025 ground-truthed agricultural areas

- Future - likely feasible
- Future - not suitable
- In use
- Past use
- DAM point
- OGF

confluent

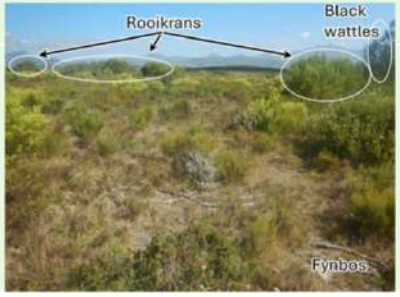
Summary of assessment - Terrestrial Biodiversity

Summary of agricultural areas ground truthed (areas 1 to 17) on ptn 373

1	4,98ha	Small past-use field; still in transformed state. Beyond the small area surveyed, there is a greater area that was flagged as agricultural in the 2023 census map on CFM; however, this section was confirmed to be Garden Route Granite Fynbos during the site assessment and is not suitable for agriculture. The transformed area here accounts for ca. 0.71 ha of transformed agricultural past-use area. The unsuitable fynbos area here, as mapped in the agricultural map is ca. 4.27 ha.	
2	1.55 ha	Transformed agricultural past-use field. Surrounding this dryland field is Rooikrans (Acacia cyclops) invaded fynbos.	
3	2.01 ha	In-use agricultural field observed on OGF Portion 373. This had recently been tilled at the time of the site assessment in January of 2025.	

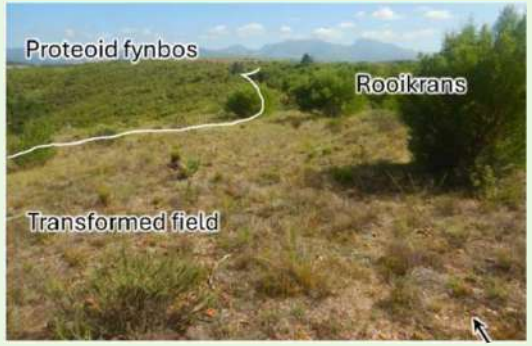
Summary of assessment - Terrestrial Biodiversity

Summary of agricultural areas ground truthed (areas 1 to 17) on ptn 373

4	**2.87ha**	Past-use field; no signs of irrigation. This field is currently just a dryland pasture and is surrounded by pristine fynbos that contains some stands of invasive wattles in places.	
5	**0.5 ha**	Area 5 was pointed out as an area that would be considered favorable for further agricultural expansion. The vegetation in this area is still fynbos, consistent with Garden Route Granite Fynbos. The southernmost point of this proposed future area is defined by a stand of black wattles. However, fynbos persists in this stand of wattles. Dure to the sensitive nature of the fynbos, and the fact that OGF is essentially considered as a CBA 1, this section covering ca. 0.54 ha may not be transformed for agriculture.	 
6	**6.79 ha**	This section represents another area that seems to have been cleared in the past, but that has been left to recover for long enough for fynbos to recover. This area may also not be transformed for agricultural use.	

Summary of assessment - Terrestrial Biodiversity

Summary of agricultural areas ground truthed (areas 1 to 17) on ptn 373

7	**0.34 ha**	Small area where some past disturbance noted. Despite being heavily invaded by both Rooikrans and black wattle, this section has excellent rehabilitation potential and may not be transformed for agricultural use.	 
8	**3.38 ha**	Dryland pasture is adjacent to proteoid fynbos. Some rooikrans invasion observed in a section of this Past-use field, and these must be cleared both in the field and in the surrounding fynbos to prevent biodiversity loss in the adjacent CR Garden Route Granite Fynbos.	
9	**3.56 ha**	In use agricultural field planted with Maize. This field is surrounded by pristine fynbos that may not be further impacted.	 

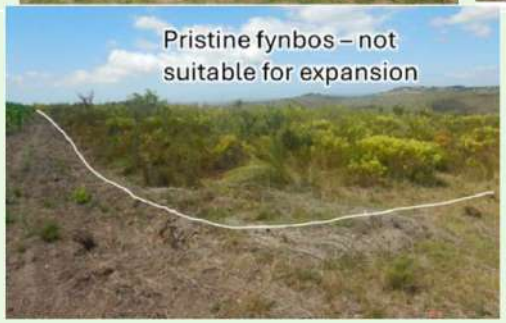
Summary of assessment - Terrestrial Biodiversity

Summary of agricultural areas ground truthed (areas 1 to 17) on ptn 373

10	**2.5ha**	A recently ploughed area adjacent to the fields planted with Maize.	
11	**2.48 ha**	Next to the ploughed field there is a transformed dryland Past-use field. This field is bounded along the south by a long stretch of area that is heavily invaded by black wattle (area 12).	
12	**3.14 ha**	The heavily invaded black wattle area represents an area that was transformed historically. Most of the wattle invaded area contains no, or minimal understorey coverage. The edges of the wattle invasion host some fynbos elements	

Summary of assessment - Terrestrial Biodiversity

Summary of agricultural areas ground truthed (areas 1 to 17) on ptn 373

13	**2.85ha / 9.2 ha**	The narrow strip of land between the wattle-invaded area and the maize fields is covered in fynbos (2.85 ha). However, due to its limited width, significant invasion by both Rooikrans and black wattle, and its lack of importance for landscape connectivity, this area is considered a potential site for agricultural expansion. This would only be considered if the currently designated In-use and Past-use agricultural areas do not provide sufficient space for the proposed irrigation zones to be supplied by the planned dam.	
14	**35.27 ha**	This area represents a large section of transformed land on Portion 373 of OGF. Most of this area is considered as In-use agricultural areas (30ha), with the section containing infrastructure and other materials mapped as a Past-use transformed area (5ha).	 
15	**0.33ha**	Small section of fynbos was flagged to be included under a pivot irrigation system. Currently the maize pivot irrigation cannot complete a full circle of irrigation. Despite the limitation of the pivot, the identified fynbos area for potential agricultural expansion is not appropriate, as it represents pristine CR Garden Route Granite Fynbos.	

Summary of assessment - Terrestrial Biodiversity

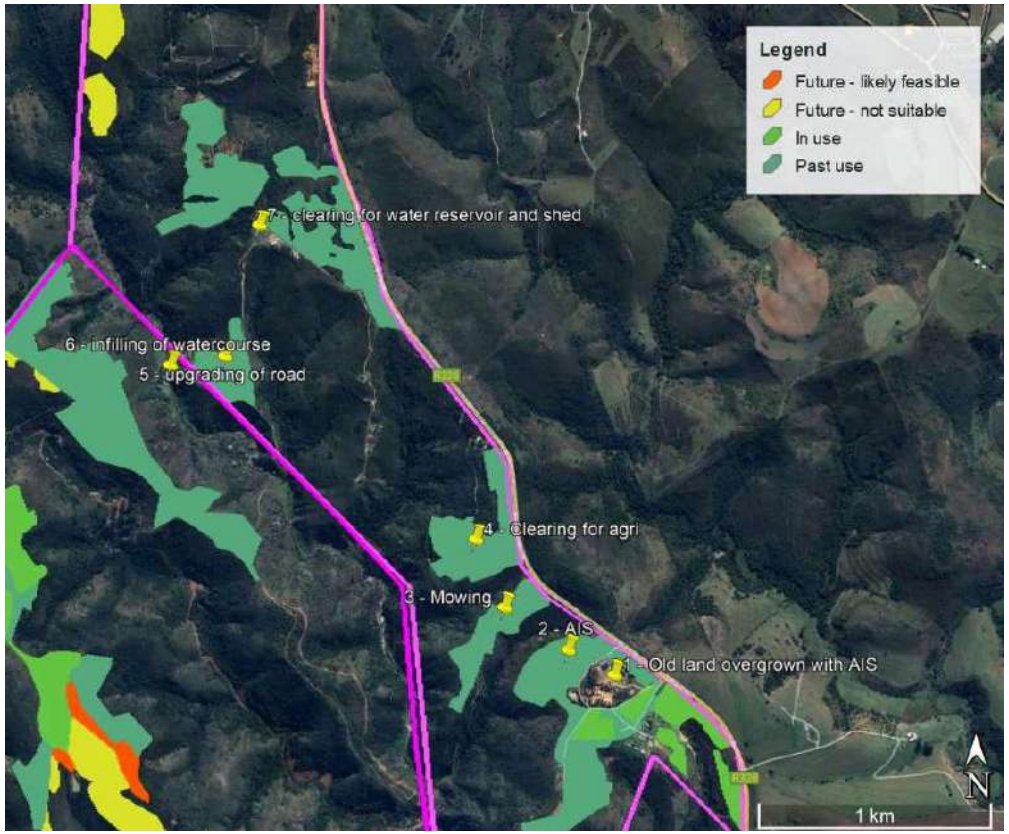
Summary of agricultural areas ground truthed (areas 1 to 17) on ptn 373

16	**0.89ha**	A section of transformed lawn / fields exists adjacent to a small dam. While some clearing was also visible adjacent to the dam, this can be rehabilitated; only the lawn areas are included as In-use agricultural areas here (ca. 0.89 ha).	 
17	**30.73 ha**	A view looking eastwards over the Past-use dryland pastures. The majority of the Past-use areas mapped on Portion 420 of OGF look very similar to this image.	

Summary of assessment - Terrestrial Biodiversity

Area 5: Agricultural area, game farm, tourism, enclosures and supporting activities – ptn 420

A vegetation assessment was carried out for disturbed areas on ptn 373 in 2019 by Jan Vlok. The areas included in the 2019 assessment coincide with the past agricultural areas ground truthed in 2025. The 2019 and 2024 and 2025 assessments were used to complete the summary provide.



Summary of assessment - Terrestrial Biodiversity

Area 5: Agricultural area, game farm, tourism, enclosures and supporting activities – ptn 420

1 and 2	**30 ha**	**In use – 9.5 ha** **Past use -19.3 ha** Restaurant, parking area, surrounding transformed gardens – 1.3ha An increase in the amount of built area and surrounding agricultural fields is visible from 1939 to 2024. The 2019 assessment found that the area consisted of an old agricultural land that was overgrown with Acacia cyclops and Acacia mearnsii. The fact that the area consisted of old agricultural lands is evident from old contour walls. No natural vegetation of any conservation significance was likely disturbed to re-establish the agricultural land.	Areas 1 and 2 are located on the far slope with the reservoir just visible on the top of the hill. The old contour walls are still visible along the slope (Vlok, 2019)	In use / past use Maintain infrastructure as required; Small scale agricultural activities permitted. Area proposed for elephant holding camp is included in this area. Holding camp for 3x elephants to be 1 ha. Manage as per agricultural and elephant enclosure management measures.

Summary of assessment - Terrestrial Biodiversity

Area 5: Agricultural area, game farm, tourism, enclosures and supporting activities – ptn 420

3	**6.5 ha**	Currently this area contains several dryland fields that are transformed but not irrigated. The 2019 assessment found that vegetation was slashed to increase the grazing value of the veld and it seems as if this practice has been followed for many years along the crest of this ridge. It is very unlikely that the clearing of the vegetation at this site removed any rare or threatened plant species or that the clearing of the vegetation had a serious negative impact on the ecological functioning of the vegetation.	Past use / in use Dryland – maintain for game farm animals
4	**10.7 ha**	This is a past-use dryland field overgrown with Acacia cyclops and Acacia mearnsii.; no signs of irrigation. Looks similar to area 3. 	Past useOnly dryland; lion and cheetah enclosure proposed for this area. Plan shows 17.6 ha and requires clearing of vegetation not mapped as past use. Retain footprint of enclosure to past use area (i.e. 10.7ha) Manage as per cheetah and lion enclosure management plan.

Summary of assessment - Terrestrial Biodiversity

Area 5: Agricultural area, game farm, tourism, enclosures and supporting activities – ptn 420

5 and 6	**5.9 ha**	Corresponds to Area 2 of Terrestrial biodiversity section assessed in 2024. Tracks, reservoir, dwellings, road-crossing, infilling. A 4X4 track was upgraded to access the riverine area where Blackwattle (Acacia mearnsii) is being eradicated. In 2019 it was found that most of the upgraded road does not exceed the allowed width of 4 m, but several curves had to be established in the very steep section of this road. In these road bend areas one can argue that the road width exceeds 4 m. The natural vegetation on the north-west facing slope was noted to not be in a healthy ecological condition. The area was clearly subjected to a high burning frequency and severe grazing pressure by domestic stock.	2024 assessment – Area 2 2019 assessment, the infilling area is marked with a red arrow. Note the cleared Blackwattle area above the arrow. The Pelargonium cf. capitatum plants are the three green shrubs to the right of the arrow. (2019 assessment) Road crossing, 2024 assessment	Past use / in use **Rehabilitate roads in areas as required. Increase biodiversity in this area through active re-vegetation. Prioritise for AIS removal. Dryland management only. Manage as per terrestrial biodiversity, AIS and fire management measures provided.**

2024 assessment – Area 2

2019 assessment, the infilling area is marked with a red arrow. Note the cleared Blackwattle area above the arrow. The Pelargonium cf. capitatum plants are the three green shrubs to the right of the arrow. (2019 assessment)

Road crossing, 2024 assessment

Summary of assessment - Terrestrial Biodiversity

Area 5: Agricultural area, game farm, tourism, enclosures and supporting activities – ptn 420

7	**28.45 ha (14.6 ha + 12 .7 ha) + (1.15ha)**	Past use amounts to 27.3 ha. The 2019 assessment describes an area of about 1 ha was cleared to establish a reservoir, a shed and general work area. Tunnels and a dwelling are also in place on this area. The remnant vegetation on the similarly flat area immediately to the east was described as an old agricultural land that overgrown with Blackwattle with a few grass species (Cynodon dactylon and Eragrostis curvula) and early pioneer shrubs (Anthospermum aethiopicum, Athanasia trifurcata and Metalasia acuta). The flat area south of this site was not ploughed earlier and is richer in species, but the species present in this southern area indicate that the vegetation was probably also highly disturbed as only the following species were recorded here: Trees and large shrubs: Agathosma ovata, Athanasia trifurcata, Diospyros dichrophylla, Gymnosporia buxifolia, Leucadendron salignum, Metalasia acuta, Montinia caryophyllacea, Protea neriifolia and Searsia lucida. Smaller shrubs and herbs: Anthospermum aethiopicum, Aspalathus nigra, Berkheya heterophylla, Centella asiatica, Clutia polifolia, Cullumia aculeata, Erica discolor, Eriocephalus africanus, Euryops ericoides, Helichrysum nudicaule, Hermannia flammea, H. saccifera, Hibiscus aethiopica, Lobelia tomentosa, Pelargonium fruticosum, P. suburbanum, Psoralea azuroides, Scabiosa columbaria, Selago corymbosa, Senecio crenatus, S. ilicifolius, Stoebe plumosa and Tephrosia capensis. Graminoids: Aristida diffusa, Brachiaria serrata, Cynodon dactylon, Eragrostis capensis, E. curvula, Lanaria lanata, Melinus repens, Restio triticeus and Tribolium hispidum. Geophytes: Babiana fourcadei, Cyanella lutea, Oxalis pes-caprae, O. purpurea, Moraea polyanthos and Tritoniopsis caffra. The only threatened species that was found in this southern area is a few individuals of Freesia fergusoniae (status = Endangered).	2019 assessment, estimated 1 ha area cleared at Area 7. Note the dense stands of Blackwattle to the left of the road that is probably the best reference site for the cleared vegetation. Past use areas and dwelling and reservoir area	Past use / In use Maintain dwellings, don't use and rehabilitate unnecessary roads. Manage as per AIS management plan and terrestrial biodiversity management measures.  **Past use areas and dwelling and reservoir area**  **2019 assessment, estimated 1 ha area cleared at Area 7. Note the dense stands of Blackwattle to the left of the road that is probably the best reference site for the cleared vegetation.**

Summary of assessment - Terrestrial Biodiversity

Area 5: Agricultural area, game farm, tourism, enclosures and supporting activities – ptn 420

8	**11.5 ha**	Past use agricultural area	Past use area – not suitable for future use	Past use Not recommended – rehabilitate unnecessary roads.

Summary of assessment - Terrestrial Biodiversity

Questions / Queries

Summary of assessment – Plant species

Description of Plant Species

STR – medium sensitivity.

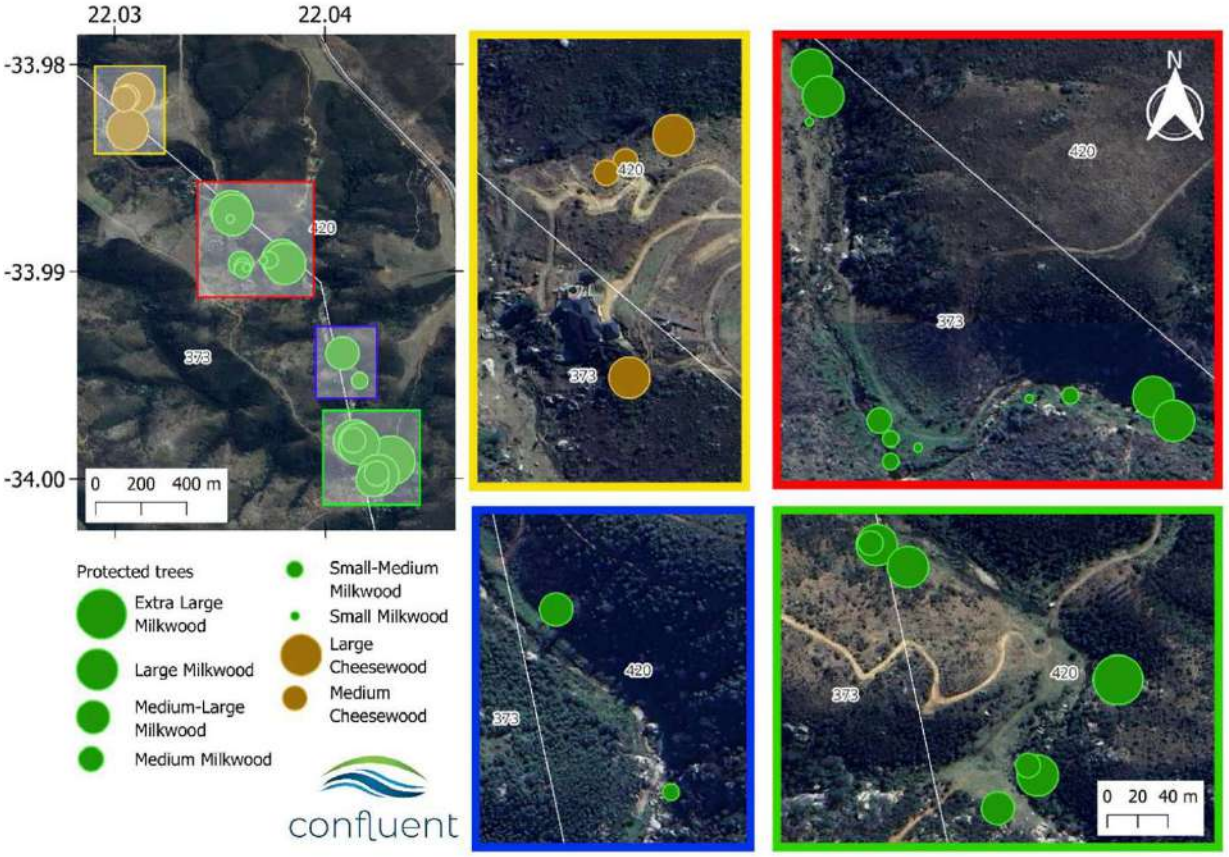
The plant species in the Screening Tool report under the Medium plant species sensitivity: *Agathosma microcarpa, Diosma passerinoides, Elegia squamosa, Erica unicolor subsp. Mutica, Euchaetis albertiniana, Freesia fergusoniae, Lampranthus pauciflorus, Lidbeckia pinnata, Romulea jugicola*, and Sensitive species *268, 500, 516, 633, 700, 800, 980, and 1024*.

Thicket (representative of Gouritz valley thicket) was found to occur in the valley on Portions 420 and 373; the thicket was found to be very disturbed, invaded by Black wattles (*Acacia mearnsii*) with only small sections remaining intact with minimal disturbance. Two species of protected trees (Milkwood (*Sideroxylon inerme inerme*; no. 579) and Cheesewoods (*Pittosporum viridiflorum*; no. 139) were observed along the valleys from Area 2 to Area 3.

Summary of assessment – Plant Species

Six species of conservational concern occurring in the fynbos vegetation were confirmed to occur on site:
•One endangered (EN) species - *Erica unicolor mutica*
•Two near threatened (NT) species – *Phylica velutina, Jamesbrittenia calciphila*
•Three vulnerable species - *Hermannia lavandulifolia,* ***Freesia cf. fergusoniae****; SS142*; one is protected and targeted by poachers and may not be revealed. Sensitive species 142 occurred in area 2 and populations of this sensitive species are deemed to have been disturbed by construction activities.
SCC that may occur on site were identified using the screening tool report, iNaturalist observations, POSA database, and the site visit by the specialist. The probability of occurrence of these 43 SCC within fynbos, thicket and aquatic vegetation on site is provided below.
The species recorded in 2019 are as follows:
Trees and large shrubs: *Aspalathus kougaensis, Diospyros dichrophylla, Euclea crispa, Gymnosporia buxifolia, Metalasia acuta, Montinia caryophyllacea, Myrsine africana* and *Searsia lucida*.
Smaller shrubs and herbs: *Anthospermum aethiopicum, Argyrolobium argenteum, Aspalathus nigra, Barleria pungens, Chaetacanthus setiger, Erica discolor, E. peltata, Eriocephalus africanus, Euryops ericoides, Helichrysum nudicaule, Hermannia flammea, H. holosericea, H. hyssopifolia, Hibiscus aethiopica, Jamesbrittenia aspalathoides, Lampranthus elegans, Lobelia tomentosa, Pelargonium suburbanum* and *Tephrosia capensis*.
Graminoids: *Aristida diffusa, Brachiaria serrata, Cynodon dactylon, Eragrostis capensis, E. curvula, Eustachys paspaloides, Hyperrhenia hirta, Tribolium hispidum* and *T. uniolae*.
Geophytes: *Drimia capensis, Ledebouria ovalifolia, Oxalis pes-caprae, O. purpurea* and *Moraea polyanthos*.
The only threatened species that was found in this southern area is a few individuals of ***Freesia fergusoniae*** (status = Endangered).
Species occurring in the aquatic environmental in the Ruiterbos River channel provides habitat to a variety of plant species; Kikuyu grass (*Cenchrus clandestinus*) was present but had not taken over the channel.

Summary of assessment – Plant species



Probability of occurrence	Number SCC - Fynbos	Number of SCC – Thicket	Number of SCC - Aquatic
Confirmed	5	2	
Likely confirmed	1		
Very high	3	1	
High	6	2	
Moderate	10	10	
Low	14	7	1
Very Low	4	21	42

Summary of assessment – Fauna

The screening tool report indicates a very high sensitivity for the majority of the area with medium sensitivity areas corresponding to old grazing areas. As indicated, the majority of current activities are taking place on the old grazing lands.

An overview of fauna SCC identified in STR with an indication of likelihood of occurrence in the project area.

Aves	Status	Overview
Crowned Eagle (Stephanoaetus coronatus)	VU	Occurs in forested valleys and mosaic landscapes near fynbos—possibly present if forest edges nearby. Rare in open fynbos. Unlikely to breed on-site but may pass through if forest edges are present nearby.
Forest Grassbird (Bradypterus sylvaticus)	VU	Rare and highly habitat-specific (dense reedbeds/wetlands). May be unlikely unless well-developed wetlands exist.
Black Harrier (Circus maurus)	EN	High likelihood of occurrence. Highly relevant. A flagship species of fynbos. Globally Endangered. Often forages in low shrubland/fynbos and grassland—appropriate for both vegetation types.
Martial Eagle (Polemaetus bellicosus)	EN	Large-range predator may occur occasionally in more open or mosaic landscapes with prey. Not fynbos specific.
African Marsh Harrier (Circus ranivorus)	NT	Wetland specialist—relevance depends on quality of wetlands. Could pass through or forage in wet areas.
Mountain Silverleaf (Aneuryphymus montanus)	VU	A fynbos-endemic grasshopper. Potentially present. This species prefers mountainous areas and collected in tough-leaved fynbos-like vegetation in rocky foothills. Threatened by overgrazing and habitat degradation.
Sensitive Species 5	VU	Predator. Does not occur naturally on site.
Sensitive Species 8	VU	Low – medium likelihood. Difficult to confirm. Browser and opportunistic feeding on eggs and insects; habitat includes forest, coastal scrub, farmlands, Prefers coastal forest thicket areas. Low water requirements; well camouflaged.

Summary of assessment – Fauna

Expected fauna for Garden Route Granite Fynbos and Swellendam Silcrete Fynbos, expected to occur naturally on site based on local species records and habitat characteristics

Common Name	Scientific Name	Conservation Status	Notes
Cape Grysbok	*Raphicerus melanotis*	Least Concern (LC)	Fynbos endemic, shy browser
Small Grey Mongoose	*Galerella pulverulenta*	LC	Widespread in fynbos & coastal scrub
Cape Porcupine	*Hystrix africaeaustralis*	LC	Mostly nocturnal
Striped Mouse	*Rhabdomys pumilio*	LC	Important fynbos pollinator
Cape Spiny Mouse	*Acomys subspinosus*	NT	Habitat specialist
Southern Aardwolf	*Proteles cristatus*	LC	Observed on site
Cape Genet	*Genetta tigrina*	LC	Nocturnal, observed on site
Cape Golden Mole	*Chrysochloris asiatica*	Nt	Endemic, fossorial insectivore
Reptiles			
Parrot-beaked Tortoise	*Homopus areolatus*	NT	Coastal and fynbos endemic
Cape Cobra	*Naja nivea*	LC	Observed
Boomslang	*Dispholidus typus*	LC	Arboreal
Southern Rock Agama	*Agama atra*	LC	Common in rocky fynbos
Cape Skink	*Trachylepis capensis*	LC	Widespread
Cape Dwarf Chameleon	*Bradypodion pumilum*	Vulnerable (VU)	Threatened by habitat loss
Birds			
Cape Sugarbird	*Promerops cafer*	LC (range-restricted)	Fynbos endemic, protea specialist
Orange-breasted Sunbird	*Anthobaphes violacea*	LC (fynbos-restricted)	Strong fynbos indicator
Malachite Sunbird	*Nectarinia famosa*	LC	Nectar feeder
Amethyst Sunbird	*Chalcomitra amethystina*	LC	Observed on site
Lesser Honeyguide	*Indicator minor (ssp. minor)*	LC	Observed on site
Cape Batis	*Batis capensis*	LC	Forest edge/strandveld
Southern Boubou	*Laniarius ferrugineus*	LC	Common in thicket/fynbos fringe
Cape Robin-Chat	*Cossypha caffra*	LC	Widespread
Lanner Falcon	*Falco biarmicus*	LC	Observed on site
Invertebrates			Invertebrates
Group	*Example Species*		
Pollen Beetles	*e.g. Heterochelus spp., Melyridae*		Fynbos endemics, pollinators
Solitary Bees	*Various native genera*		Vital for endemic shrub pollination
Ants	*e.g. Camponotus, Lepisiota spp.*		Myrmecochory (seed dispersal)
Grasshoppers	*Infraorder Acrididea*		Observed
Butterflies	*Charaxes pelias, Chrysoritis spp.*		Some rare fynbos endemics

Summary of assessment – Alien Invasive Vegetation

AIS infestation is a common problem facing many farmers and the AIS infestation is generally common along the drainage lines. Landowners - legal obligation to control alien plants occurring on their properties. Alien Invasive Plants require removal according to the CARA and the NEMBA Alien and Invasive Species Lists (GN R598 and GN R599 of 2014).

The valley areas along the drainage lines is heavily infested with *acacia mearnsii*. Kikuyu grass (*Cenchrus clandestinus*) was found to be present in the aquatic environmental in the Ruiterbos River channel but had not taken over the channel. The extent of AIS on the property has been estimated as an area of approximately 200ha occurring mostly within the drainage line on the site.

The following AIS were found in thicket and valley areas:

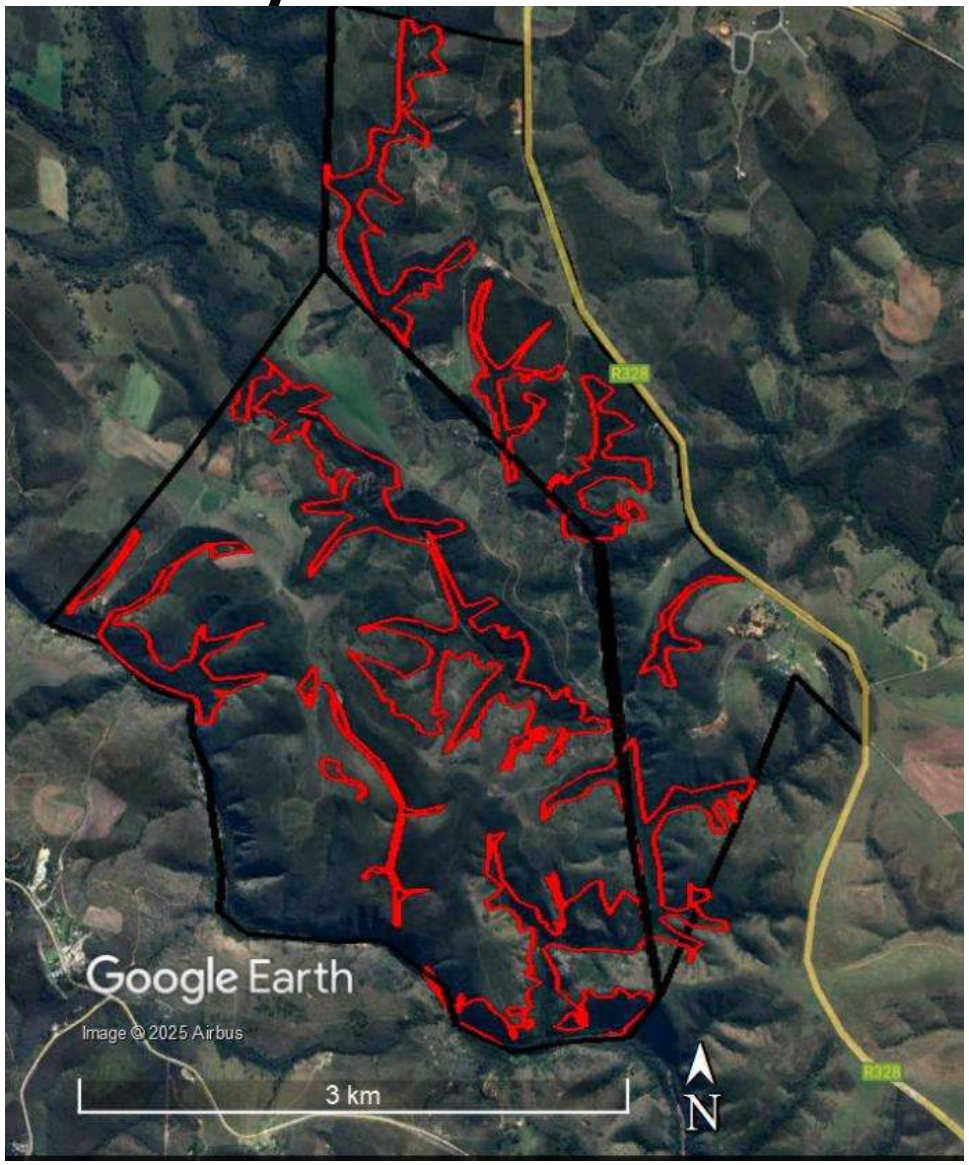
- Black wattles (*Acacia mearnsii*)
- Plume Albizia (*Paraserianthes lophantha*)
- Inkweed (*Phytolacca octandra*)
- Jimson weed (*Datura stramonium*)
- Purpletop vervain (*Verbena bonariensis*)

The following AIS were found in fynbos and valley areas:

- Kikuyu Grass (*Cenchrus clandestinus*)
- Bull Thistle *(Cirsium vulgare)*
- Indian fig opuntia *(Opuntia ficus-indica)*
- Western coastal wattle *(Acacia cyclops)*
- **Bushy needlebush *(Hakea sericea)***
- Bugweed *(Solanum mauritianum)*

Ongoing removal of the AIS using a combination of fire, clearing and biological measures as per the recommended fire management and AIS management measures, can considerably improve the condition of the site. The ongoing clearing of AIS and implementation of management measures could improve the overall functioning of terrestrial and aquatic ecosystems on OGF.

Summary of assessment – Alien Invasive Vegetation



Estimated AIS areas on property falling mostly within drainage line areas

Extracted from AN EXPERIMENTAL STUDY OF THE EFFECT OF ACACIA MEARNSII (BLACK WATTLE TREES) ON STREAMFLOW IN THE SAND RIVER, ZWARTKOPS RIVER CATCHMENT, EASTERN CAPE, Rowntree, Beyers, 1999:
Pristine fynbos catchments are known as reliable sources of large quantities of high-quality water, but with the invasion of alien trees this reliability is being threatened (Le Maitre et al., 1996). ***The mountain catchments of the Fynbos Biome yield large amounts of water - essential for the social and economic development of the region (Cowling, 1995). Fynbos shrubs provide a stable ground cover inhibiting sheet erosion and encouraging infiltration, as opposed to stands of Acacia mearnsii which develop bare soil under the canopy (Macdonald, 1987). The indigenous plants also require less water to survive than the high biomass stands of A. mearnsii, resulting in more water reaching the streams and rivers (Cowling, 1995; Le Maitre et al., 1996).***

Summary of assessment – Fire Management

(CR) Garden Route Granite Fynbos and (EN) Swellendam Silcrete Fynbos are grouped as midlands upland fynbos ecosystems in the Fynbos Ecosystem Guidelines. Fynbos is a fire driven ecosystem. A fire scar assessment was carried out (SANSA, 2017) following a fire in the area in 2016. Fire risk is confirmed to be high. The fire risk on the property (and surrounding areas) is exacerbated by the alien invasive species.

*The **enhanced biomass that results from dense stands of woody aliens increases the intensity and temperature of fires which, in turn, can destroy indigenous seed banks and change the physical structure and composition of soil.** Fynbos is particularly prone to the spread of alien species after physical disturbance and unseasonal and too-frequent fires. Black wattle Acacia mearnsii can spread virulently in mountain streams. Altered fire regimes can also be a major problem in fynbos ecosystems with veld either burnt too frequently or fire is actively suppressed. Reduced fire frequency associated with development means that many patches convert to thicket or forest.* (Fynbos Ecosystem Guidelines).

It is a legal duty and responsibility to ensure that veld fires do not break, and to take preventative measures to minimize the risk of fires spreading. Property owners are required to prepare and maintain firebreaks on the boundary of their property to prevent the spread of fires to neighbouring lands. Fire management practices are required to prevent and combat fires.

Controlled burns, fire breaks and fire proof hedges are required to be implemented. Fire management must take place in conjunction with AIS management and take grazing requirements into consideration. Fire frequency depends in part on degree and type of grazing applied. It is important that this application be reviewed by the Southern Cape Fire Protection Association (SCFPA) so they can provide comments on the management recommendations from a fire risk reduction perspective. It is noted that OGF is a member of the SCFPA.
Natural fire season is during the hot dry season (i.e. summer or early autumn). In Granite Fynbos, Ferricrete, Conglomerate and Silcrete Fynbos (i.e. fynbos on the property), hot burns are required to prevent over-dominance of weedy elements such as renosterbos *Elytropappus rhinocerotis* and *Cliffortia* spp. Hot-burning fires also allow recovery of large-seeded species, early seral species, prominent in these communities. Pioneer (early seral) plant species take 4-8 years to disappear and be replaced by typical fynbos.
Too frequent burns to promote grasses for grazing can impact fynbos ecosystems. However, reduced frequency can result in transition of fynbos to thicket. The recommended burning interval for this area is 10-15 years. To retain species richness, appropriate grazer-browser ratios and certain fire regimes must be retained.

Summary of assessment - Terrestrial Biodiversity

Verification of Terrestrial Biodiversity and Plant and Animal Species

Theme	Environmental Sensitivity in terms of DFFE Screening Tool Report	Site Verification
Terrestrial Biodiversity	Very High	Very high – fynbos and thicket
		Medium sensitivity – previous disturbed agricultural areas no longer in use (fynbos invaded with wattle)
		Low Sensitivity –watercourses / in use disturbed agricultural areas
Plant Species	Medium	High Sensitivity – Fynbos and Thicket
		Medium sensitivity – previous disturbed agricultural areas no longer in use (fynbos invaded with wattle)
		Low Sensitivity –watercourses / in use disturbed agricultural areas
Animal Species Theme	High / Medium	High / Medium

Summary of assessment - Terrestrial Biodiversity

Questions / Queries

Impact Assessment- Terrestrial Biodiversity (including flora and fauna)

Terrestrial biodiversity (including flora and fauna) - Past Activities

Aspect	Impact	Summary	Mitigation	Impact rating and Significance without Mitigation	Impact rating and Significance with mitigation
Past agricultural activities (pre 2005) (Area 4-1-15 and 17; Area 5)	Habitat Loss and Fragmentation and loss of SCC	Historical vegetation on the property is (CR) Garden Route Granite Fynbos, (EN) Swellendam Silcrete Fynbos. Historical agricultural activities (dryland cattle grazing) have modified identified areas on the property (little natural vegetation remaining, soil disturbance and AIS). Previously disturbed areas on the site show signs of fynbos regeneration and these areas are not recommended for further agricultural expansion / disturbance (22.98 ha).	Ongoing removal of the AIS using a combination of fire, clearing and biological measures as per the recommended fire management and AIS management measures	**Negative medium high**	**Positive Low**

Impact Assessment- Terrestrial Biodiversity (including flora and fauna)

Terrestrial biodiversity (including flora and fauna) - Construction phase - existing activities

Aspect	Impact	Summary	Mitigation	Impact rating and Significance without Mitigation	Impact rating and Significance with mitigation
Clearing of vegetation for roads, dwellings (Areas 1, 2, 3)	Habitat Loss and Fragmentation	Intact fynbos / thicket with some AIS in dwelling areas; roads along watercourses heavily infested with AIS	Not possible – activity has already occurred. Put in place operational EMP.	**Negative High**	**NA**
Clearing of vegetation for roads, dwellings (Areas 1, 2, 3)	Loss of indigenous vegetation and SCC	A search and rescue of flora and fauna could have occurred. Rescued plants could have been used for landscaping / revegetation. Unnecessary harm to fauna (particularly reptiles and burrowing mammals) could have been prevented.	Not possible – activity has already occurred (put in place for future construction activities). Put in place operational EMP	**Negative Medium High**	**Cannot be mitigated**
Clearing of vegetation for agricultural activities, enclosures and restaurant facility and supporting structures (reservoirs, solar, roads) (Area 4-15, 17, 9, 10,3; Area 5)	Habitat Loss and Fragmentation	These activities were developed on old agricultural lands. No further habitat fragmentation deemed to occur as a result of these activities.	Operational management must take place as per the operational mitigation measures.	**Negative Low**	**Cannot be mitigated**
Clearing of vegetation for agricultural activities, enclosures and restaurant facility and supporting structures (reservoirs, solar, roads) (Area 4-15, 17, 9, 10,3; Area 5)	Loss of indigenous vegetation and SCC	Clearing of vegetation took place. The probability of loss of SCC, based on the current and previous vegetation assessments of this occurring on these areas is considered to be low as these areas had already been transformed upon purchasing o the land by OGF	Operational management must take place as per the operational mitigation measures.	**Negative Low**	**Cannot be mitigated**
Clearing of vegetation for agricultural activities at area 4-16 and associated crossing and dam area	Disruption of ecosystem services	Clearing of vegetation took place in a thicket area which was likely disturbed by AIS. This area is mapped as a NFEPA wetland. (Eastern Fynbos-Renosterveld Granite Fynbos_Channelled valley-bottom wetland).	This area (0.89ha) is recommended to be rehabilitated with thicket / riverine/ wetland vegetation. Modify dammed area to allow for drainage. Culvert recommended at crossing.	**Negative Medium**	**Positive low**

Impact Assessment- Terrestrial Biodiversity (including flora and fauna)

Terrestrial biodiversity (including flora and fauna) - Proposed and existing activities - Construction and operations -

Aspect	Impact	Summary	Mitigation	Impact rating and Significance without Mitigation	Impact rating and Significance with mitigation
Construction of proposed dam – 150 000 m3 capacity	Loss of Riparian and Thicket Habitat and SCC	Plants, invertebrates, fish, and other organisms that rely on specific riverine conditions may be adversely affected or displaced	Avoid protected trees Construct during dry season One access road - not the Jeep track between Areas 2 / 3 along the Ruiterbos River. Rehabilitated and stabilise areas as required	**Negative Medium High**	**Negative Medium**
Construction and operations - Agricultural activities enclosures	Loss of fynbos / thicket vegetation / disruption to fauna	Agricultural activities recommended on area 4-17 and Area 4-13 (2.58 ha). Area 5-4 is acceptable site for the predator enclosure - may not exceed 10.4 ha previously disturbed footprint. Area 5 1&2 is considered acceptable for the 1ha elephant enclosure.	No further expansion / development without further assessment and approval. Put in place measures in EMPr.	**Negative Medium High**	**Negative Low**
Roads and tracks	Habitat Loss and Fragmentation and unnecessary loss of SCC	Creation of unnecessary roads and tracks leading to unnecessary loss of vegetation and habitat loss and fragmentation	Put in place EMPr mitigation measures.	**Negative Medium High**	**Negative Low**
Dwellings, facilities and structures	Habitat Loss, SCC Loss and Fragmentation	negative edge effects	Put in place EMPr mitigation measures.	**Negative Medium**	**Negative Low**
Game farming and stock farming	Exceeding carrying capacity	The carrying capacity of ptn 420 - ~33 and 55 LSU; the existing LSU is 92 LSU. The carrying capacity of ptn 373 - ~60 and 104 LSU; existing LSU (107) is considered to be at maximum land capacity.	Reassess stocking rates and the browser: grazer ratio relative to carrying capacity Recommended ratio: Browsers: 40–60% Grazers: 30–50% Mixed Feeders 10–20% AIS, fire management and rehabilitation measures to be implemented	**Negative medium high**	**Negative / Positive low**

Impact Assessment- Terrestrial Biodiversity (including flora and fauna)

Alien Invasive Species (AIS) Management - Construction and operations

Aspect	Impact	Summary	Mitigation	Impact rating and Significance without Mitigation	Impact rating and Significance with mitigation
Construction activities	introduction of AIS on disturbed construction areas	Construction activities can lead to introduction of AIS	Prevent introduction of new AIS. Put in place EMPr AIS mitigation and rehabilitation measures.	**Negative Medium**	**Negative Low**
Operations	Increase in AIS / displacement indigenous vegetation	Poor management can lead to disruption to ecosystem services /	Put in place EMPr AIS mitigation and rehabilitation measures.	**Negative Medium**	**Negligible**
Operations	beneficial for terrestrial and aquatic ecosystems	correct management can be beneficial	Put in place EMPr AIS mitigation, fire management and rehabilitation measures.	**Negative Medium**	**Positive Medium**

Impact Assessment- Terrestrial Biodiversity (including flora and fauna)

Fire Management - Construction and operations

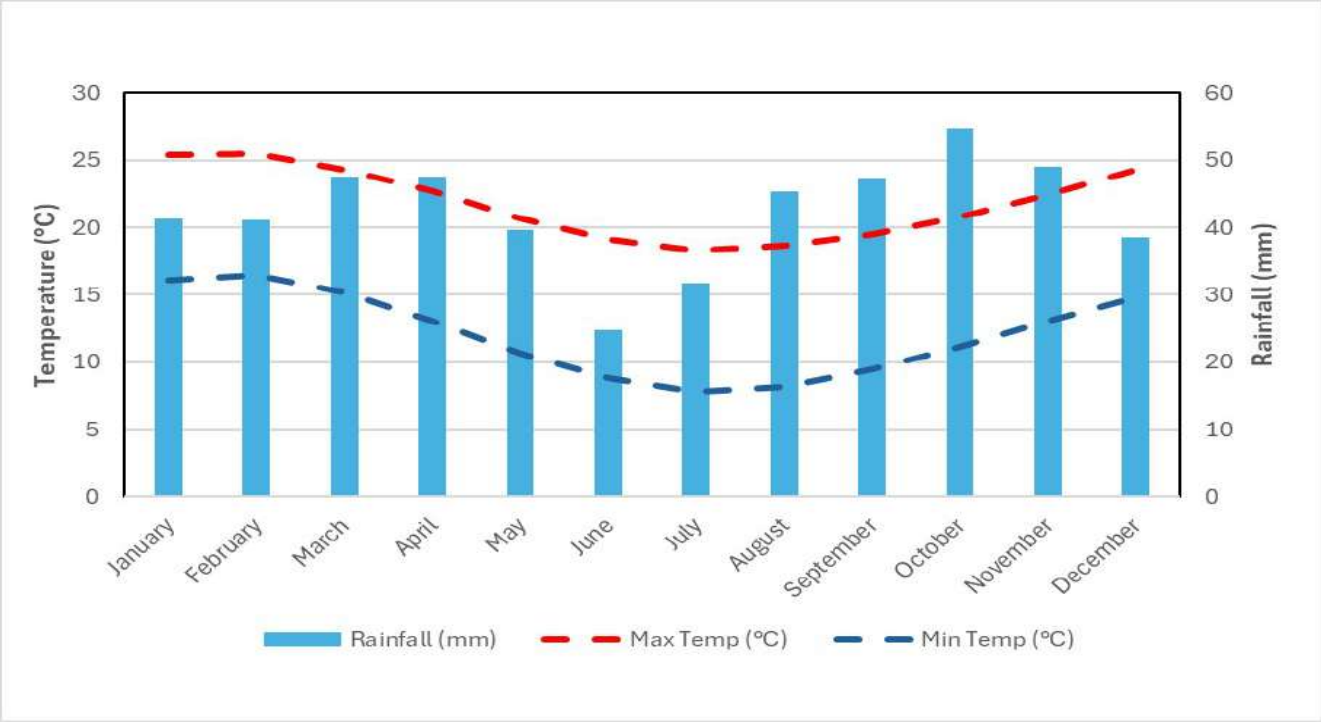
Aspect	Impact	Summary	Mitigation	Impact rating and Significance without Mitigation	Impact rating and Significance with mitigation
Fire regimes and planning	Fire risk and hazard	Fire risk areas	Firebreaks; management of AIS; member of the SCFPA; controlled burns; Fire-proof hedges Recommended burning frequency: 10 – 15 years for area	**Negative Medium High**	**Negative Low**
Fire regimes and planning	Fire driven ecosystem	Correct hot fires at correct timing and intervals, combined with ongoing AIS and rehabilitation should result in a long-term positive impact	As above	**Negative Medium High**	**Positive medium**

Summary of assessment - Terrestrial Biodiversity

Questions / Queries

Summary of assessment – Aquatic

OGF is located in quaternary catchment K10D of the Kromme Primary Catchment. OGF covers a combined area of 1277 ha in extent and are located in the foothills of the Outeniqua Mountains within the Southern Coastal Belt ecoregion which is located between 0 and 500 masl and is characterized by undulating plains and low hills of moderate relief. The mean annual precipitation (MAP) is relatively low (454 mm per annum - Bailey and Pitman, 2016), with distinct peaks in the transition between summer and autumn (March to April) and winter and spring (August to November)



Mean monthly rainfall and temperature for quaternary K10D (Van Heerden and Walker, 2016)

Summary of assessment – Aquatic

STR indicated Very High Sensitivity

The Ruiterbos River originates from the mountains and runs north to south along the boundary of the two properties and joins the Palmiet River to form the Brandwag River which terminates at the Great Brak Estuary. Numerous, small instream farm dams are located in the upper most reaches of the river and its catchment, where a mixture of dryland and irrigated pastures are farmed (mostly dryland, with small areas of macadamias and avocado).

The Ruiterbos River is mapped as a non-perennial river associated with a channelled valley-bottom wetland. The river runs along the steeply confined valley and fed by several non-perennial rivers draining from the east and west. In terms of the Biodiversity Spatial Plan for the Western Cape (WC BSP), the watercourses on the properties are mapped as River and Wetland CBA1. Terrain throughout the properties consists of flat to gentle sloping plains at higher altitudes, interspersed with very steep valleys along the Ruiterbos River and its tributaries.

Table 7: WCBSP categories and associated management objectives.

Category	Description	Management Objectives
CBA1	Areas in a natural condition that are 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.

Summary of assessment – Aquatic - Hydrology

A hydrological assessment was carried out to gain a better understanding of the yield of the catchment area of the proposed dam, the impacts of the proposed dam on downstream users, and the amount of water available for farm portions for the existing and proposed activities.

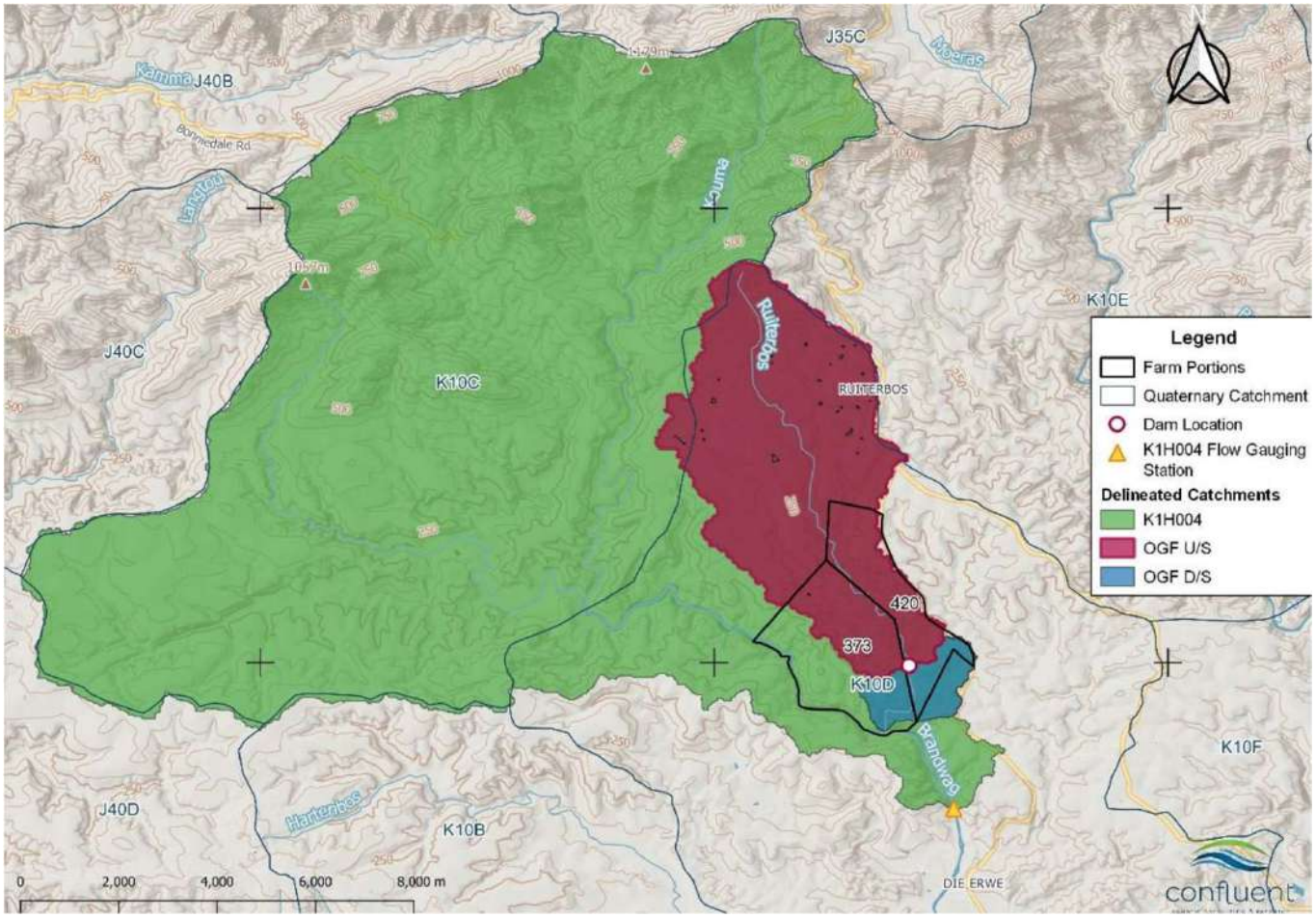
The mean annual runoff of K10D catchment is 17.9Mm3.
Reserve requirements are as follows:

- **Ecological Water Requirement (EWR):** 9 % of MAR (or 1.77 Mm3)
- **Basic Human Need (BHN):** 0.06 % of MAR (or 0.01 Mm3).

Mean annual runoff for the Ruiterbos catchment upstream of the dam was estimated using downscaled estimates of flow simulated by the Water Resources System Model / Pitman Model (WRSM/2000) for K10D. The percentage area of the OGF Dam catchment that falls within K10D catchment area upstream ***of K1H004 was calculated at 51 %.*** This was used to downscale WRSM K10D simulations for K1H004 in order to estimate flows into the dam from Ruiterbos River catchment.

Peak high flow periods are from spring to early summer (i.e. August to November) and critical low flow periods are during peak summer (January and February). They hydrology assessment shows that the Ruiterbos River ***does periodically cease flowing 25 % of the time during the summer months (October to March). Simulated mean annual flows from the OGF U/S catchment area are 1.24 Mm3, which represents approximately 9.5 % of the mean annual flows measured at K1H0004 (13.07 Mm3).***
The catchment modelling exercise indicates that the mean annual runoff from the catchment area of the dam is approximately 1.24 Mm3, which is sufficient to meet the irrigation demands of crops.

Summary of assessment – Aquatic - Hydrology



Delineated catchments

Summary of assessment – Aquatic - Hydrology

The Outeniqua Game Farm receives an average annual rainfall of approximately 450 mm, which equates to 4,500 m^3 of water per hectare per year. However, not all rainfall contributes directly to plant-available water due to factors such as evaporation, transpiration, and surface runoff. Assuming an average effective rainfall rate of 60%, the actual water available for crop use is estimated at 2,700 m^3/ha/year. General water use requirements are shown below and include olive trees which are not currently grown (EAP).

Crop	Water Requirement (m^3/ha/year)	Rainfall Contribution (m^3/ha/year)	Irrigation Needed (m^3/ha/year)
Avocados	3000–5000	2700	300–2300
Maize	4500–6000	2700	1800–3300
Lucerne	~1200	2700	0 (surplus)
Citrus	3000–5000	2700	300–2300
Vegetables	3000–5000	2700	300–2300
Olive Trees	600–800	2700	0 (surplus)

Water requirements of commercial crops

Summary of assessment – Aquatic - Hydrology

The SAPWAT 4.0 model was used to estimate irrigation requirements for crops and associated areas (59 ha in total).

Avocado	RE/420	10 ha
Broccoli	RE/420	3 ha
Maize	RE/373	23 ha
Lucerne	RE/373	23 ha

Crops and associated areas

Summary of assessment – Aquatic - Hydrology

Water Requirements Analysis

RE/373 has an authorised abstraction of 80 000 m3 from the Palmiet River. This allocation will be used for irrigation of 10 ha of avocado (RE/420) and 8 ha of maize (18ha). Water from the Ruiterbos River will be used for irrigation of 15 hectares of maize and 23 ha of lucerne on RE/373 and 3 hectares of broccoli on RE/420 (41 ha).

Average irrigation demand per annum is approximately 180 000 m3 per annum, with maximum demand (90th percentile) increasing up to 214 770 m3 during below average rainfall periods.

Considering an existing water entitlement of 80 000 m3 from the Ruiterbos River, a Water Use License (WUL) would be required to abstract and additional 100 000 m3 to 135 000 m3. The applicant will therefore need to apply for additional abstraction of between 100 000 m3 and 135 000 m3 in order to meet irrigation demands with a 90 % assurance of supply. Average monthly flows meet average monthly irrigation requirements.

Dam Size	No. of Deficit Months	No. of Deficit Months (% of total)	Average Monthly Deficit (% of irrigation demand)	Maximum Monthly Deficit (% of irrigation demand)
100 000	44	7.6	72	100
150 000	15	2.6	68	100
200 000	6	1.0	88	100

Summary of assessment – Aquatic - Hydrology

Median irrigation requirements exceed median monthly flows during the drier summer months and demonstrates the need for a dam to store water during high flow periods such that irrigation demands can be met during low flow periods.

Based on a detailed monthly water balance based on weather data covering a 50-year period, a dam size of 150 000 m3 is expected to provide at least a 95 % assurance of supply.

Based on the 50-year simulation assuming a 150 000 m3 dam and abstraction for meeting irrigation requirements, mean annual flow simulated at K1H004 would reduce from 11.08 Mm3 to 10.87 Mm3 (or 2 %).

Summary of assessment - Aquatic

Questions / Queries

Summary of assessment – Aquatic Present Ecological State (PES)

The PES assessment of the river considered the entire length of the Ruiterbos River running from its source and through the Outeniqua Game Farm. The upper most reaches of the Ruiterbos River are dominated by agriculture which is associated with numerous small instream farm dams and abstraction of water for irrigation. Base flows running through the properties have therefore been reduced. The channel banks are incised and eroded in places, most likely due to historical invasion by *A. mearnsii*.

Water quality measurements indicate relatively high conductivity, which is likely due to upstream agricultural activities. Apart from these modifications, instream habitat is in a relatively good ecological state.

The most significant impacts are associated with riparian habitat.
The entire length of the river reach had historically been heavily invaded by mainly *Acacia mearnsii.*
Clearing of invasives has taken place right up to the banks of the river and vegetation has been replaced by kikuyu (*Cenchrus clandestinus*).
The lack of a functional riparian zone has compromised the protection of the channel against peak flood flows and will most likely contribute to the erosion and incision of the channel banks.
The PES of the River is **D – Largely Modified**

Summary of assessment – Aquatic Ecological Importance & Sensitivity (EIS)

The Ruiterbos River is a relatively small non-perennial river characterised by seasonal flows. It provides important diversity of habitat at a local scale, but given its flow characteristics, offers low potential for hosting endangered or unique biota. Considering its size and geomorphological zonation, the river is relatively sensitive to changes in flow and water quality.

In terms of conservation importance, the river is an aquatic CBA and is regarded as important for meeting biodiversity targets at a provincial scale. Overall, the river is considered as important at a local scale.

The EIS score is 2 (**Moderate)**

The availability of the water in the area has been determined at 150 000m3 available for storage and use. Planning on the property is therefore advised to keep within these water availability limits. A review of the IDP, SDF and past conditions from the Department of Agriculture highlights that integrated farming, permanent soil cover and water wise irrigation (in the form of drip irrigation) are preferred management methods (EAP).

Summary of assessment – Aquatic

Area 1 and Area 2**: Dwellings are located within 500 meters of a Channelled valley-bottom wetland.**

Aquatic impacts are negligible in this area, however relevant activities must be included in the water use license application for the dwellings and infrastructure (roads, dam and crossings) located within 100 m of watercourse / 500 m wetland and will require an accompanying risk assessment matrix completed by an aquatic SANASP registered specialist.

The location of the septic tanks (outside of the riparian area and floodline) and the volumes discharged daily (<50 m3 per day), do not trigger the need to register them as water uses.

Best practice measures to prevent soil erosion and impact on drainage lines must be put in place (refer to EMPr)

Summary of assessment – Aquatic

Roads along watercourses

OGF Game Farm constructed a road that crosses the Ruiterbos River at multiple locations. The western most road is located within 100 meters of a non-perennial watercourse and within 500 meters of a Channelled valley-bottom wetland. The eastern most road is located within 500 meters of the Ruiterbos river and associated channelled valley-bottom wetland (X1-9).

Vegetation was cleared to create a road along the Ruiterbos River in 2019 in order to for clearance operations of dense stands of Black Wattle (*Acacia mearnsii*) to take place, which appear to have invaded the entire length of the river channel. Evidence of *A. mearnsii* invasion along the steeper slopes adjacent to the river is apparent and clearance of the invasion is ongoing. Kikuyu (*Cenchrus clandestinus*) grass was noted along the banks of the river and revegetated the entire length of the road, to the extent that the road is now defined by a single jeep-track running along the length of the river.

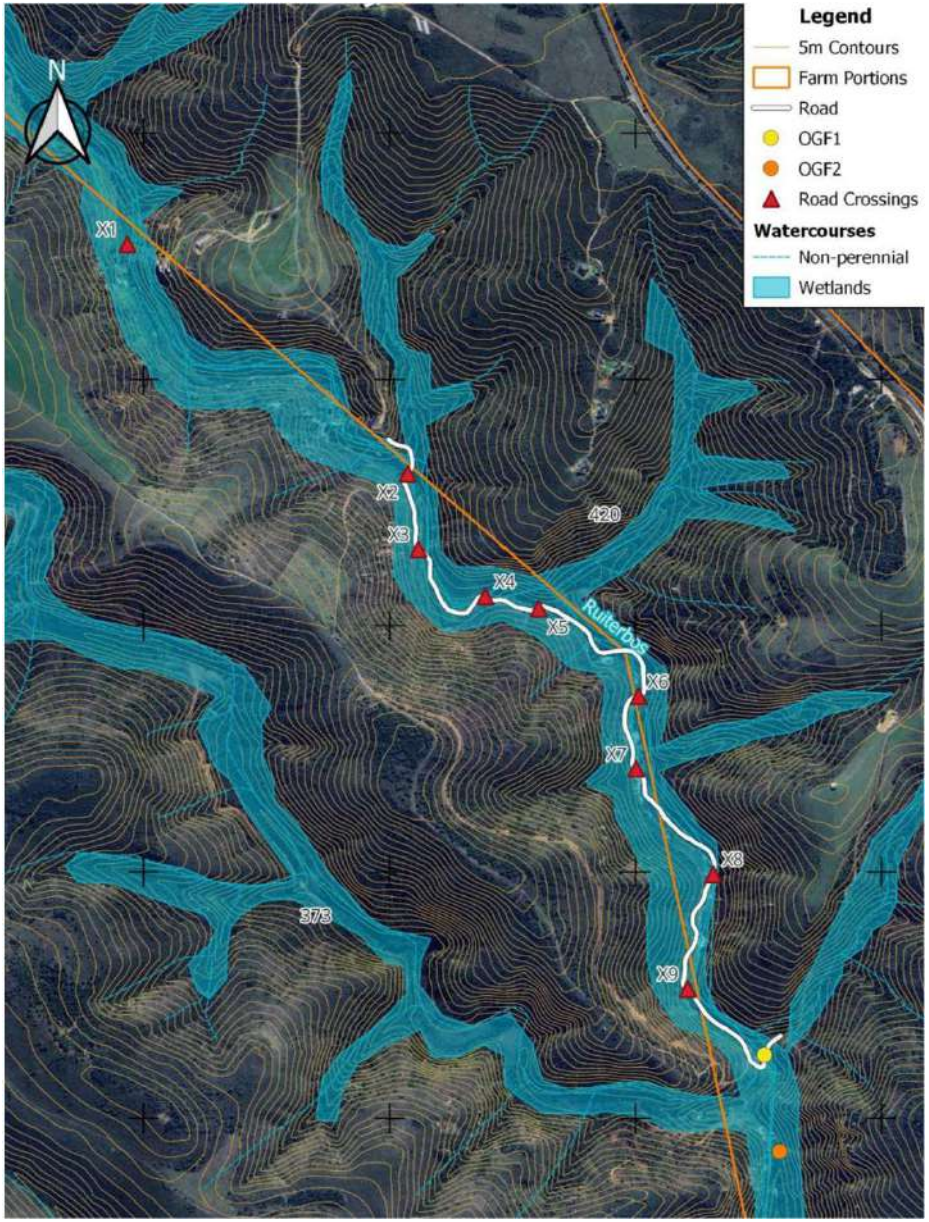
The road crosses the river at several location along the river. The crossings are unprotected drifts directly across the riverbed (most often on bedrock substrate, but also occasionally over cobble substrate)

Summary of assessment – Aquatic

Roads along watercourses

Map showing watercourses affected by historical and proposed activities on the Ruiterbos River running through the Outeniqua Game Farm, with indication of road crossings (X1-9), and existing dam OGF 1 and proposed location of dam OGF2

Observations at crossings to be addressed:
X1 – cement tracks have been constructed down each bank leading down to the river. Road crossings have not resulted in any impedance or diversion of flow
X3 - accumulation of woody debris from AIS clearing; obstruction of eastern bank and resultant erosion on opposite side
X7 and X9- multiple entry/exit points to/from the river have resulted in unnecessary additional disturbance to the riverbank. No signs of erosion were observed at road crossing points.



Summary of assessment – Aquatic

Area 3: Road crossing and existing dam (OGF1) and proposed dam (OFG2)

OGF2 is proposed to be located a short distance downstream from the existing dam. The length of the Ruiterbos River stretching from road crossing X1 down to the proposed location for OGF2 was assessed.

An existing road crossing was upgraded that resulted in the creation of a small instream dam (OGF1) on the Ruiterbos River .The road crossing the Ruiterbos River at the current dam location (OGF1) has existed since at least 2005.

The current instream dam location is first visible in 2017. One of the roads was also altered between 2016 and 2018.

Historical imagery indicated the presence of a road crossing the Ruiterbos River at the dam location from at least 2005. The river crossing and current instream dam location is first visible in 2017, when clearing of vegetation occurred (most likely *A. mearnsii*). 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 require maintenance in the near future. Sediment 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.

Summary of assessment – Aquatic

Area 3: Road crossing and existing dam (OGF1) and proposed dam (OFG2)

Summary of assessment – Aquatic

Area 3: Road crossing and existing dam (OGF1) and proposed dam (OFG2)

OGF2 site assessment

The river is confined to a well-defined channel with clearly discernible bed and banks (relatively incised in places). Occasional narrow stretches of channelled valley bottom wetland habitat were observed along sand banks but were not continuous along the entire length of the river channel. A variety of wetland plant species were observed. In terms of classification, the river reach is considered to be primarily a river dominated by granite bedrock, with narrow, intermittent patches of channelled valley-bottom wetland habitat where sand banks have formed along gentler gradients. Substrate was dominated by bedrock and coarse sand to fine gravel.

Water quality measurements taken at the proposed dam OGF2 location, showed that water was clear (high clarity) with very low turbidity. The flow can be best described as trickle base flow, the water was well oxygenated, indicating a low organic load, as would be expected of a stream close to its mountain source.

Note: The conductivity measurement indicates elevated concentrations of salts (most likely from upstream agricultural activities) which can also account for the increase in pH (in case of elevated base cations such as calcium and sodium).

Parameter	Measurement
Temperature	21.2 ºC
Dissolve Oxygen	9.95 mg/L
pH	7.16
Conductivity	88.3 mS/m
Clarity	80 cm

Summary of assessment – Aquatic

Area 3: Road crossing and existing dam (OGF1) and proposed dam (OFG2)

OGF2 site assessment

Aquatic biodiversity

Macroinvertebrates

Instream biotopes were relatively limited. The main biotope present was shallow, very slow flowing pools, ranging from 5 to 40 cm in depth.

Cobble riffle (stone in current) habitat was very poorly represented and runs were generally very shallow chutes over bedrock connecting pools. Instream vegetation was very limited to small patches *Persecaria sp.* and marginal vegetation was sparse. Overall instream habitat is fairly limited in terms of diversity as is reflected in the biotope score (53 %). In total 21 taxa were observed, which included a relatively high proportion of air breathing taxa (i.e. Hemipterans and Gyrinidae beetles). These taxa are typically abundant in pools where slow-moving currents do no not favour rapid respiration across gill surfaces typically required by other aquatic macroinvertebrate taxa. Gomphid dragonfly larvae and Naucorid bugs were abundant in gravel habitat. Families favouring high flow conditions (e.g. *Ephemerotera, Plecoptera and Trichoptera*) comprised a low proportion of taxa. The total SASS score was 92 with an Average Score per Taxon of 4.4 which is a relatively low score.

Parameter	Score
SASS Score	92
Number of Taxa	21
Average Score per Taxon	4.4
Biotope score	24 (53%)

WCBSP categories and associated management objectives.

Summary of assessment – Aquatic

Area 3: Road crossing and existing dam (OGF1) and proposed dam (OFG2)

OGF2 site assessment

Aquatic biodiversity

Macroinvertebrates

Instream biotopes were relatively limited. The main biotope present was shallow, very slow flowing pools, ranging from 5 to 40 cm in depth. Cobble riffle (stone in current) habitat was very poorly represented and runs were generally very shallow chutes over bedrock connecting pools. Instream vegetation was very limited to small patches *Persecaria sp.* and marginal vegetation was sparse. Overall instream habitat is fairly limited in terms of diversity as is reflected in the biotope score (53 %). In total 21 taxa were observed, which included a relatively high proportion of air breathing taxa (i.e. Hemipterans and Gyrinidae beetles). These taxa are typically abundant in pools where slow-moving currents do no not favour rapid respiration across gill surfaces typically required by other aquatic macroinvertebrate taxa. Gomphid dragonfly larvae and Naucorid bugs were abundant in gravel habitat. Families favouring high flow conditions (e.g. *Ephemerotera, Plecoptera and Trichoptera*) comprised a low proportion of taxa. The total SASS score was 92 with an Average Score per Taxon of 4.4 which is a relatively low score.

Elevated conductivity levels (together with other contaminants such as pesticides and fertilisers used in agriculture) are likely to partly explain this score, however, the limited habitat diversity and seasonal flow regime is also a contributing factor.

The SASS results provide a baseline against which to monitor future downstream impacts of the proposed OGF2 dam.

Parameter	Score
SASS Score	92
Number of Taxa	21
Average Score per Taxon	4.4
Biotope score	24 (53%)

WCBSP categories and associated management objectives.

Summary of assessment – Aquatic

Area 3: Road crossing and existing dam (OGF1) and proposed dam (OFG2)

OGF2 site assessment

Fish

An approximate 200 m stretch of river habitat was sampled in the vicinity of the OGF2 dam site. Habitat for fish is very limited and is restricted to deeper pools (~ 40 cm depth) where cover (in the form of rock overhangs and marginal aquatic vegetation) was available. No fast-flowing run or riffle habitat was present. Only one fish species was collected – *Tilapia sparmanii.* This species is tolerant of a wide range of habitats but has a preference for slow flowing pools or standing water. The species was relatively abundant in such pools and adults and juveniles were observed. The natural distribution of this species is from the Orange River and southern KwaZulu-Natal northwards (Skelton, 2004). The species has been introduced to the Western Cape Distribution in the Western Cape where it is considered extralimital (i.e. occurs outside of its natural distribution).

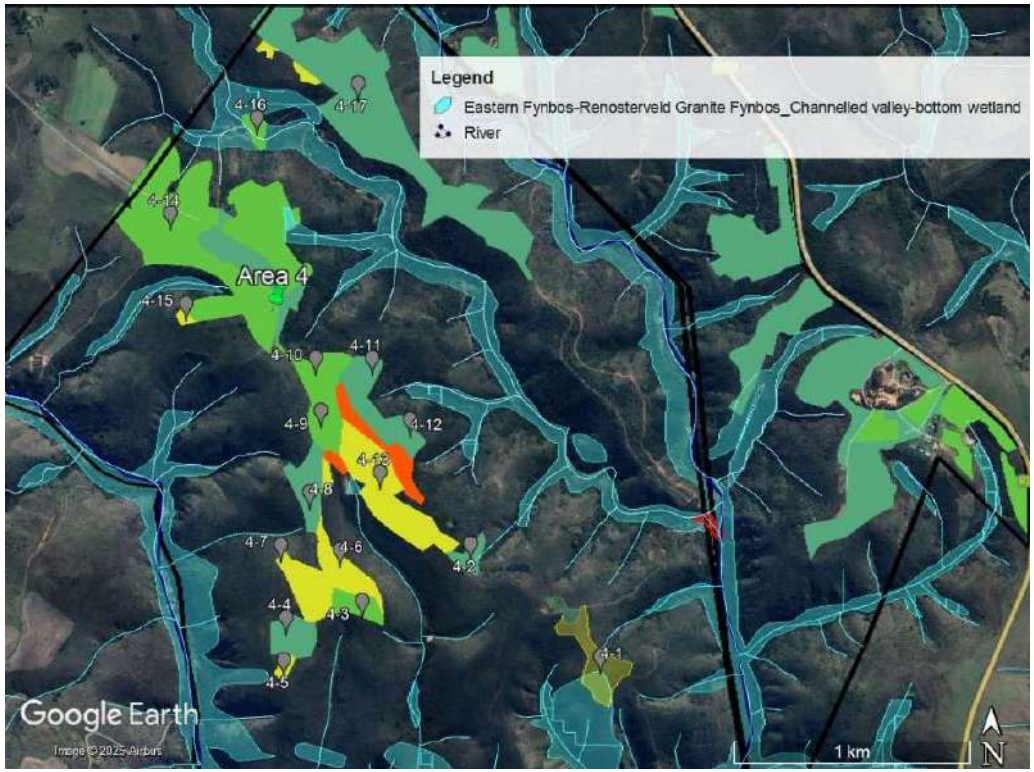
Given the seasonal nature of river flows, rheophilic species favouring fast flowing water are unlikely to occur along the river reach. Marginal, lentic habitat availability during the dry season will only be likely to be suitable for hardy species such as *T. sparmanii.* No other records of any fish species have been recorded for the Ruiterbos River and given the FEPA status for the catchment area, is unlikely to be an important river reach for conservation of fish species.

WCBSP categories and associated management objectives.

Summary of assessment – Aquatic

Area 4 – Agricultural areas and road crossings

All agricultural areas are outside of the aquatic systems with exception of Areas 4-1 and 4-16 which are not recommended. The road crossing and dammed area at 4-16 needs to be addressed. This area (0.89ha) is in a valley area and is recommended to be rehabilitated with thicket / riverine/ wetland vegetation. The existing road crossing was already in place by 2005; however, no dammed area is visible in historical imagery from that period. At the road crossing, no culvert, bridge, or formal channel is visible to facilitate hydrological flow, and the obstruction of natural drainage has the potential to contribute to ecological degradation. This location intersects a mapped non-perennial drainage line (DWS) and falls within a NFEPA-designated channelled valley-bottom wetland system. A proper hydrological flow path (e.g. culvert or low water crossing) must be installed at the road crossing. This road is anticipated to be retained long-term due to its role in accessing recommended agricultural areas 4-15 and 4-17. The operational management measures need to be implemented to ensure ongoing removal of AIS within the drainage line areas on the property. These measures should in the long term, increase the amount of water that can be captured by the proposed OGF2 dam during storm events.

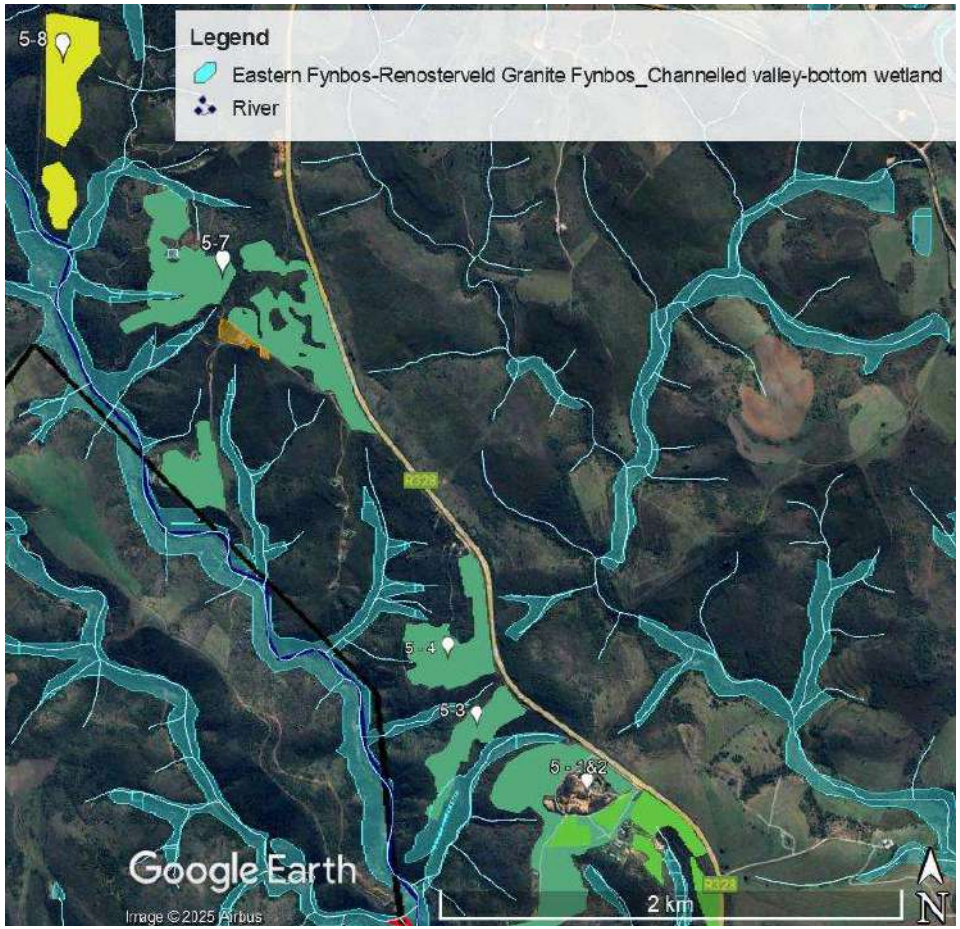


Area 4 showing drainage lines (light blue), Ruiterbos and Palmiet Rivers and channelled valley bottom wetland mapped in terms of the NFEPA

Summary of assessment – Aquatic

Area 5 – Agricultural, tourism, game farm, road crossings

All agricultural areas (5-1 to 5-8) are outside of the aquatic systems. Some roads in areas 5-7 and 5-8 which are unnecessary and cross drainage lines should not be used.



Area 5 showing Ruiterbos River and drainage lines (light blue) - no agricultural activities are occurring within drainage lines / wetland areas; enclosures will be located within 32 meters of drainage lines

Summary of assessment – Aquatic

Verification of aquatic biodiversity

Theme	Environmental Sensitivity in terms of DFFE Screening Tool Report	Verification
Aquatic Biodiversity	Very high	Very high

Summary of assessment - Aquatic

Questions / Queries

Impact Assessment - Aquatic Biodiversity

Aquatic ecosystem and biodiversity – existing activities – construction and operations

Aspect	Impact	Summary	Mitigation	Impact rating and Significance without Mitigation	Impact rating and Significance with mitigation
Construction within watercourses – road crossings between area 2 and 3	Disturbance of bed and banks caused by construction of road along the Ruiterbos River	none of the crossings that were assessed have resulted in any impedance of flow and have not resulted in any erosion of the bank.	Entry/exit points at each crossing must be restricted to a single track. Road crossings must be routinely inspected. protected in an appropriate manner	Negative Low	Negligible
Gabion road structure crossing the Ruiterbos River / existing OGF1 dam	Impendence of flow	created a small instream dam, allowing the landowner to abstract water from the river	The existing dam must be rehabilitated as a condition of approval for the new larger dam (see Rehabilitation Plan).	Negative Medium High	Negligible
Construction within watercourses – existing OGF1 dam	Impact of OGF1 dam on river habitat	converting habitat from a natural lotic (flowing) system to a lentic (stagnant) system. This represents a very small section of habitat relative to the length of the entire river reach	The existing dam must be rehabilitated as a condition of approval for the new larger dam (see Rehabilitation Plan).	Negligible	Negligible
Construction within watercourses – existing OGF1 dam	dumping excavated sediment in the Ruiterbos River	Excavated sediment dumped in the watercourse has smothered aquatic habitat. Future flood flows could potentially be diverted into the opposite bank (causing erosion of the bank)	sediment must be removed from the watercourse (see Rehabilitation Plan).	Negative Low	Negligible
Current agricultural activities at area 4-16 and associated crossing and dam area	Disruption of ecosystem services	Area and falls within drainage line and associated NFEPA valley bottom wetland	A proper hydrological flow path (e.g. culvert or low-water crossing) must be installed at the road crossing.	Negative Medium High	Positive Low

Impact Assessment - Aquatic Biodiversity

Aquatic ecosystem and biodiversity – proposed activities – construction and operations

Aspect	Impact	Summary	Mitigation	Impact rating and Significance without Mitigation	Impact rating and Significance with mitigation
Construction new instream dam - construction activities	Disturbance and pollution of aquatic habitat	Disturbance, pollution, sediment mobilisation	As per EMPr	**Negative medium**	**Negative low**
New instream dam	reduced instream flows on instream habitat and aquatic biota	Disruption of flow conditions	Operational release mechanisms must be incorporated into the dam design to accommodate the required EWR. Measures in EMPR to be implemented.	**Negative High**	**Negative medium high**
New instream dam	Inundation of river habitat	The extent of inundation represents a small percentage of the entire length of the river and the spatial extent the impact is therefore very limited	Permanent impact; mitigation not possible	**Negative Medium High**	**Cannot be mitigated**
Instream dam	reduced sediment transport on instream habitat	Dams act as a barrier to sediment transport which will likely lead to a reduction in sediment supply and a modification to the quality and diversity of instream habitat downstream of the dam.	Cannot be mitigated.	**Negative medium high**	**Cannot be mitigated**
Instream dam	Fragmentation of aquatic habitat caused by construction of OGF2	barrier preventing movement of biota	Cannot be mitigated.	**Negative High**	**Cannot be mitigated.**
Instream dam	Impact of dam on downstream users	No additional water users on Ruiterbos. According to the WARMS database, water users downstream of the applicant are registered to abstract a total of 3.54 Mm3 / annum. The reduction in MAR caused by the storage and increased abstraction from the Ruiterbos River is unlikely to impact downstream users.	Measures in EMPR to be implemented. Authorisation for additional abstraction from the Ruiterbos River must be subject to the surrender of existing borehole abstraction rights from RE/420 and RE/373, thereby avoiding cumulative impacts on the water resource.	**Negligible**	

Summary of assessment - Aquatic

Questions / Queries

Summary of Assessment - Soil and land capability

Historical images and data indicates that the existing agricultural areas have been farmed since 1976 (grazing areas for cattle). The estimated past use area identified is approximately 197 ha. Current areas in use is an estimated 95 ha.

DFFE land class map (DFFE, 2022)

Class:	**commercial annual crops rain-fed / dryland**
Classification Level 1:	**Cultivated**
Classification Level 2:	**Temporary Crops**

Brown areas correspond to the areas requiring verification in terms of threatened ecosystem layers, 2022. The vegetation assessment confirmed that these areas are past use / in-use agricultural areas.

The light green areas represent the fynbos grassland area; the vegetation assessment shows that the majority of fynbos is intact on the property with light to moderate AIS invasion in some areas;

The dark green provides an indication of valley vegetation (forest / thicket) which is currently invaded.

Summary of Assessment - Soil and land capability

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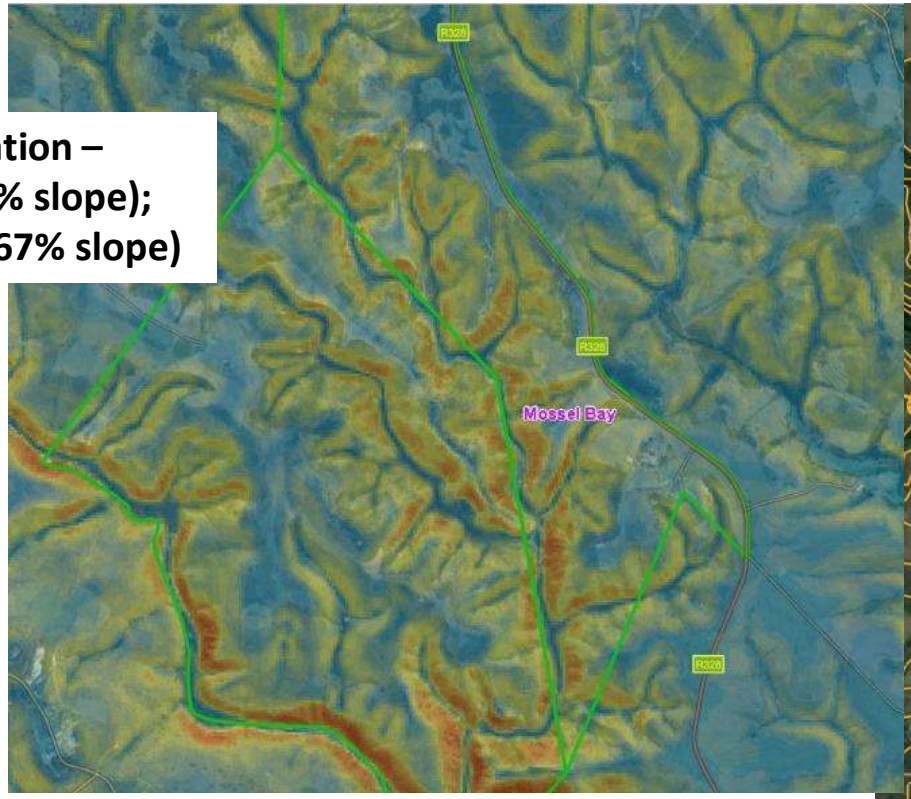
Summary of assessment - Soil and land capability

Slope classification –
blue: gentle (2% slope);
red: steepest (67% slope)



20 meters contour lines / slope showing mountainous nature of ptns 373 and 420; the agricultural activities are taking place on flat ridge areas.

The dwellings and other infrastructure have also been developed on the flatter areas of the property.

Summary of assessment - Soil and land capability

Approximately 158.8 ha of ptn 373 was surveyed and assessed for agricultural potential - irrigated crops and pastures as well as dryland pastures.

Potentials were rated from high to moderately low for 143.9 ha of arable land. Soils were described and classified using the South African soil classification (Soil Classification Working Group, 2018).

The soils were found to vary considerably over short distances with regards to soil depth, texture and classification and therefore delineated soil units may have some variation but for practical reasons they are grouped into management units.

The geology of the assessment area is predominantly granite with some ridge crests capped with silcrete remnants (consistent Garden Route Granite Fynbos and Swellendam silcrete vegetation).

Summary of assessment - Soil and land capability

Soils derived from the silcretes occurred on the top and upper slopes of the area.

These soils are generally podzolized *(Houwhoek* or *Groenkop* soil forms) with very high gravel contents. Iron and aluminium are then leached out of the upper horizons of the soil profile into the lower B horizons (Brink, 1985). A hard-pan or ortstein B horizon layer generally occurs below 60 cm. This is largely impervious and limits vertical water movement.

Soils developed from sandstone - Upper and upper mid slopes

These soils are moderately deep to deep sandy loam to sandy clay loams (Be 1 soil unit). They are apedal, friable and well drained with little stone or rock in the upper subsoil horizons. Topsoil clay percentages range between 16 and 18% and subsoil between 24 and 35 %. Effective soil depths are between 70 and 100 cm. and they are underlain by hard or fractured rock. These soils which support a Protea/Erica vegetation are likely to be more acid than other soils.

Soils derived from the Granites on Upper to lower mid slopes

These granites comprise very coarse-grained particles, are well-drained sandy clay loams and have weathered to mainly dark reddish-brown soils or dark brown quartz rich sandy clays.

Textures range from sandy loam to sandy clay loam in the topsoils and generally sandy clay loam (25 to 35%) in the subsoils. The *Tubatse* soils are red apedal and friable and contain some loose stone or rock in the lower subsoil while the *Vilafontes* have an E horizon that has developed over the gravel rich subsoil. These soils are quite variable due mainly to the variable nature of the terrain: steep to very steep, both convex and concave slopes and frequent rock outcrops. They are however of moderate to high potential despite the very steep slope gradients for the most part. The boundaries of this unit were photo interpreted as the very steep slopes and dense vegetation made it difficult to excavate any soil pits.

Concave lower slopes and drainage lines

Organic rich, apedal, loamy sands and sandy loams overlie a clay rich lower subsoil at below 100 to 130 cm depth (Tu 1 unit). These soils are well drained, acid but have a high agricultural potential. An added advantage for crop production, particularly fruit tree crops, is that these sites are well protected from wind. A small area of hydromorphic soils viz. *Kroonstad* was described on a level lower slope (unit Kd 1), These soils have a moderate potential for dryland pastures.

Summary of assessment - Soil and land capability

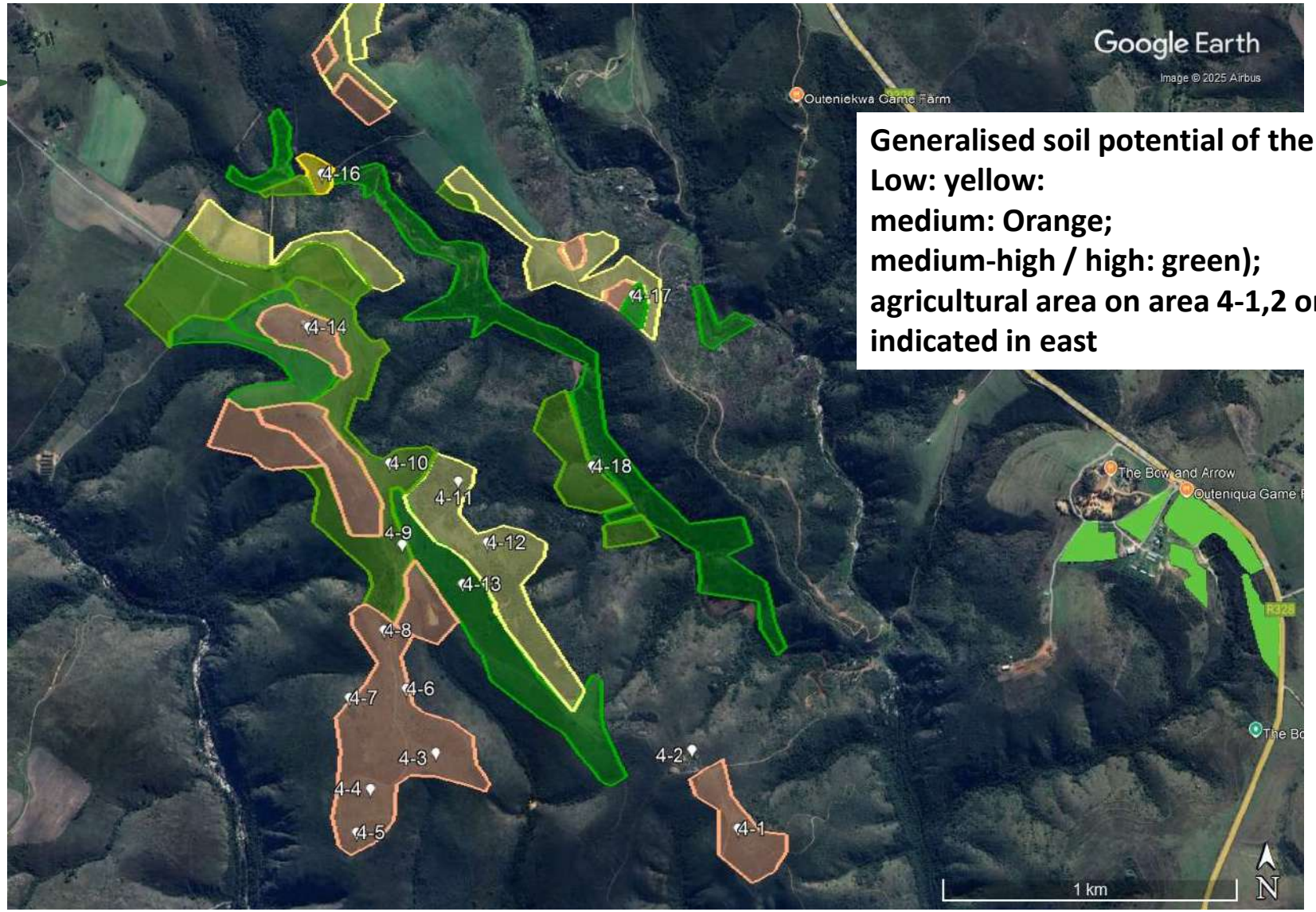
Overview of soil potential

Soil units mapped by the specialist provides an indication the suitability rating for improved dryland pastures as well as irrigated lands and an indication of clay percentage and limitations of the soil unit.

Potential was assessed for irrigated orchards, pastures and dryland pastures. The soils have been rated from high to low. The general crop potential areas are as follows:

Potential class	Area in hectares
High	56.6
Medium high	44.6
Medium	34.3
Medium low	5.9
Low	17.4

Summary of assessment - Soil and land capability



Generalised soil potential of the study area
Low: yellow:
medium: Orange;
medium-high / high: green);
agricultural area on area 4-1,2 on ptn 420 indicated in east

Summary of assessment - Soil and land capability

Area	Size estimate	Soil unit	Limitations	Generalised Soil Potential	Dryland	Irrigated					Land use	Recommendation
					Pastures	Pastures	Avocado	Citrus	Maize	Olives		
1	4,98ha	Nk1	Gravel; restricted depth; low Water holding capacity	Medium	Medium						Past use /	Only dryland in 0.71 ha if required / Future use – not feasible
2	1.55 ha	Be 1	Stone; saprolite	High	Medium High	High	High	High	High	High	Past use	Only dryland grazing
3	2.01 ha	Hh1	Gravel; restricted depth; low Water holding capacity	Medium	ML	M	-	-	-	-	In use	Preferably not be used; if used, only dryland grazing
4	2.87ha	Hh1	Gravel; restricted depth; low Water holding capacity	Medium	ML	M	-	-	-	-	Past use	Only dryland grazing
5	0.5 ha	Hh1	Gravel; restricted depth; low Water holding capacity1	Medium	ML	M	-	-	-	-	Future use – not feasible Intact fynbos	Retain as fynbos; removal of dense wattles as per AIS management plan

Summary of assessment - Soil and land capability

Area	Size estimate	Soil unit	Limitations	Generalised Soil Potential	Dryland Pastures	Irrigated Pastures	Avocado	Citrus	Maize	Olives	Land use	Recommendation
6	**6.79 ha**	**Hh1**	**Gravel; restricted depth; low Water holding capacity**	M	**ML**	**M**	**-**	**-**	**-**	**-**	**Past use Future use – not feasible**	**Retain as fynbos; removal of dense wattles as per AIS management plan**
7	0.34 ha	Hh1	Gravel; restricted depth; low Water holding capacity	M	ML	M	-	-	-	-	Future use – not feasible	Retain as fynbos; removal alien trees as per AIS management plan
8	3.38 ha	Hh1	Gravel; restricted depth; low Water holding capacity	M	ML	M	-	-	-	-	Past use	Only dryland; removal alien trees in field and adjacent area as per AIS management plan
		Vf 1	Gravel; restricted depth; low Water holding capacity	mediu m high	Medium High	High	-	Medium	Medium	Medium		
9	3.56 ha	Vf 1	Gravel; restricted depth; low Water holding capacity	mediu m high	Medium High	High		Medium	Medium	Medium	In use	No further expansion this area. Manage agricultural area as per mitigation measures.
10	2.5ha										In use	Manage agricultural area as per mitigation measures.

Summary of assessment - Soil and land capability

A concise summary of the soil potential for areas 4 (1-17) and includes the corresponding recommendations identified from site visits and specialist input.

Area	Size estimate	Soil unit	Limitations	Generalised Soil Potential	Dryland Pastures	Irrigated Pastures	Irrigated Avocado	Irrigated Citrus	Irrigated Maize	Irrigated Olives	Land use	Recommendation
11	**2.48 ha**	**GS1**	**Stone and rock; restricted depth; low WHC**	**Low**	**Medium Low**						**Past use - invaded**	**Dryland grazing Manage as per AIS management plan**
12	3.14 ha										Past use - invaded	Not suitable – Manage as per AIS management plan
13	2.85ha										Future - likely feasible (2.85)	Low ecological importance however soil potential is indicated as low for the corresponding area. Possible dryland

Summary of assessment - Soil and land capability

A concise summary of the soil potential for areas 4 (1-17) and includes the corresponding recommendations identified from site visits and specialist input.

Area	Size estimate	Soil unit	Limitations	Generalised Soil Potential	Dryland Pastures	Irrigated Pastures	Irrigated Avocado	Irrigated Citrus	Irrigated Maize	Irrigated Olives	Land use	Recommendation
13	**9.2ha**	**Be1**	**Stone;saprolite**	**High**	**Medium High**	**High**	**High**	**High**	**High**	**High**	**Remaining area 13 – not feasible**	**High ecological importance**
14	3.6 ha	GK2	This section on Area 4-14 is where supporting infrastructure and dwellings are in place. Area is recommended for supporting structures, storage facilities and compost areas.	High and medium High (in use) Medium potential (past use)	M	M	-	-	M	-	In use Past use	Maintain as irrigated agricultural area; use past use area for additional irrigated area and required dwellings, storage.
14	30 ha	GK1	Gravel; sub-optimal WHC	MH	M	MH	-	-	MH	-		Existing agricultural area suitable for combination of maize, olives, avocados and citrus.
		Be2	Gravel & stone;	MH	M	H	M	M	H	MH		
		Be3	Gravel; dense lower subsoil	H	M	H	MH	H	H	H		
		Vf1	Restricted depth; low WHC	MH	MH	H	-	M	M	M		
	6.6ha	Gs1	Stone and rock;	L	L	ML	-	-	-	-		No agricultural expansion in this area
		GS2	restricted depth; low WHC	L	L	-	-	-	-	L		

Summary of assessment - Soil and land capability

A concise summary of the soil potential for areas 4 (1-17) and includes the corresponding recommendations identified from site visits and specialist input.

Area	Size estimate	Soil unit	Limitations	Generalised Soil Potential	Dryland Pastures	Irrigated Pastures	Irrigated Avocado	Irrigated Citrus	Irrigated Maize	Irrigated Olives	Land use	Recommendation
15	**0.33ha**	**HH1**	**Gravel; restricted depth; low WHC**	**Medium**	**ML**	**M**	**-**	**-**	**-**	**-**	**Future use – not suitable**	**Retain as fynbos No agricultural expansion permitted.**
16	0.89ha	Kd1	Poor drainage	Medium	M	MH	-	-	-	-	In use	Area surrounding dam should be mulched and planted.
17	30.73 ha	Be2	Gravel & stone;	Medium high	M	H	M	M	H	MH	Past use	Recommended for irrigated mixed cropped farming. Manage as per agricultural measures.
		CV1	Gravel; restricted depth	medium	MH	M	-	-	M	-		
		Tu1	Variable soils; drainage areas	High	H	H	H	H	H	H		
		Tu2	Restricted depth	Medium	M	M	-	-	-	-		
		Se1	Dense structured clay subsoil; soil wetness	Medium low	M	M	-	-	-	-		
		Gs1	Stone and rock;	Low	L	ML	-	-	-	-		
		GS2	restricted depth, low WHC	Low	L	L	-	-	-	-		

Summary of assessment - Soil and land capability

A concise summary of the soil potential for areas 4 (1-17) and includes the corresponding recommendations identified from site visits and specialist input.

Area	Size estimate	Soil unit	Limitations	Generalised Soil Potential	Dryland Pastures	Irrigated Pastures	Irrigated Avocado	Irrigated Citrus	Irrigated Maize	Irrigated Olives	Land use	Recommendation
18	5ha	Tb1	Steep slopes; variable soils	Medium high	MH	H	M-H	M	-	MH	Fynbos with high AIS	No formal crop farming is recommended to take place in this area. The area, as well as the majority of drainage line areas on the property which (estimated of 200 ha) requires ongoing AIS clearing combined with rehabilitation. A 10-15 m buffer areas of drainage lines / rivers are to be rehabilitated with plants as provided in rehabilitation plan and maintained. Sustainable harvesting of Agathosma recurvifolia and Cyclopia subternata should be considered once rehabilitation has been underway for 5 years.
	15.5ha	TU1	Variable soils; drainage areas	High	H	H	H	H	H	H	Thicket / riverine with high AIS	

Summary of assessment – Soil and land capability

Questions / Queries

Impact Assessment - Soil and land capability

Soil and land capability – existing and proposed activities – construction and operations

Aspect	Impact	Summary	Mitigation	Impact rating and Significance without Mitigation	Impact rating and Significance with mitigation
Land use change – past, current, proposed	Change of land use from cattle farming to mixed use including crops, grazing, game farm, enclosures and restaurant.	If the activities are well managed the impact is considered a low positive impact for overall land use on the area.	Put in place EMPr. Consider incorporation of bee farming, sustainable harvesting (5 year plan), olive trees (lower water requirements)	**Negative medium**	**Positive Low**
Energy management	Reliance on non-renewable energy sources	All energy requirements are met through off-grid systems, primarily solar power and gas	As per EMPr	**Positive low**	**Positive low**

Summary of Assessment – Land Use

Area 4: Agricultural area and supporting activities – ptn 373 (789ha)

- Past use areas (prior to 2005): 95,77ha
- Past use agricultural areas currently in use: 43 ha
- Dryland (all past use): 12 ha
- Past undisturbed agricultural area currently in use: 1 ha (Site 4-16) (must be rehabilitated)
- Current and additional agricultural area (20 ha) on past use / disturbed area: 33ha
- Total (proposed and current) irrigated – 77 ha
- Total (current and proposed) irrigated and dryland: 89 ha

Area 1,2,3 and 5: Agricultural area, game farm, tourism, game enclosures, supporting activities - ptn 420 (489ha)

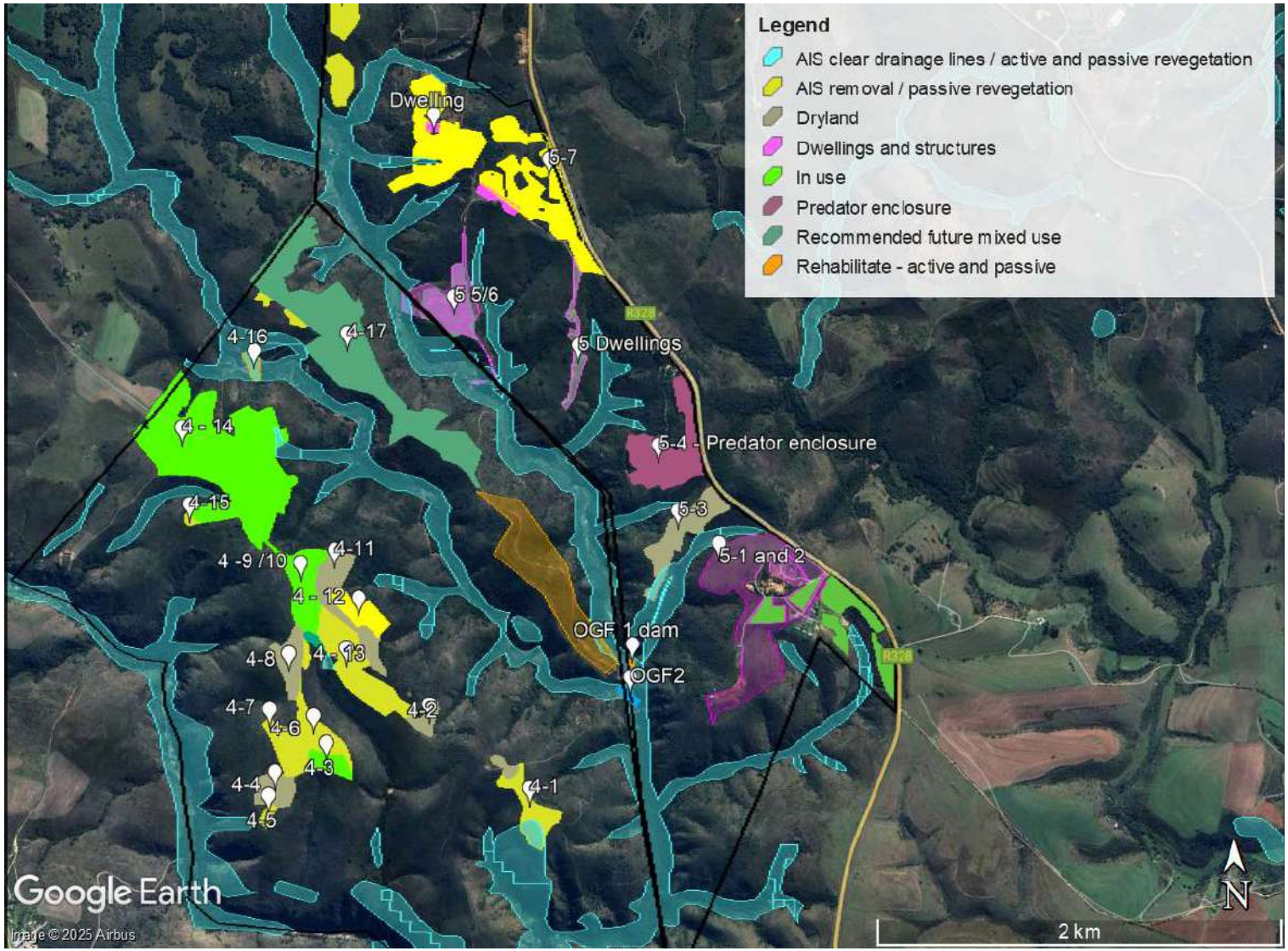
- Past use areas (prior to 2005) : 97.05 ha
    - Past use agricultural areas currently in use: 17.2 ha; Restaurant adjacent to old quarry - 7200m2
- Past undisturbed area currently in use: 2.7 ha
    - Five dwellings and road - 8000m2
    - Two dwellings, structures, water storage, roads, tracks on ptn 420 - 9000m2
    - Roads between Area 2 and 3 on ptn 420 – 10 000 m2
    - Dam area – 800m2
- Proposed activities on previously disturbed areas: 13.4 ha
    - Elephant night enclosure to accommodate a maximum of four (4) African elephants: 1 ha within previously disturbed area (Area 5-1&2)
    - Proposed – predator enclosure: 10,4 ha (maximum) within previously disturbed area (Area 5-4)
    - Proposed 150 000m3 dam (2ha) - Area 3

Extent of areas with alien invasive species (AIS): 200ha (both portions)

Summary of Assessment – Land Use

Recommended land uses

The combined footprint of all activities (existing and proposed) would be an estimated 122.5 ha, which is a reduction of 75 ha compared to past use activities. The property currently has a diversity of land uses that are considered to complement each other. Additional low impact activities recommended to be integrated into agricultural activities includes bee-farming; it is further recommended to consider olive trees (i.e. instead of more maize or avocado) due to the lower water requirements. Owl box are recommended in remaining natural areas to assist with rodent control.



Impact Assessment – Land Use

Change in Land use – past, current, proposed activities

Aspect	Impact	Summary	Mitigation	Impact rating and Significance without Mitigation	Impact rating and Significance with mitigation
Excavation Activities and roads and crossings	Soil erosion and ability of vegetation to recover	Removal of vegetation and increased erosion risk	Put in place EMPr. Rehabilitate as required	**Negative medium**	**Negative Low**
Agricultural activities	Soil potential and land capability	Insufficient groundcover	As per EMPr	**Negative medium**	**Negative / positive Low**
Farming operations - fertilizers, pesticides	Soil and groundwater quality and surrounding indigenous vegetation and fauna	Overuse pesticides / fertilizers	As per EMPr	**Negative medium**	**Negative low**

Summary of assessment - Socio-economic

Current activities allow for staff to be accommodated in the existing agricultural dwellings, and the 7 dwellings on ptn 420. A game farm and restaurant has also been established as well as 60 ha of cropland. The landowner reportedly encourages proposals from the existing staff members (agricultural and game farming activities) which will add value to the land.

The agricultural activities provides avocados, maize and vegetables to the market and the small-scale vegetables are also made available for staff use.

The agricultural activities and restaurant, game farm and tourist activities provide employment. The game farm area and proposed enclosures provides for the environmental awareness of species of conservational concern

The majority of dwellings are located on ptn 420 and allow for accommodation to be provided for the staff. Energy costs are dramatically reduced as the staff members live within walking distance of their workplace.

The persons currently in operational management are qualified personnel with previous experience in the relevant proposed activities and the property therefore provides unique employment opportunities.

Water is a resource which is required to be shared by all persons and all persons have the right to water.

In order for any activity to take place, water is a pre-requisite. The borehole water on the site is not suitable for domestic or irrigation purposes. The impact of not being able to source water for the activities currently in place will have significant high economic and social impacts on persons employed on the farm.

Summary of assessment - Socio-economic

Any further development on the portions (excluding that presented in this assessment) will require all approvals to be in place, to ensure correct planning has taken place and that the proposed activity is most suitable with regards to the prevailing conditions of the property. Further clearance of vegetation on this property, and further farming, without approval could result in a significant high impact on water resources and critical biodiversity due the fact that water supply is scarce in the area and that the vegetation which occurs on this property is endemic and only occurs in a very small area (i.e. the Mossel bay municipality). This would then deem the project unstainable due to high environmental impacts.

It is critical that the management team view themselves as custodians of this endemic vegetation and incorporate the pristine fynbos on the property into all planning and management and focus on proposals that are low impact and suited to the vegetation and soil and water capacity on the site.

Impact assessment - Socio-economic

Aspect	Impact	Summary	Mitigation	Impact rating and Significance without Mitigation	Impact rating and Significance with mitigation
Dwellings	Accommodation	Dwellings allow for accommodation to be provided for the staff.	Rehabilitate areas around dwellings and structures as per EMPr Pit in place a fire management plan as per EMPr	**Positive low**	**Positive low**
Water requirements	Food production, economic, social	low water supply will negatively impact the operations of the farm until such time that a more reliable source or suitable water is in place.	As per EMPr	**Negative Medium high**	**Positive medium high**
Agricultural, restaurant, game farm, enclosures and construction of dam	Economic opportunities and employment creation	The agricultural operations provide employment opportunities in both cultivation and harvesting. The restaurant, game farm management, enclosures and related tourism activities further contribute to local job creation.	Local employment and suppliers; training provided	**Positive Medium**	**Positive Medium**
Agricultural, restaurant, game farm, enclosures	Environmental awareness	play a significant role in promoting environmental awareness	- Consider incorporation of sustainable agricultural products into tourism - Consider incorporation of agricultural produce into restaurant	**Positive medium**	**Positive medium**
Waste management	localised pollution and disturbance to flora and fauna and overall ecosystem functioning	Careful waste management is required to prevent the introduction and spread of Argentine ants. Correct waste management practices should result in negligible impacts and could result in positive impacts through reuse and recycling of the various waste streams	Put in place waste management measures as per EMPr	Negative medium	Negative / Positive Low

Summary of assessment – Soil, land use, social

Questions / Queries

Thank you for your participation!!