BOTANICAL ASSESSMENT: LAND CLEARING ON FARM ANGELIERS BOSCH 157, PRINCE ALBERT

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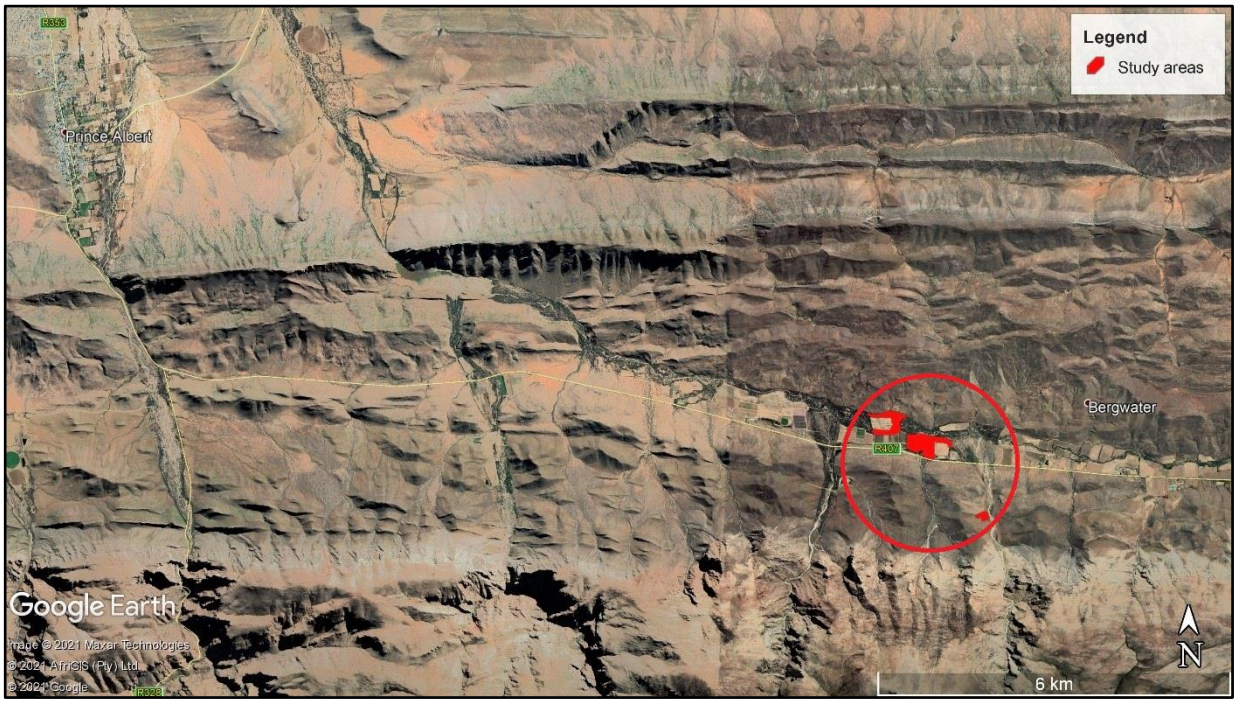
1 INTRODUCTION

This report investigates the biodiversity aspects of several areas (23.57 ha) cleared of vegetation on Farm Angeliers Bosch 157 to the east of Prince Albert (see Map 1). The farmer wishes to extent areas for cultivation (seed production) and to establishment a new farm dam. The aim of the study, which was requested by Sharples Environmental Services (EAP), is to determine the impact of clearing activities on the local biodiversity and to identify remediation measures to address the impact, where deemed feasible. The new farm dam is located inside Swartberg Shale Renosterveld, while the new land areas are all located inside Southern Karoo Riviere (i.e. low-lying areas next to the Cordiers River).



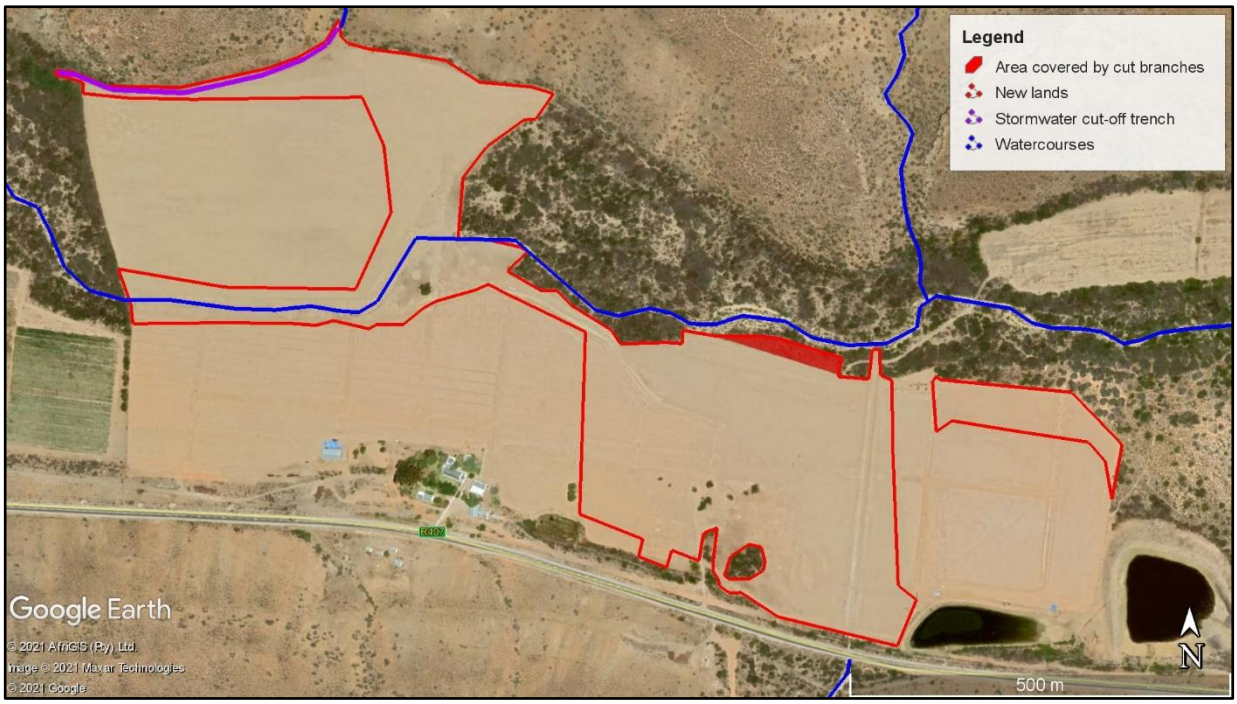
Map 1 Satellite photo showing the position of the disturbed areas (red) next to the Klaarstroom road.

2 DESCRIPTION OF ACTIVITIES

Several areas (23.57 ha) on the subject property (872 ha) were cleared of vegetation as follows (see Maps 2 & 3):

- A new earth dam (1.22 ha) on a mildly angled foot slope in a side valley south of the Klaarstroom road.
- New land areas (22.35 ha) along the Cordiers River. Of this, 7.08 ha comprised fallow land and 12.13 ha riverine vegetation. The land is to be utilised for seed production (grazing).
- A stormwater cut-off trench (±400 m) along the northern boundary of the western cleared area with the intention to divert runoff away from the new land below.

Map 2 Satellite photo showing the position of the new farm dam.



Map 3 Satellite photo showing the cleared new land areas (outlined in red).

3 TERMS OF REFERENCE

- Identify and describe biodiversity patterns at a community and ecosystem level (vegetation types and threatened/vulnerable ecosystems), at species level (Species of Conservation Concern, protected species, presence of alien species) and in terms of significant landscape features;

- Map the extent of clearing activities;
- Extrapolate and quantify the situation on site prior to clearing, with the emphasis on biodiversity;
- Review the relevant biodiversity plans compiled in terms of the National Environmental Management Biodiversity Act (Act 10 of 2004); and
- Adhere to the NEMA, Department of Environmental Affairs & Development Planning (DEA&DP), CapeNature and Brownlie's (2005) guidelines for biodiversity studies in the Western Cape.

4 METHODOLOGY

A botanical survey of the site was undertaken on 10 February 2021 by Mark Berry, an independent biodiversity specialist (see CV attached). An assessment of the cleared areas was undertaken, while the adjacent vegetation was also investigated in order to extrapolate the type and condition of the cleared vegetation, and possible presence of Species of Conservation Concern (SCC). Plant species not identified in the field, were collected and/or photographed and identified at the office and Compton (Kirstenbosch) and Bolus (UCT) Herbaria. The 2018 South African Vegetation Map and the latest floristic taxonomic literature and reference books were used for the purpose of this specialist study. Any plants classified as rare or endangered in the Red List of South African Plants online database are highlighted. The assessment follows the NEMA, CapeNature and other relevant guidelines for biodiversity assessments.

The following information was recorded during the site visit:

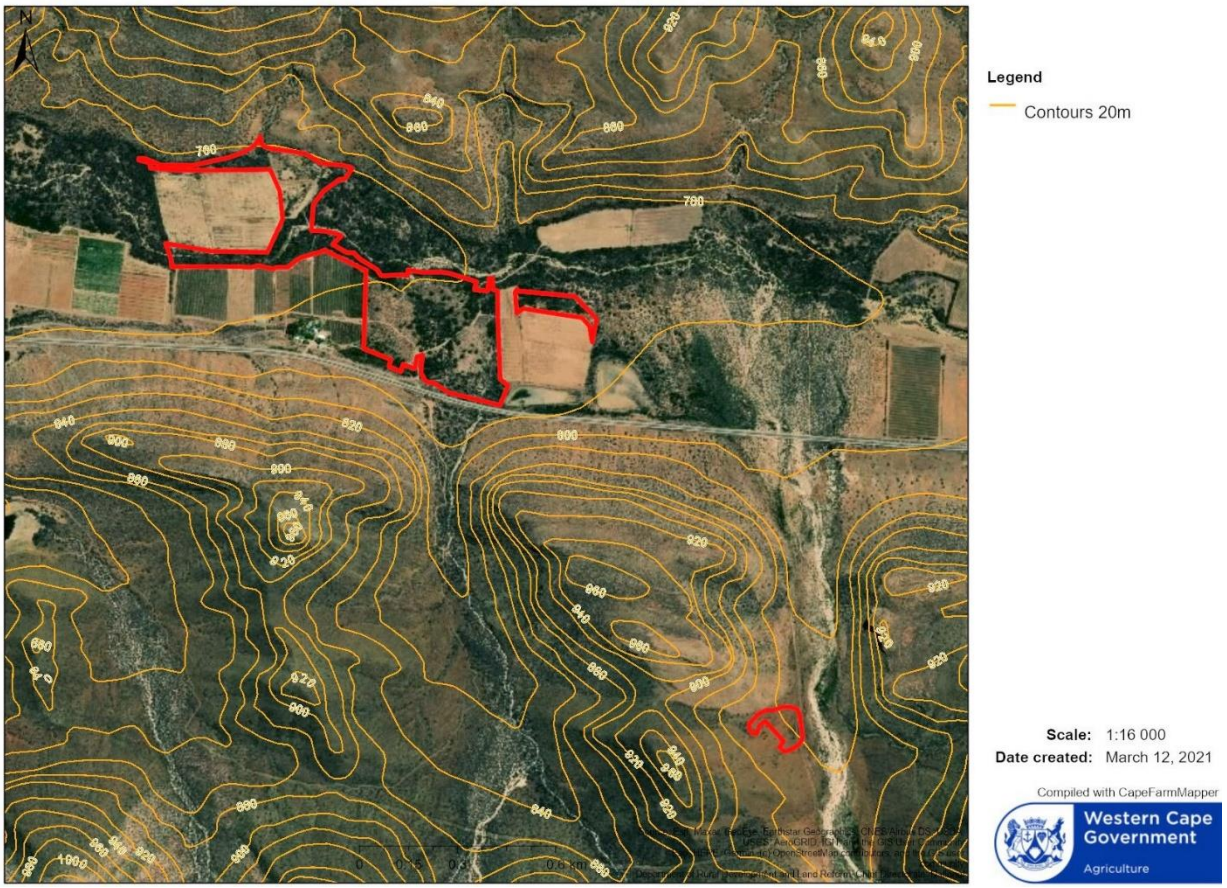
1. The extent and nature of clearing that took place.
2. Type and species diversity of the vegetation adjacent to the cleared areas. This refers to the numbers of different indigenous plant species occurring on site.
3. Species of Conservation Concern (SCC), as well as protected species found in the adjacent vegetation. This would include rare, vulnerable, endangered or critically endangered species.

5 LIMITATIONS TO THE STUDY

Since fieldwork was carried out late in the summer season, flowering plants that only flower at other times of the year (e.g. winter to spring), such as certain bulbs, may have been missed. A recent veld fire also affected the new dam site, and the vegetation is still recovering (albeit very slowly). The overall confidence in the completeness and accuracy of the botanical findings is however considered to be moderate to good and no follow-up survey is considered necessary to aid decision making. Nevertheless, a spring survey will certainly add to the recorded species.

6 LOCALITY & SITE DESCRIPTION

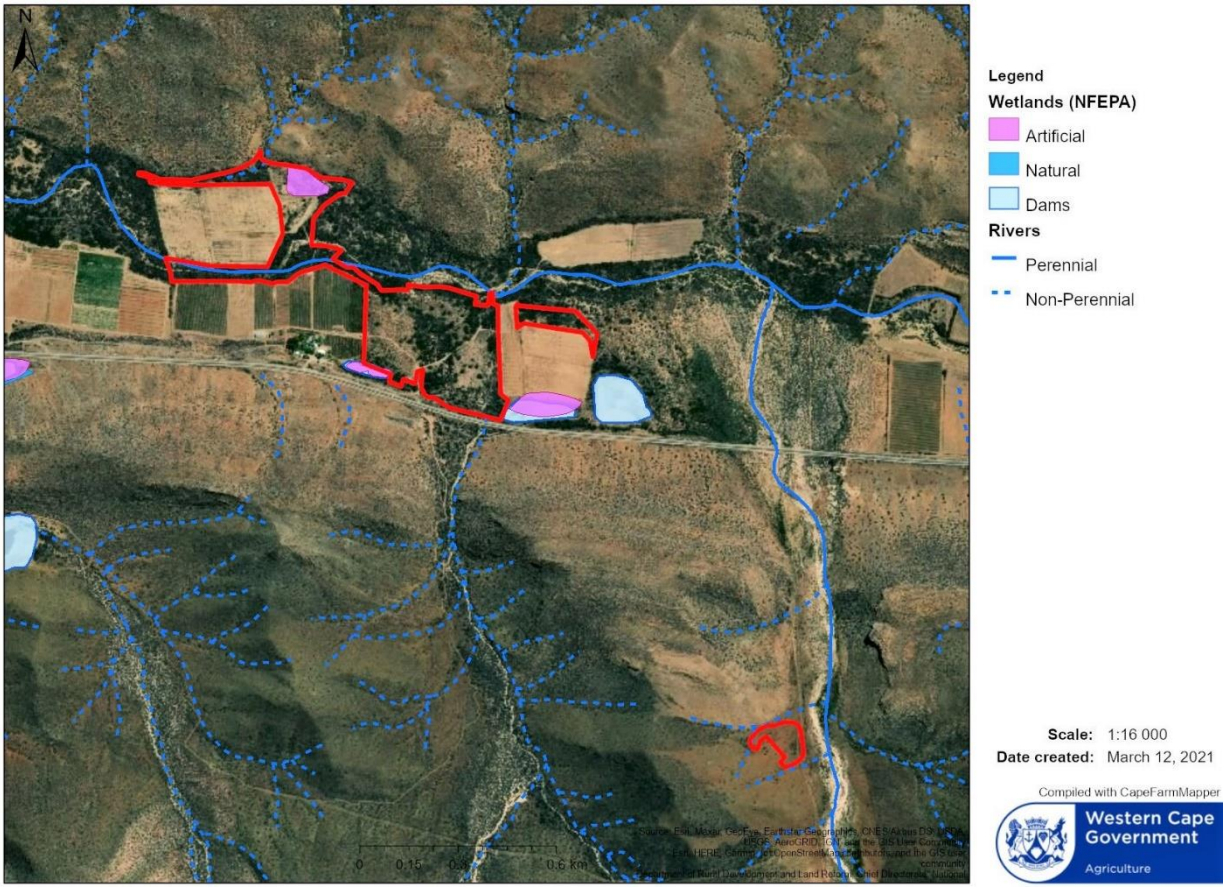
The study site is located on the southern edge of the Great Karoo basin (750-850 masl) at the foot of the Groot Swartberg Mountains. The new farm dam is located in a north-south orientated side valley, while the cleared new land areas are located in a valley that connects Klaarstroom in the east with Prince Albert in the west. The Groot Swartberg, which separates the Great from the Little Karoo, rises a further 1150 m above the valley to 1921 masl (Blouberg). The general terrain around the subject areas is relatively flat to moderately sloped, the result of the eroding effects of the Cordiers River and its numerous smaller tributaries (see Map 4).



Map 4 Topographical (contour) map. The disturbed areas are outlined in red.

The main watercourses in the area are lined with *Vachellia karroo* and *Searsia* sp trees (see Photo 1). The Cordiers River, a tributary of the Gamka River, runs through the farm in a western direction towards Prince Albert. Both large cleared areas encroach upon its banks. Several earth farm dams in the vicinity of the cleared areas have been mapped as artificial waterbodies on the NFEPA (National Freshwater Ecosystem Priority Areas) wetland layer (see Map 5). There are no mapped natural wetlands present in the vicinity of the disturbed areas. Although not visibly in flow during the site visit, the Cordiers is mapped as a perennial river and Critical

Biodiversity Area (CBA): river.



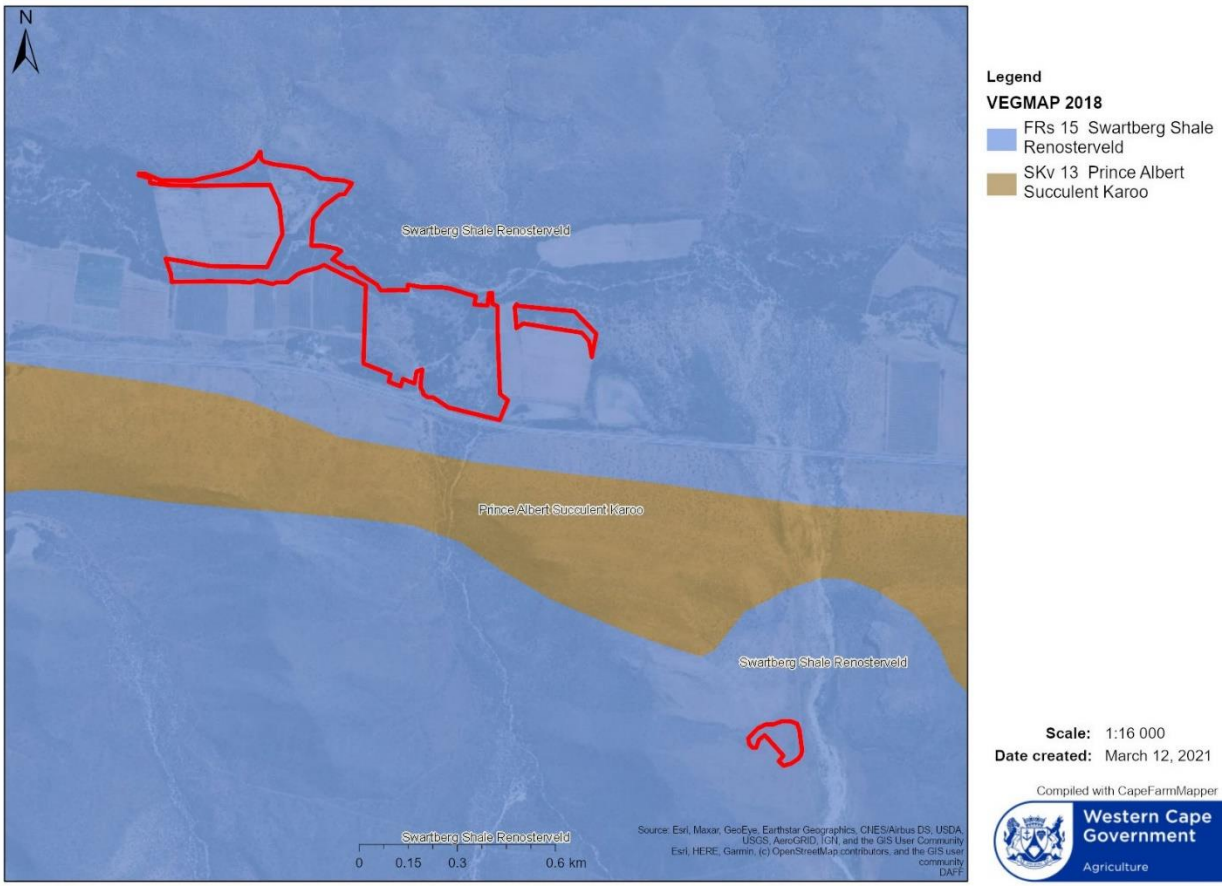
Map 5 Satellite photo illustrating the surface hydrology of the area.

The farm is located within the arid region of the Great Karoo, as well as in the rain shadow of the Groot Swartberg, and therefore receives a relatively low annual rainfall. Rainfall in the area ranges from 150 to 440 mm per annum (mean: 286 mm), as per Mucina & Rutherford's (2006) description of the climate for Swartberg Shale Renosterveld. It is even throughout the year, with a slight peak in March (Mucina & Rutherford 2006). Mean daily maximum and minimum temperatures are 30.0°C and 2.3°C for January and July, respectively (Mucina & Rutherford 2006). Frost incidence is 10 to 30 days per year.

According to the 3322 Oudtshoorn 1:250 000 geological map, the study area is underlain by Bokkeveld and Witteberg Group sediments, both of which are members of the Cape Supergroup. More specifically, the southern part of the farm (south of the Klaarstroom road) where the new farm dam is located, is underlain by Traka Subgroup (Bokkeveld Group) sediments, which comprise siltstone, shale and arenaceous shale. The northern part where the cleared land areas are located, is underlain by alluvial valley deposits and bordered on the northern and southern sides by Weltevrede Formation (Witteberg Group) sediments. The latter comprises arenaceous shale, siltstone and sandstone. An interesting feature of the latter formation is the presence of numerous *Spirophyton* impressions (Toerien 1979).

7 BIOGEOGRAPHICAL CONTEXT

The study area is located inside the Fynbos Biome, in a transitional unit (Swartberg Shale Renosterveld) between fynbos proper (North Swartberg Sandstone Fynbos) and succulent karoo (Prince Albert Succulent Karoo). The latter transitions into Nama Karoo further away to the north. The South African Vegetation Map classifies the main vegetation types found in the area as Swartberg Shale Renosterveld and Prince Albert Succulent Karoo (see Map 6). In the study area it was not possible to distinguish between the two types, but it is suggested that the main type found on the slopes above the alluvial area is shale renosterveld. The Vegetation Map does not show any Southern Karoo Riviere, but the latter was indeed recorded on the valley floor along the Cordiers River.



Map 6 Extract of the 2018 SA Vegetation Map, showing the position of the disturbed areas (outlined in red) inside Swartberg Shale Renosterveld, interrupted by Prince Albert Succulent Karoo.

Swartberg Shale Renosterveld is mainly found on the northern slopes of the Groot Swartberg and some parallel ridges in the Oukloof and Droëkloof from near Prince Albert in the west to Vartjiesrivier in the east (Mucina & Rutherford 2006). Altitude ranges between 750 m and 1200 masl. It is described as a low, medium dense cupressoid-leaved shrubland with an open grassy

understorey and dominated by renosterbos (Mucina & Rutherford 2006). Being located in the rain shadow of the Cape Fold Belt, it is considered as one of the more arid units of the Fynbos Biome. Southern Karoo Riviere occurs in the Western and Eastern Cape Provinces on the alluvial plains of among other the Gamka and Dwyka Rivers (Mucina & Rutherford 2006). It is embedded within several Karoo vegetation types, including Prince Albert Succulent Karoo and Gamka Karoo. It comprises narrow riverine flats supporting a complex of *Vachellia karroo* thickets, bordered by *Salsola*-dominated shrubland (Mucina & Rutherford 2006).

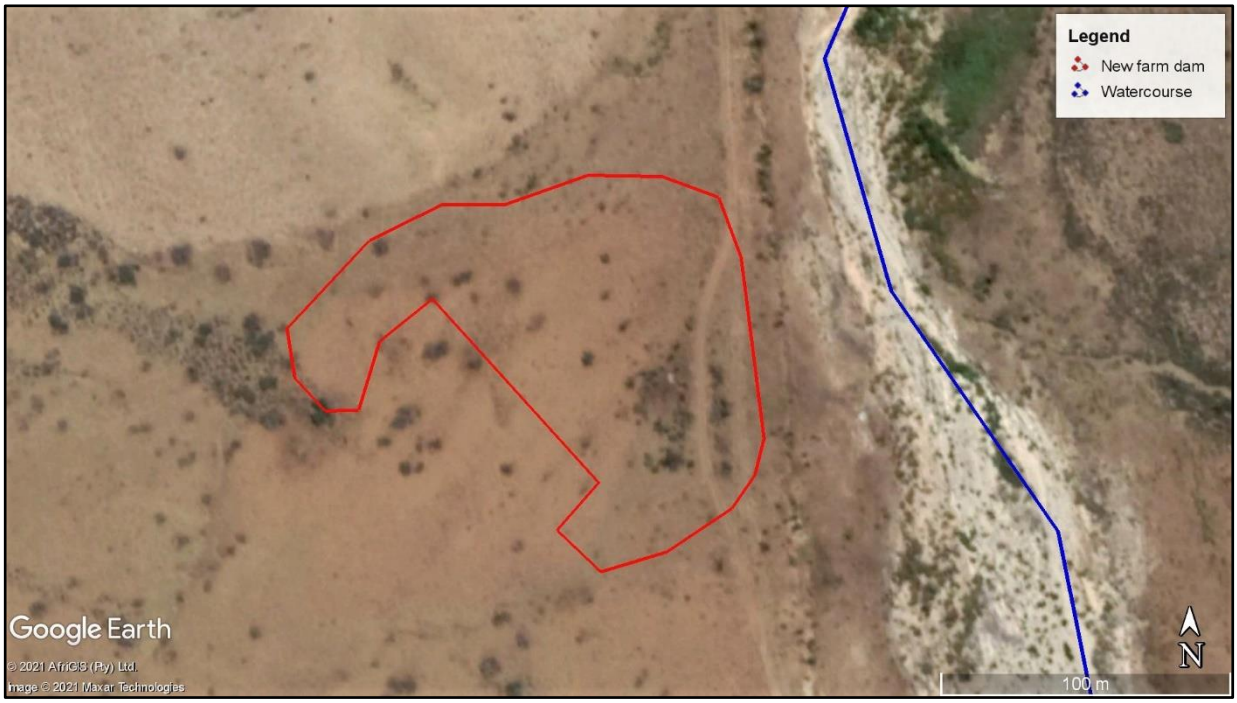
Prince Albert Succulent Karoo (not recorded on site) is found on broad flat-bottomed, colluvium-filled valleys between the north-facing slopes of the Swartberg and the parallel ridges to the north of the Swartberg (Mucina & Rutherford 2006). The unit extends from the Gamkapoort Dam area (west of Prince Albert) along the Swartberg foothills towards Bosmanspoort north of Willowmore (Mucina & Rutherford 2006). It is characterised by low scrub where leaf-succulent vygies and small-leaved Karoo shrubs are dominant (Mucina & Rutherford 2006). Heuweltjies are also an important feature.

8 VEGETATION & FLORA

New farm dam site

The new dam was established inside shale renosterveld (see Map 7 & Photos 1-3). The vegetation around the dam site is still recovering from a landscape-scale fire event in 2018, which burnt a large part of the Groot Swartberg and terminated on the northern foot slopes. Structurally, it can be described as a low (±0.4 m) open (40%) shrubland following Campbell's (1981) classification. Apart from the fire and a farm track leading up the small valley, no other disturbances were noted around the dam site.

Indigenous shrub species recorded in the veld adjacent to the dam and slope directly above include *Galenia africana* (dominant pioneer), *Leipoldtia schultzei, Ruschia pungens* (dom), *R. multiflora, Lampranthus haworthii, Tylecodon wallichii, Cotyledon orbiculata, Crassula rupestris, C. tetragona, Euphorbia mauritanica, Vachellia karroo* (dom along nearby watercourse), *Calobota pungens* (dom), *Chrysocoma ciliata, Elytropappus rhinocerotis, Pteronia incana, P. flexicaulis, Euryops lateriflorus, Oedera squarrosa, Athanasia vestita, Dicoma picta, Searsia pallens, S. longispina, Euclea undulata, Diospyros austro-africana, Carissa bispinosa, Lycium* sp, *Dodonaea viscosa, Hermannia holosericea, Anisodontea triloba* and *Anginon fruticosum*. A few weedy species were also recorded, including *Mesembryanthemum guerichianum* and *Atriplex* sp. No Species of Conservation Concern, regional endemics or protected species were recorded. All the species recorded are widespread and common. The presence of *Dicoma picta* "indicates veld in a healthy condition" (Vlok & Schutte-Vlok 2015).



Map 7 Satellite photo showing the new dam area (outlined in red) prior to construction.

Photo 1 Distance view of farm dam inside shale renosterveld. The dominant yellow shrub is *Galenia africana*.

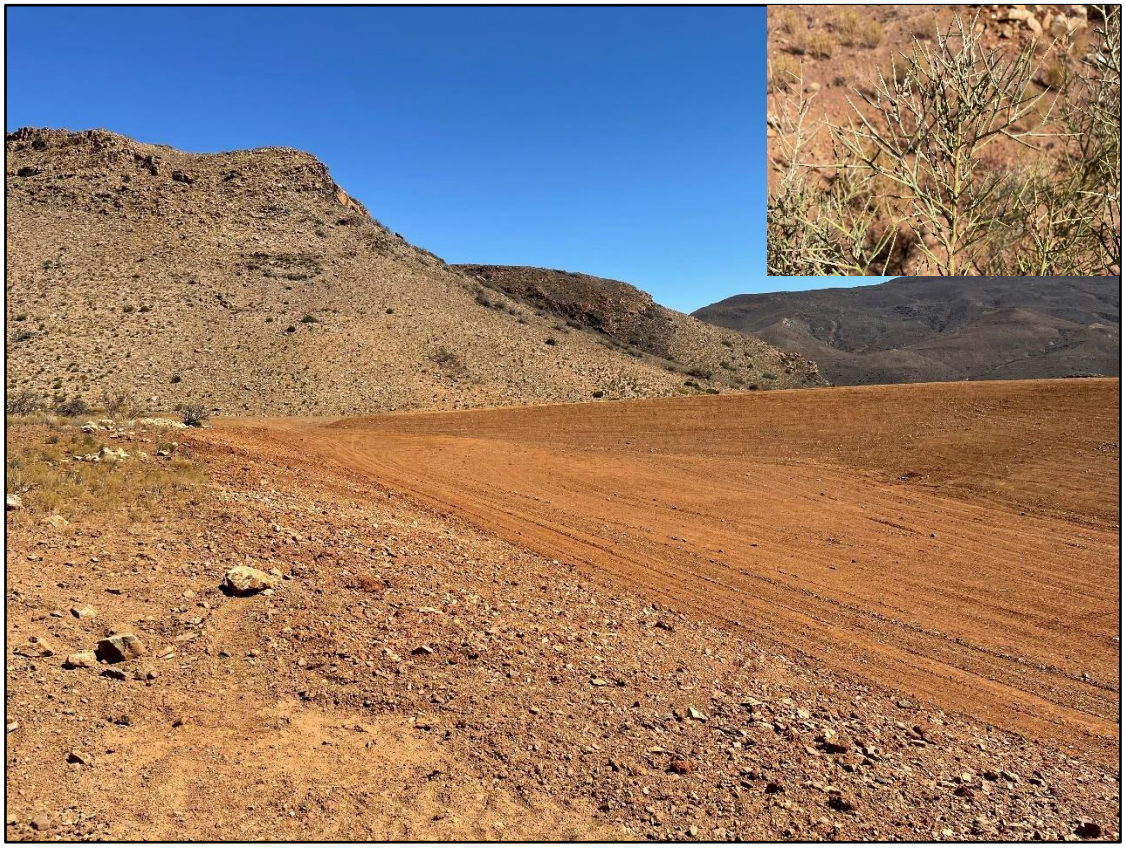
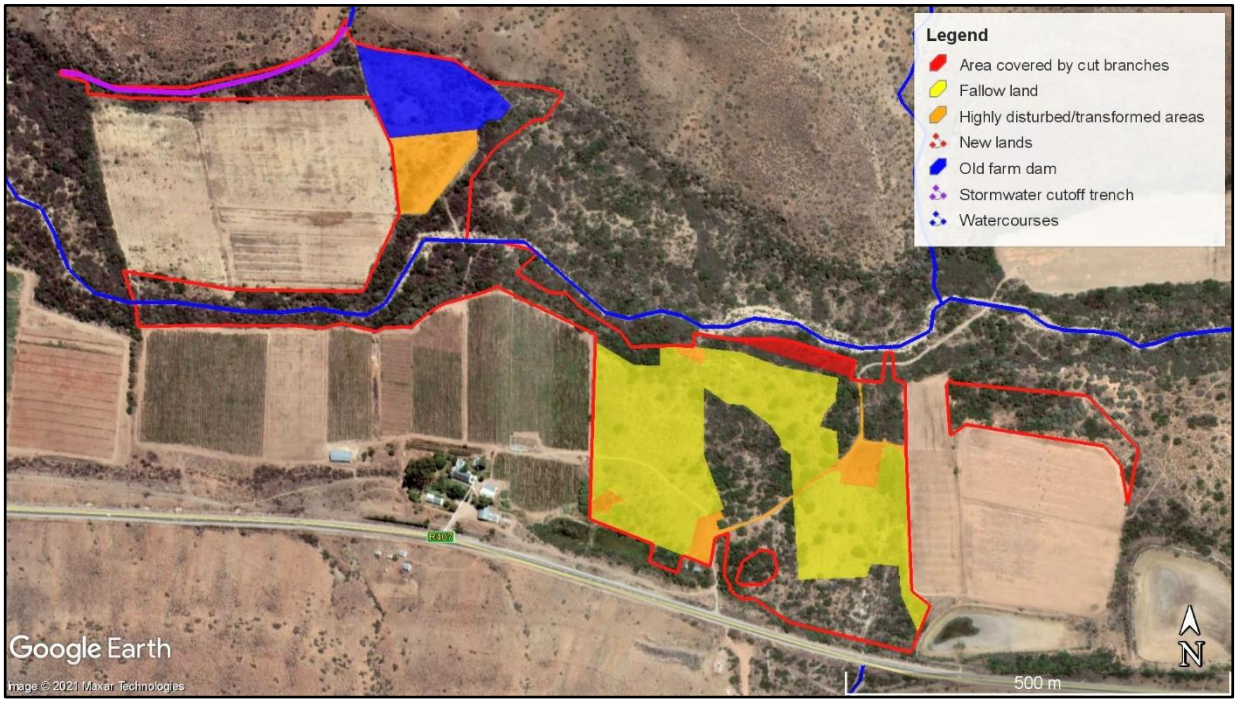


Photo 2 View across farm dam. Insert: Thorny *Calobota pungens*

Photo 3 Section of dam wall with nearby watercourse (whitish area) to the left. Insert: *Dicoma picta*

Cleared new land areas

A large area was cleared inside Southern Karoo Riviere alongside the Cordiers River (see Map 8 & Photos 4-7). Prior to clearing, large parts of it comprised intact Riviere vegetation, fallow land and other disturbed areas, including an old farm dam (in the western part) and goat/ostrich camps (in eastern part). Ostriches and goats were kept on the farm from around 1985 until 2010 (Klue pers. comm.). The old farm dam was filled in and levelled during the clearing operation. GoogleEarth also shows a severely degraded area below the farm dam prior to clearing. Structurally, the undisturbed Riviere vegetation adjacent to the cleared areas can be described as a closed woodland following Campbell's (1981) classification.



Map 8 Satellite photo showing the cleared areas (outlined in red) in context of previous land uses/disturbances.

Indigenous tree and shrub species recorded in the adjacent Riviere vegetation include *Vachellia karroo* (dom), *Calobota pungens, Searsia lancea, S. longispina, S. pyroides, S. pallens, Gymnosporia buxifolia, Galenia africana* (dom pioneer), *Mesembryanthemum junceum, M. granulicaule, Ruschia multiflora, Elytropappus rhinocerotis* (dom)*, Asparagus suaveolens, Melianthus comosus* and *Lacomucinaea lineata.* All the species recorded are widespread and common. A single invasive *Opuntia ficus-indica* was also noted in the riverine corridor next the eastern new land. It is listed as a category 1b invader in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) Alien and Invasive Species List (2016).

Photo 4 Cordiers River next to the eastern new land, lined with *Vachellia karroo* and *Searsia* species.

Photo 5 Area between the Cordiers River and eastern new land covered with branches (photo supplied by Sharples Environmental Services).

Photo 6 View south-eastwards across western new land, with eastern new land visible in the distance to the left.

Photo 7 Eastern edge of western new land, with Riviere scrub on righthand-side and renosterveld covered hillslope in background.

The new stormwater cut-off trench on the northern side of the western new land is located on the edge of Riviere habitat encroaching slightly onto renosterveld (see Photo 8). Some bush cutting was noted in the veld directly above the trench, but this is considered minor and is expected to recover fully without intervention. Shrub species recorded above the trench include *Pteronia incana* (dominant), *Eriocephalus ericoides, Vachellia karroo, Euclea undulata, Drosanthemum cf karrooense, Mesembryanthemum splendens, Tylecodon wallichii, Euphorbia mauritanica, Lycium cf cinereum, Roepera sp, Salsola kali* and *Cissampelos capensis*. Two vygies *Peersia macradenia* and *Ruschia archeri* were also recorded in renosterveld on a sandstone bench above the eastern end of the western new land. *Ruschia archeri* is a regional endemic previously only known from the western Klein Karoo and the Laingsburg area. *Peersia macradenia* is more widespread.

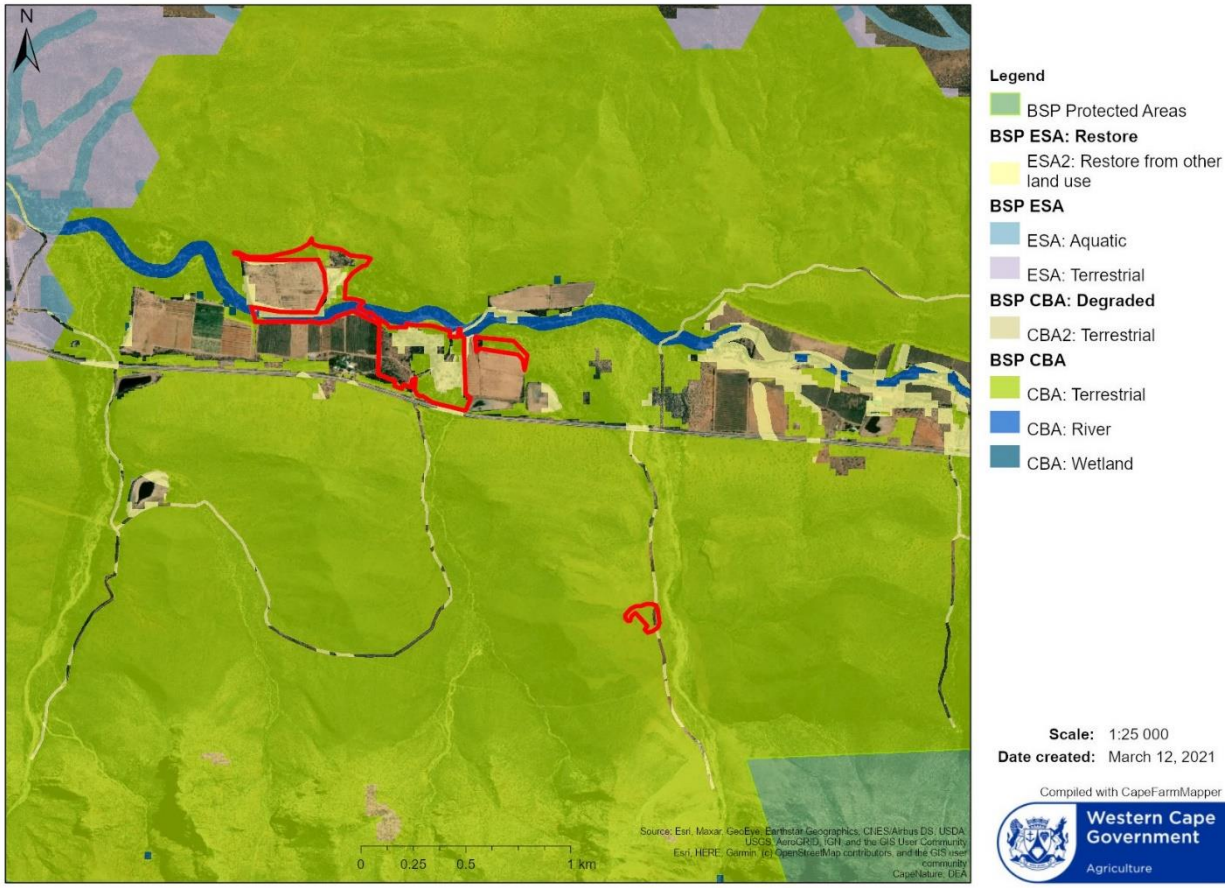
Photo 8 Stormwater cut-off trench above western new land.

9 CONSERVATION STATUS & BIODIVERSITY NETWORK

About 9% of Swartberg Shale Renosterveld is formally conserved in the Groot Swartberg Nature Reserve and Swartberg East mountain catchment area (Mucina & Rutherford 2006). Only 4% is transformed (Skowno *et al.* 2019). Only about 1.5% of Southern Karoo Riviere is formally conserved in the Karoo National Park, and a few other nature reserves, including the Gamkapoort and Karoo Nature Reserves (Mucina & Rutherford 2006). About 86.8% of the latter

still remains (Skowno *et al.* 2019). Both vegetation types are therefore well represented in the larger area and currently not listed as threatened (DEA 2011; Skowno *et al.* 2019).

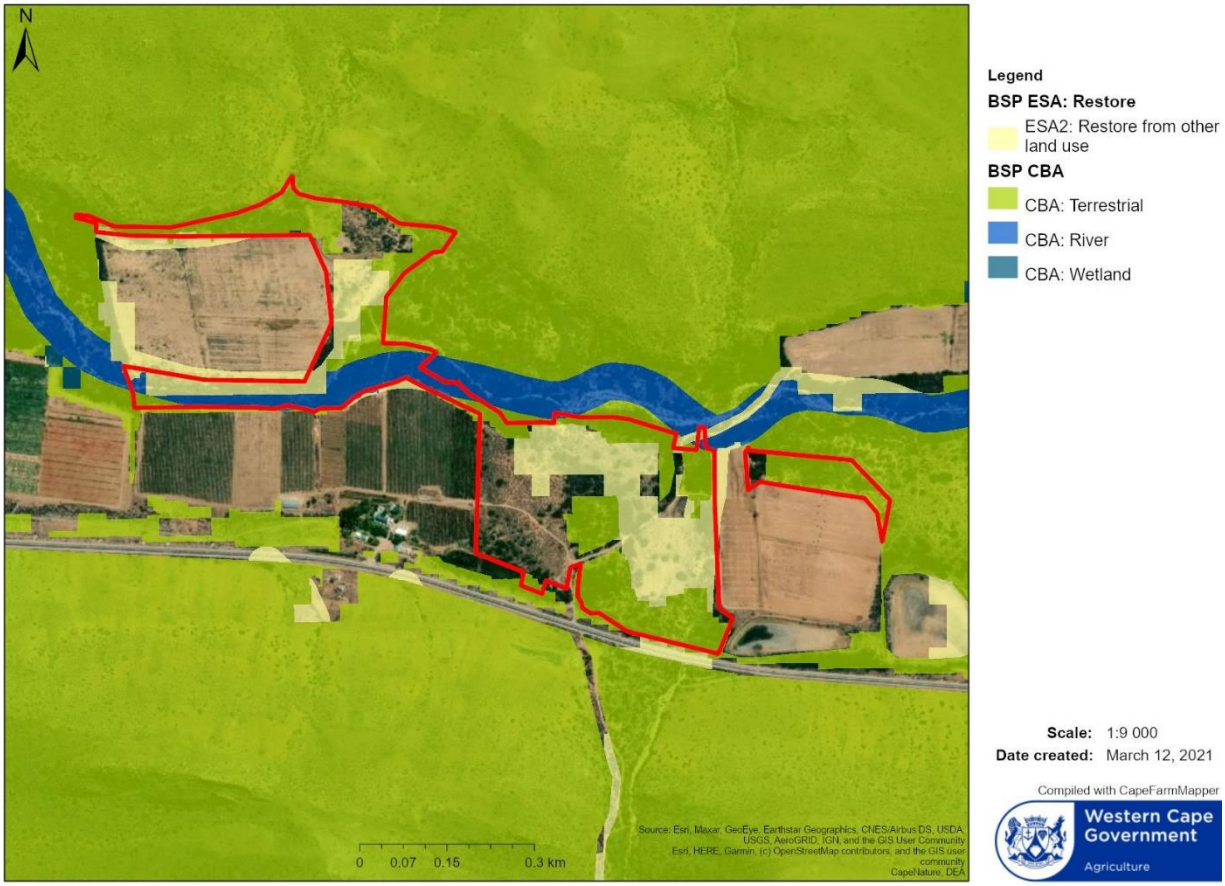
The site forms part of the Prince Albert biodiversity network (see Maps 9 & 10), which comprises an extensive east-west orientated critical biodiversity area (CBA) corridor on the northern side of the Groot Swartberg Nature Reserve. Apart from a bypassing farm road the entire dam site is mapped as a CBA for reasons including the presence of Swartberg Shale Renosterveld, ecological processes (upland-lowland interface), threatened vertebrate (Mountain Zebra habitat) and water resource protection. Large portions of the new land areas are mapped as CBA's and ecological support areas (ESA's), including an aquatic CBA associated with the Cordiers River. Reasons are the same as for the dam site. The Cordiers is also indicated as a FEPA (Freshwater Ecosystem Priority Areas) river corridor.



Map 9 Biodiversity network map of the larger area, with the disturbed areas outlined in red.

Due to its relatively small size, the new dam should not have a significant implication for the CBA network. Disturbed areas around the dam can be rehabilitated, which will reduce the residual impact. The impact of the new land areas is another matter as it impairs a north-south connection across the valley, as well as the river itself, of which sections have been disturbed/modified. This can be addressed by means of rehabilitation of the riverbanks and a

corridor of a suitable width. A big concern is the potential for a massive silt washaway during a large rainfall event.



Map 10 Close-up biodiversity network map of the new land areas (outlined in red).

CBA's are defined as areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure (Pool-Stanvliet *et al.* 2017). These sites are selected for meeting national targets for species, habitats and ecological processes (Pool-Stanvliet *et al.* 2017). Many of these areas support known occurrences of threatened plant species, and/or may be essential elements of designated ecological corridors. Loss of designated CBA's is therefore not recommended. ESA's, on the other hand, are supporting zones required to prevent the degradation of CBA's and Protected Areas. With the cleared areas affecting certain ESA's, one can expect an impact on the network.

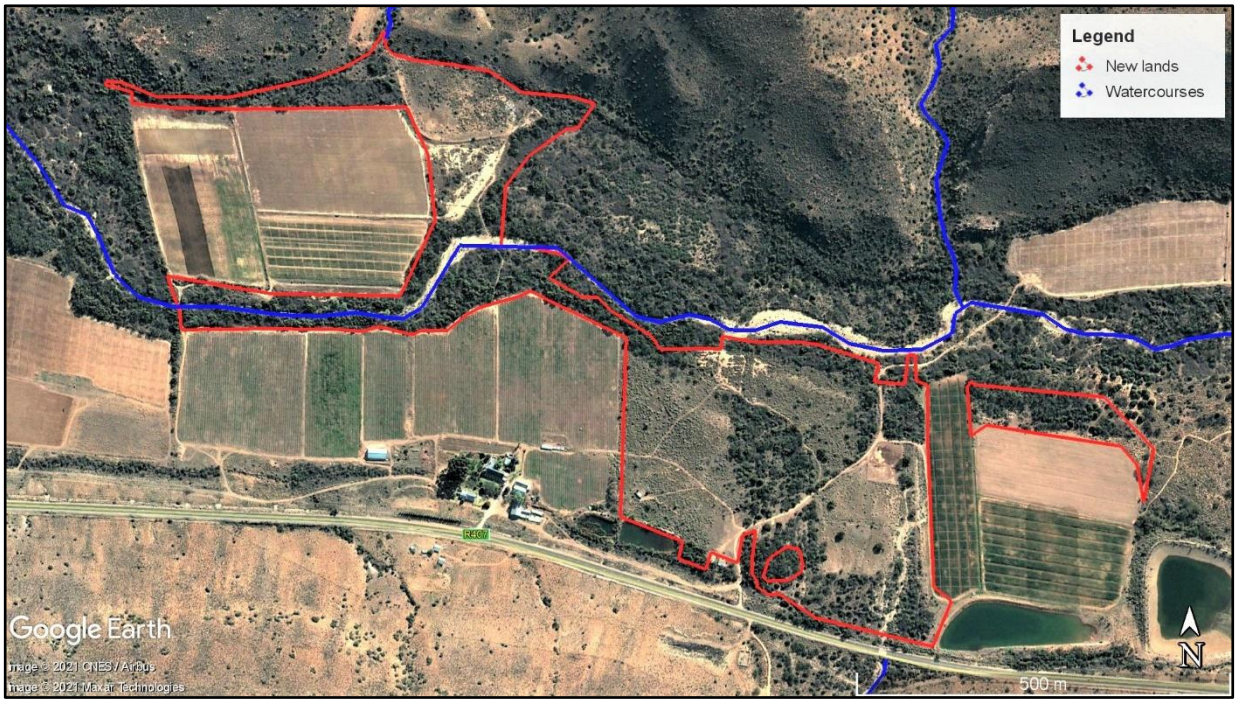
10 *EX POST FACTO* IMPACT ASSESSMENT

The impact on vegetation can be quantified by means of calculating the areas of natural vegetation and fallow land cleared. According to Table 1, 1.22 ha of Swartberg Shale Renosterveld and 12.13 ha of Southern Karoo Riviere were cleared by earthmoving machinery. An additional 7.08 ha of fallow land was also cleared. The age of the fallow land is estimated to be around 15 years, so it qualifies as 'natural vegetation' in terms of the NEMA definition. Map

11 gives a glimpse of the cleared new land areas in August 2010, the approximate threshold date for the NEMA definition of natural vegetation regarding fallow land. The rest of the cleared areas (3.14 ha) comprised severely degraded areas, such as an old farm dam, buildings, farm roads and other disturbed areas. These areas should not be treated as natural and should be left out of the equation. Apart from the fallow land areas, the quality of the cleared vegetation should be considered good to relatively undisturbed.

Table 1 Areas cleared/transformed.

Vegetation/land use types	New farm dam:	New land areas:
Good quality renosterveld	**1.22 ha**	
Good quality Riviere vegetation		**12.13 ha**
Fallow land		**7.08 ha**
Highly disturbed areas, e.g. farm dam and goat/ostrich camps		3.14 ha



Map 11 Historical GoogleEarth image illustrating the land use and transformed state of the new land areas in August 2010.

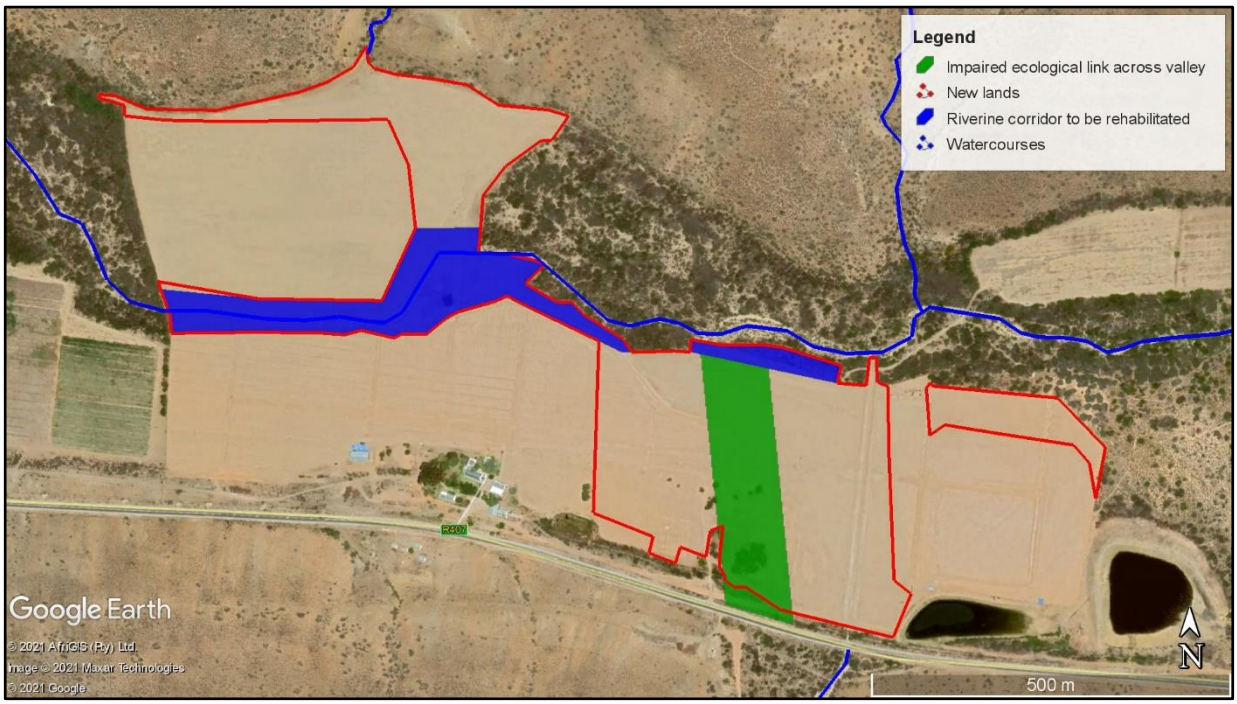
Due to both Swartberg Shale Renosterveld and Southern Karoo Riviere being well represented in the larger area, the impact on vegetation type *per se* is of a low to moderate concern. With regards to the biodiversity network, the impact is of greater significance, especially the new lands where the Cordiers River (an aquatic CBA) and an ecological (CBA and ESA) link across the valley were impaired. Restoration of the ecological link across the valley will be difficult to achieve, but at the very least, the Cordiers and a buffer of an appropriate width should be

rehabilitated and restored to function accordingly. Of particular concern is the siltation threat currently posed by the exposed riverbanks.

Table 2 presents an *ex post facto* impact assessment of the current situation compared to a scenario if mitigation measures were applied. The aquatic CBA (Cordiers River) is of particular importance due to the sensitivity/scarcity of water resources in the Karoo. The impact is however not considered to be permanent and can be restored if acted upon quickly. Probably the most important mitigation measure that should have been considered would be the determination of a suitable buffer for the aquatic CBA, as well as a possible ecological link across the eastern cleared land. The recommended rehabilitation of these corridors is illustrated on Map 12.

Table 2 Impact on vegetation type and biodiversity (CBA) network.

Mitigation	Extent	Duration	Intensity	Probability of occurrence	Significance	Confidence
Without mitigation (current situation)	Site & immediate surroundings	Med	High	High	High (-)	Med-high
With mitigation (prior to clearing)	Site & immediate surroundings	Med	High	High	Low-medium (-)	Med-high



Map 12 Disturbed riverine corridor (blue) proposed for rehabilitation/restoration. Consideration should also be given to the rehabilitation of an impaired ecological link (green) across the valley.

It is unlikely that any Species of Conservation Concern (SCC), regional endemics or protected species were directly affected by the clearing activities. Apart from a regional endemic (*Ruschia archeri*) recorded on a sandstone bench outside one of the cleared areas, all the recorded species are widespread and mostly common. The possibility of regional endemics being present at the dam site prior to the fire event must however not be excluded. With regards to the new dam, a useful mitigation measure would have been to use the cleared topsoil (containing indigenous plant seeds and nutrients) to rehabilitate the front slope of the dam wall and other disturbed surfaces. It is uncertain what has happened to the topsoil and if this can still be achieved. In any event, stabilisation of the exposed slopes by means of logs or netting and reseeding may still be needed to prevent erosion.

As an indirect impact, soil disturbance caused by clearing activities will provide ideal conditions for the establishment of invasive alien species. As an operational phase impact, alien control will be required in and around the rehabilitation areas as an ongoing management concern. A further operational phase concern is the trampling of vegetation in the rehabilitated areas by livestock. If livestock is kept on the farm and allowed to enter the riverine areas, appropriate fencing should be erected and maintained around the rehabilitation areas until it is fully recovered.

11 CONCLUSION & RECOMMENDATIONS

The vegetation recorded adjacent to the cleared areas is described as good quality Swartberg Shale Renosterveld and Southern Karoo Riviere. Apart from farming activities, few other disturbances were noted. Alien plant infestation is also minimal. Due to both vegetation types being well represented in the larger area and not threatened, the impact on vegetation type *per se* is of a low to moderate concern. Apart from a regional endemic (*Ruschia archeri*) recorded on a sandstone bench outside one of the cleared areas, all the recorded species are widespread and mostly common. No Species of Conservation Concern were recorded.

With regards to the biodiversity network, the impact is of greater significance, especially the new lands where the Cordiers River (an aquatic CBA) and an ecological (CBA and ESA) link across the valley were impaired. Restoration of the ecological link will be difficult to achieve, but the Cordiers and a buffer of an appropriate width must be rehabilitated and restored to function accordingly. Of particular concern is the siltation threat currently posed by the exposed riverbanks. Erosion risk is high on fine-textured, deep soils associated with the banks.

The following recommendations should be considered in rehabilitating the disturbed areas:

- ❖ Allow renosterveld species to re-establish on the disturbed surfaces around the dam site. Stabilisation (e.g. reseeding and log stabilisation) of the steep front slope of the dam wall may also be required. If still available, topsoil (containing indigenous plant seeds and nutrients) cleared from the dam site when it was constructed should be salvaged and spread over the disturbed surfaces. Seed of locally indigenous species can also be obtained from local nurseries, seed collecting or seed-bearing branches cut from local species. Please note that the surrounding vegetation is still recovering from the last veld fire.
- ❖ Rehabilitate the disturbed banks and a buffer of a suitable width along the Cordiers River. Extensive stabilisation of the exposed riverbanks and adjacent surface will be required to prevent soil/silt loss during a major rainfall event. It is recommended that a detailed rehab plan be prepared for this purpose. The following rehab measures are in order of sequence:
  - Before the riverine area is revegetated it must first be reshaped to allow for maximum water retention, e.g. the lowering of embankment profile and creation of swales outside the main channel. The final surface should be rough, not smooth.
  - As a next step, stabilise the exposed river banks, as well as all visible entry points of any tributaries. Geo-fabric netting, sand bags, spreading of cobbles and cut branches can be used for this purpose.
  - Reseed/revegetate the disturbed surfaces. Select indigenous species that are suitable for the local conditions. Local tree/shrub species that can be used in the riverine area include *Vachellia karroo*, *Searsia lancea, S. pyroides, Gymnosporia buxifolia, Diospyros lycioides, Eriocephalus ericoides* and *Carpobrotus edulis*. The latter is a good groundcover species. Commercially available grass species include *Ehrharta calycina, Eragrostis curvula* and *Themeda triandra*. The best time for sowing seed in this area would be immediately after the late summer-autumn rain. See Sue Milton-Dean and Richard Dean's veld restoration guidelines (Ecological Consulting - renu-karoo.co.za (renu-karoo.co.za) for further details.
  - An affordable source of seed and aid to rehabilitation would be to cover the banks and bare surfaces further away with seed-bearing cut branches collected from the adjacent riverine vegetation.
  - Approach Sue Milton-Dean and Richard Dean, local ecologists from Prince Albert, for more practical advice and hands on guidance with regards to rehabilitation.
- ❖ If the ecological link across the valley is to be rehabilitated, the same approach as above (for the riverine area) is recommended.
- ❖ It will be important to keep livestock out of the rehabilitation areas until it is fully recovered. These areas will need to be fenced off if livestock are kept on the farm and allowed into

the riverine areas.

- Alien clearing will be critical in the rehabilitated areas. Continually monitor the areas for infestation by invasive aliens, such as *Prosopis glandulosa, Acacia mearnsii* and *Tamarix ramosissima*. One-year old seedlings can be hand-pulled, preferably when soil is wet after a rainfall. If left to grow, removal becomes more difficult and costly. Alien seedlings should not be allowed to grow to a size that requires mechanical or chemical means of removal.
- Given the location of the farm, one would expect a slow rehabilitation process, depending on the amount of intervention. Recovery will very much depend on rainfall events, the lack of which will mean that the rehabilitation areas need to be irrigated. At least three years (including two winter seasons) should be allowed for monitoring progress of rehabilitation. If rehabilitation is started immediately, one should start seeing results after the next winter months.

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BRIEF CV OF SPECIALIST

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PROFESSIONAL STATEMENT
Environmental assessment professional and biodiversity specialist with over 20 years of experience mainly in the Western Cape Province, but also in the Northern Cape and Eastern Cape. Experience in Environmental Impact Assessments (EIA's), biodiversity assessments, Environmental Management Programmes (EMPr's), Environmental Control Officer (ECO) duties and environmental due diligence investigations.

WORK EXPERIENCE

1989-1990 Nature Conservation Officer in the South African Air Force, based at Langebaan Road Air Force Base

1997-2005 Employed as principal environmental specialist at Planning Partners, a multi-disciplinary consultancy specialising in town and regional planning, environmental planning and landscape architecture. Duties included the conducting of EIA's, compiling EMPr's, ECO duties, biodiversity surveys and status quo environmental assessments for spatial development frameworks.

2000-2006 Examiner for the Board of Control for Landscape Architects (BOCLA), responsible for the setting up and marking of the Environmental Planning Section of exam paper.

2005-current Started Mark Berry Environmental Consultants in June 2005. Responsibilities include office management, seeking tenders, conducting EIA's, compiling EMPr's, construction site environmental audits, biodiversity surveys, etc. A relationship is maintained with previous employer, and, among other, undertook land-use surveys and reporting for the Eskom's site safety reports for three proposed nuclear power plants in the Western and Eastern Cape Provinces.

QUALIFICATIONS
- BSc (1988) University of Stellenbosch
- BSc-Hons in Botany (1991) University of Stellenbosch
- MSc in Botany (1993) Nelson Mandela Metropolitan University
- PhD in Botany (2000) Nelson Mandela Metropolitan University.

PROFESSIONAL MEMBERSHIP
Professional member (reg. no. 400073/98) of the South African Council for Natural Scientific Professions (SACNASP).

REFERENCES
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DECLARATION OF INDEPENDENCE

I Mark Gerald Berry, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent:
  - **other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity**; or
  - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- in terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the Specialist: 

Name of Company: Mark Berry Environmental Consultants

Date: 16 March 2021