Botanical Impact Assessment for

disturbed sites on Outeniqua Game Farm

(farms 373 & 420)

in the Mossel Bay district.

This report was prepared during June 2019 by:

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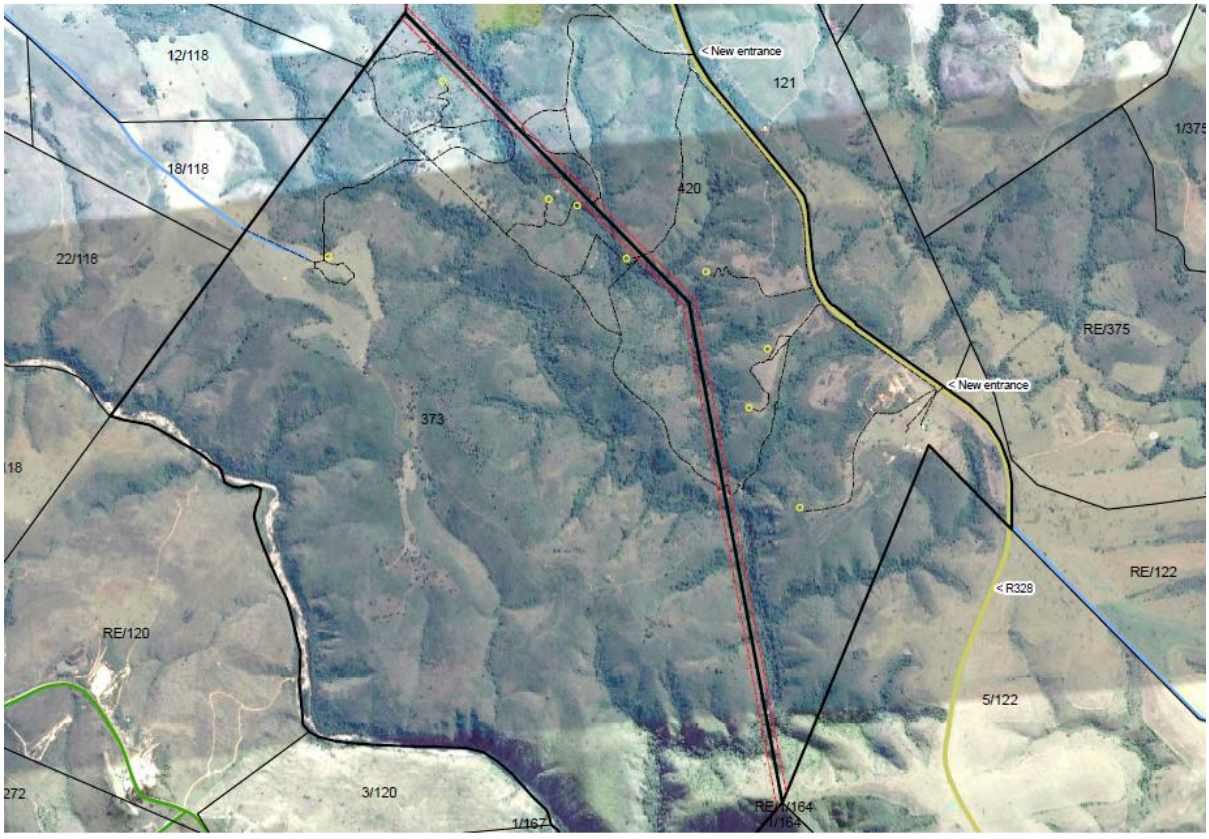
INTRODUCTION

The landowner of the Outeniqua Game Farm in the Mossel bay district (for location see Map 1) allegedly cleared natural vegetation on several sites on farm portions 373 and 420 to establish agricultural lands, to establish a water reservoir and shed area and along upgraded access routes (DEA&DP correspondence with reference 14/1/1/E3/9/10/3/L1019/19, dated 18th March 2019).



Map 1: The location of Outeniqua Game Farm (farms 373 & 420) in the Mossel Bay district.

The purpose of this report is to provide a botanical impact assessment and to suggest mitigation measures for the disturbed sites.

Jan Vlok of RES surveyed the affected area in May 2019 and the results of my field study and recommendations are provided here.

METHODOLOGY AND UNCERTAINTY REGARDING STUDY RESULTS

The national status of the affected vegetation type was determined by means of consulting Mucina *et al (*2006) and the regional conservation value of the affected vegetation was determined by means of consulting the updated fine-scale conservation plan for the region by Pence (2017). I am thus confident that the methodology followed complies with:

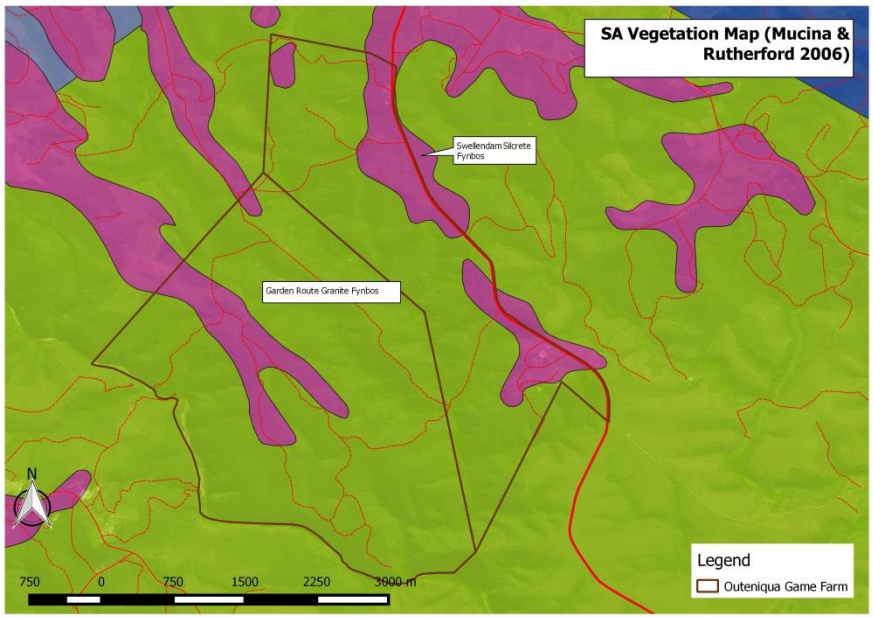
1. Appendix 6 of the 2014 National Environmental Management Act, 1998 (No. 107 of 1998) (NEMA) Environmental Impact Assessment (EIA) Regulations (and as amended), detailing the requirements for specialist's reports; and,
2. The principals outlined in the *Guideline for Biodiversity Specialists* (WC: DEA&DP, 2005) and those of the *Western Cape Biodiversity Spatial Plan Handbook* (Pool-Stanvliet et al, 2017).

The disturbed sites were surveyed on foot to determine the ecological condition of the affected areas and to establish if any rare or endangered plant species (*sensu* Raimondo *et al*, 2009 and updates thereof in www.sanbi.redlist) are, or may have been present in the disturbed sites.

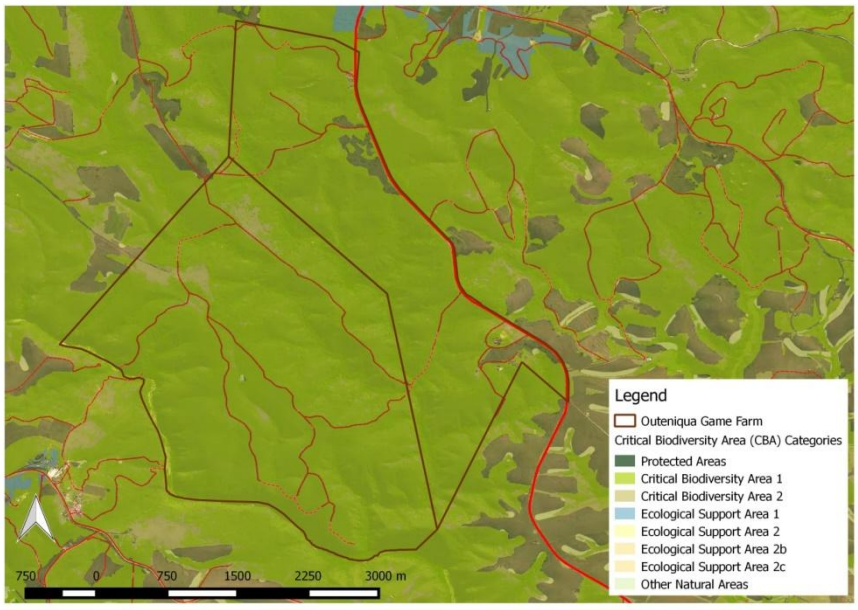
My field survey was conducted in autumn and all the sites were burned during 2018. To my opinion the post-fire conditions were ideal to survey the sites and I am thus confident that my findings and recommendations comply with the guidelines provided in the *Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape (*2nd edition, 2016*)*, the *Guideline for Biodiversity Specialists* (DEA&DP, 2005) and those of the *Western Cape Biodiversity Spatial Plan Handbook* (Pool-Stanvliet et al, 2017).

STUDY RESULTS

Following the national vegetation map the affected vegetation consists of Swellendam Silcrete Fynbos (status = Endangered) and Garden Route Shale Fynbos (status = Critically Endangered). The regional conservation plan indicates that all the disturbed sites are located within Critical Biodiversity Areas (CBA1 & CBA2) (see Maps 2 & 3).



Map 2. National vegetation types of the affected vegetation.



Map 3: Regional conservation plan for the affected vegetation on the two properties.

For easy reference I indicate the location of the seven disturbed sites on Map 4.

Site 1 consists of establishment of a reservoir.

Site 2 is clearing of vegetation to establish agricultural land.

Site 3 is mowing of vegetation.

Site 4 is clearing of vegetation to establish agricultural land.

Site 5 is upgrading of a road.

Site 6 is infilling of watercourse.

Site 7 is clearing of vegetation to establish a water reservoir and shed area.

Map 4: Location of the seven disturbed areas.

Sites 1 &2 (mapped as Swellendam Silcrete Fynbos) clearly consisted of an old agricultural land that was overgrown with *Acacia cyclops* and *Acacia mearnsii* (see Photo 1). The fact that the area consisted of old agricultural lands is evident from old contour walls. To my opinion no natural vegetation of any significance to conservation was disturbed when the alien vegetation was cleared to re-establish the agricultural land.

Photo 1: Sites 1 and 2 (as indicated on Map 4) 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.

At **Site 3** (mapped as Garden Route Granite Fynbos) the vegetation was slashed to increase the grazing value of the veld (see Photo 2). From the existing vegetation it seems as if this practice has been followed for many years along the crest of this ridge. The very high abundance of species such as *Bobartia robusta, Lanaria lanata, Moraea polyanthos,* etc. indicates that this area was very often slashed or mowed in the past. Apart from alien vegetation (*Acacia cyclops* and *Acacia mearnsii*) it seems as if only indigenous herbs and shrubs that benefit from such disturbance (e.g. *Anthospermum aethiopicum, Athanasia trifurcata, Metalasia acuta, Stoebe plumosa*, etc.) were removed in the clearing operation. These 'weedy' species will rapidly re-establish themselves. 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.

Site 4 (mapped as Swellendam Silcrete Fynbos) is a very similar case to Site 2 where the area consisted of an old agricultural land that was overgrown with *Acacia cyclops* and *Acacia mearnsii*. I could not find any evidence that natural vegetation of any significance to conservation was cleared at this site. There may have been some 'weedy' indigenous species,

such as *Anthospermum aethiopicum, Athanasia trifurcata* and *Metalasia acuta* that establish on old lands, but it is very difficult to say to what extent such species were present.

Photo 2: Site 3 (as indicated on Map 4) where the vegetation was slashed.

At **Site 5** (mapped as Garden Route Granite Fynbos) a 4X4 track was upgraded to access the riverine area where Blackwattle (*Acacia mearnsii*) is being eradicated. 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 (see Photo 3). In these road bend areas one can argue that the road width exceeds 4 m. The natural vegetation on this north-west facing slope is not in a healthy ecological condition. The area was clearly subjected to a high burning frequency and severe grazing pressure by domestic stock. Non-sprouting overstorey species, such as *Protea lanceolata*, have been reduced to a few individuals in rocky outcrops and the vegetation is generally poor in species. No rare or threatened species was found in the area or are suspected to still occur in the area. The species recorded in the affected area 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*.

Photo 3: Bends in the steep section of the upgraded road at Site 5. Note the soil erosion from these fragile granitic soils.

Site 6 (mapped as Garden Route Granite Fynbos) is located just below Site 5 where the upgraded road crosses the river. Very dense stands of Blackwattle were cleared in this area and the subsequent fire was of a very high intensity (see Photo 4). Very few indigenous plants managed to re-establish at this site. On the embankment they are mostly the grasses *Cynodon dactylon, Eragrostis curvula* and *Panicum deustum* and *Juncus capensis* and *J. cephalotes* in the water coarse area. Three plants of either a peculiar variant of *Pelargonium capitatum* or perhaps a new threatened species of *Pelargonium* grow on the embankment, just above the infilled area. This potentially threatened species was not negatively affected, but

most probably rather positively affected by the activities. There is no indication that natural vegetation was negatively affected upstream or downstream from the infilled area.

Photo 4: 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.

At **Site 7** (mapped as Swellendam Silcrete Fynbos) an area of at most 1 ha was cleared to establish a reservoir, a shed and general work area. It is very difficult to establish the exact nature of the vegetation that was cleared, but the remnant vegetation on the similarly flat area immediately to the east of the site is probably the best reference vegetation. This reference site was clearly also an old agricultural land that became overgrown with Blackwattle. Only a few grass species (*Cynodon dactylon* and *Eragrostis curvula*) and early pioneer shrubs (*Anthospermum aethiopicum, Athanasia trifurcata* and *Metalasia acuta*) managed to establish amongst the Blackwattle on the old lands. 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).

Photo 5: The ca. 1 ha area cleared at Site 7. Note the dense stands of Blackwattle to the left of the road that is probably the best reference site for the cleared vegetation.

CONCLUSIONS AND RECOMMENDATIONS

Following the literature the seven disturbed areas all fall within very sensitive sites as the affected vegetation is classified as Endangered and Critically Endangered and since the affected areas were mapped as Critical Biodiversity Areas (CBA1 & CBA2).

It is, however, quite clear that the blanket Critical Biodiversity Area classification for this farm is not correct as many of the mapped CBA's consisted of old agricultural lands that was overgrown with invasive aliens (*Acacia cyclops* and *Acacia mearnsii*). The poor quality of the transformation layer that was used to determine the conservation status of this area is clearly the reason why such highly disturbed sites were mapped as CBA's. Even the remnant indigenous vegetation on this farm is not in a healthy ecological condition as the farm was clearly subjected over a long period to a high fire frequency and heavy grazing pressure soon after the burns. The poor state of the vegetation was subsequently further exacerbated by the invasion of alien vegetation.

To my opinion none of the seven disturbed sites (see Map 4) had natural vegetation of a high conservation value, either through their intrinsic biodiversity or functioning in important ecological processes. The only recognized threatened species found during the survey (*Freesia fergusoniae*; status = Endangered) may have been present in the area cleared at Site 7, but there is no conclusive evidence to reach such a verdict. The potentially threatened species at Site 6 (*Pelargonium cf. capitatum*) clearly benefitted from the clearing of the dense stands of Blackwattle, with no indication that the infilling of the streambed having had a negative impact.

The most significant disturbance of natural vegetation was caused when the road was upgraded at Site 5. Although not in a healthy ecological condition the vegetation here probably warrants a status of Ecological Support Area and should be treated accordingly. It is debatable if the action at this site triggers NEMA/NEMBA regulations, but I recommend that this road is retained to access the areas where Blackwattle is being eradicated. Although there is no indication of a loss of biodiversity of significance to conservation, the large scale soil disturbance caused by the cutting this road is of concern - especially since the granitic soils of

the site is very prone to erosion. Mitigation actions will have to be taken to ensure that the road surface and road embankments will not erode any further.

The vegetation at Site 3 probably also warrants a status of Ecological Support Area and the cutting of the vegetation at this site will not be compatible with the objectives of an Ecological Support Area. I do not believe that the cutting of the vegetation has had a serious negative impact on biodiversity or the ecological functioning of the area, but the vegetation should not be cut again unless the area must function as a fire break in future.

The possible transgression of environmental legislation at the seven sites should be seen in the positive contribution of eradicating invasive alien vegetation on this farm, which in its own right complies with other legislation. The eradication of alien vegetation on this farm will ultimately benefit the local environment considerably more than the possible negative impacts of the relatively minor disturbances caused at the seven sites discussed in this report.

In conclusion:

1. I did not find any conclusive evidence that the disturbance caused at the seven sites had a serious negative impact on the intrinsic biodiversity of the affected vegetation types or the ecological functioning of the incorrectly mapped Critical Biodiversity Areas.
2. It is highly debatable that any of the actions on this farm triggered environmental regulations.
3. I do believe that the upgrading of the road at Site 5 holds a potential negative impact regarding soil erosion and that the landowner must take actions to ensure that soil erosion will be curbed along this road.
4. The removal of alien vegetation on this farm will have a highly positive impact on the affected environment, certainly ratifying the CBA/ESA intentions of the area. I suggest that the landowner develop a sound alien eradication plan for the farm that will consider all the relevant environmental legislation.

REFERENCES

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