Botanical Impact Report

for the proposed new agricultural development

on Corner farm

(portion 7 of farm 466, Caledon).

This report was prepared during December 2017 by:

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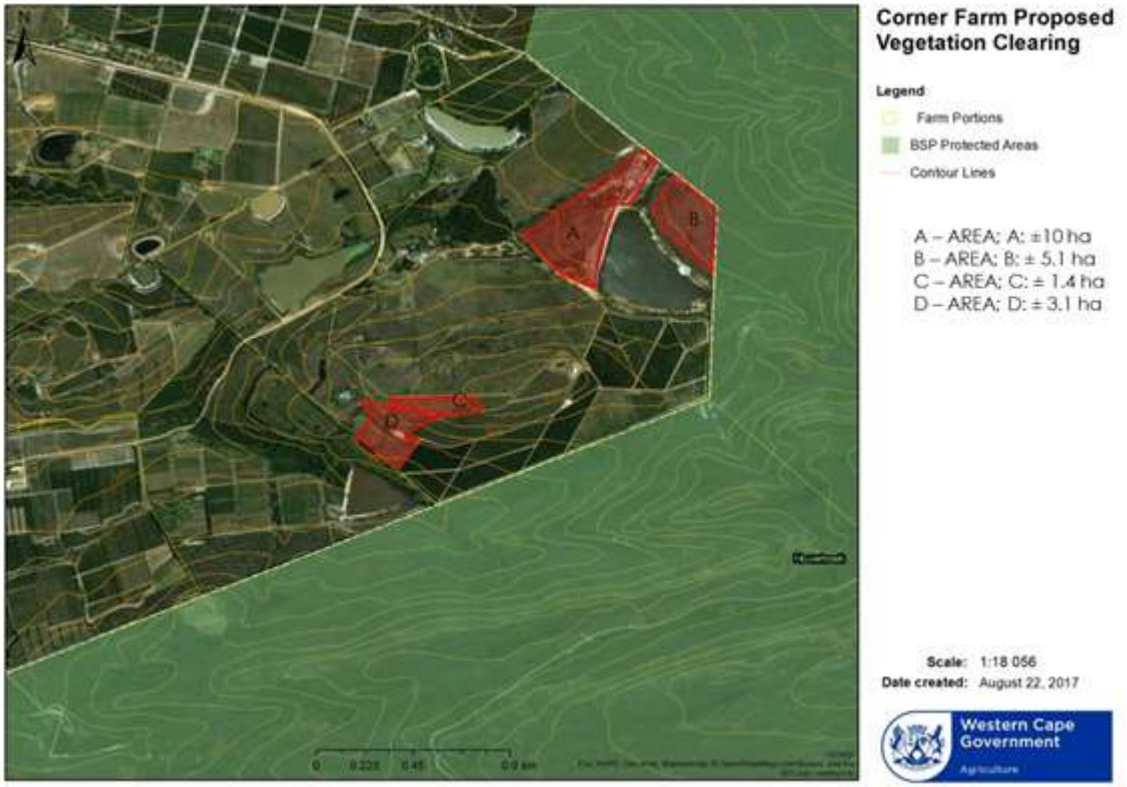
INTRODUCTION

The purpose of this report is to provide a botanical impact assessment for the establishment of ca. 20 ha of apple orchards of Corner Farm in the Elgin Valley near Grabouw (portion 7 of farm 466, Caledon). The location of the proposed development sites on the farm is indicated on Map 1.



Map 1: The extent and location of the proposed development areas on Corner Farm. Note the location of areas A,B,C & D as I will refer to them accordingly in this report.

The terms of reference for this study is to comply with the principals outlined in the *Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape (2nd edition) 2016.*

Jan Vlok of RES surveyed the affected area during November 2017 and the results of my field study are provided here. My declaration of independence is provided as Appendage 1, my impact assessment in Appendage 2 and my CV as Appendage 3.

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 significance of the affected vegetation was determined by means of consulting the fine-scale conservation plan for the region, as was adjustments by Pence (2014). I am thus confident that the methodology followed and proposed recommendations carefully consider national and regional conservation principles as are prescribed in the Guideline for biodiversity specialists (DEA&DP, 2005).

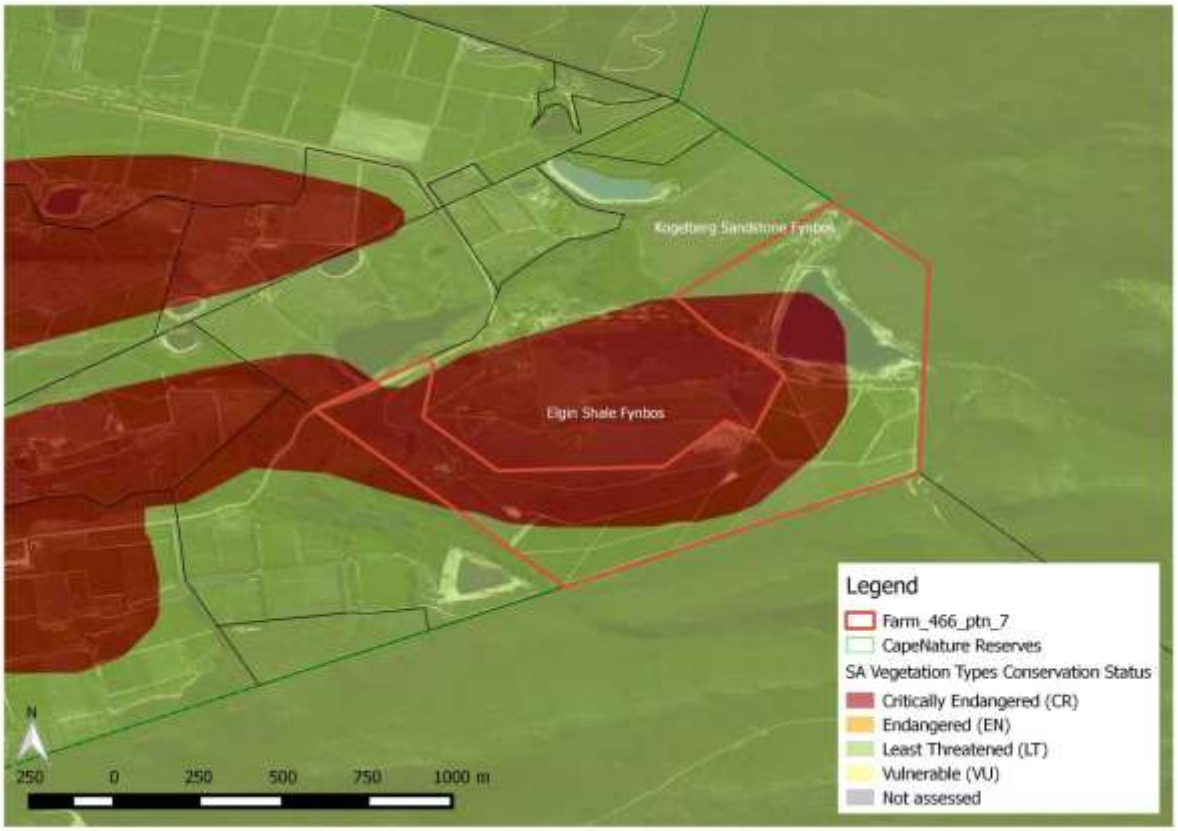
The entire proposed development site was surveyed on foot to determine the ecological condition of the sites and to establish if rare or endangered plant species (*sensu* Raimondo *et al*, 2009 and updates thereof on www.sanbi.redlist) are, or may be present.

The survey period was ideal to detect the occurrence of species, despite 2017 being a very dry year. The survey followed some late rain and most of the species were still in flower. The affected vegetation was 2-5 years old, which facilitated identification of most of the local taxa, with perhaps the non-sprouting Ericaceae. It is hence possible that I missed some rare *Erica* species in my survey, but it is unlikely as none are known from the immediate vicinity.

I am thus confident that my indication of non-sensitive sites fully comply with the recommendations provided in the *Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape (*2nd edition, 2016*)* and those of the *Guideline for Biodiversity Specialists* (DEA&DP, 2005).

STUDY RESULTS

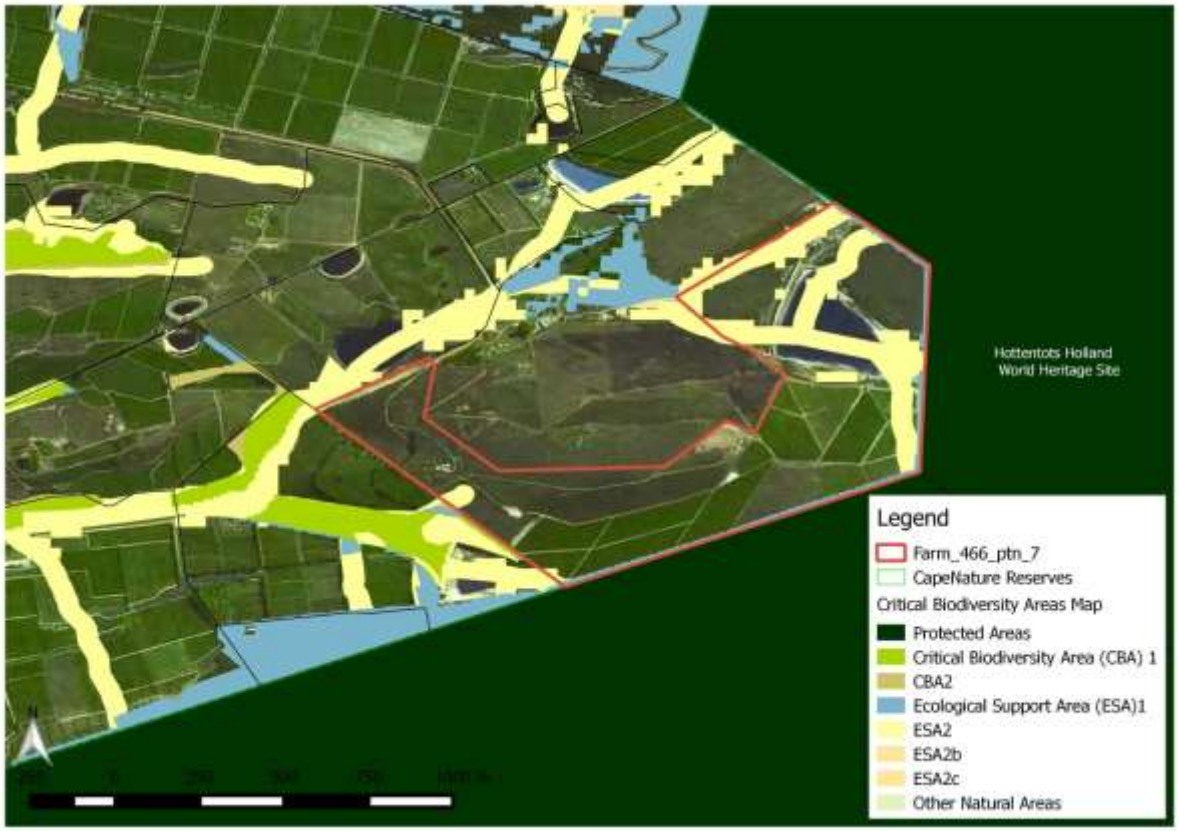
Following the national vegetation classification the proposed development area consists of Kogelberg Sandstone Fynbos (status = Least Threatened) in sites A & B and Elgin Shale Fynbos (status = Critically Endangered) in sites C & D (see Map 2).



Map 2: National vegetation types in the affected area.

Corner Farm abuts the Kogelberg Nature Reserve Complex, which forms part of the Hottentots Holland World Heritage Site. The proposed development sites are thus all in close proximity (<2 km) to a Nature Reserve and World Heritage Site.

The regional conservation plan shows that the water drainage area between sites A & B consists of an Ecological Support Area (ESA2) [see Map 3]. None of the proposed development sites intersects a Critical Biodiversity Area.



Map 2: Regional conservation plan of the affected area.

The fynbos vegetation at sites A & B consists of a very similar flora. Both sites were heavily disturbed previously. Site A was ploughed previously, but not tilled for a number of years (about 3 years). A number of species re-established here from seed, e.g. several species of serotinous Proteaceae, that blew in from the adjacent nature reserve after the recent fire (see Photo 1). Most of site B was heavily disturbed several years ago probably when soil was removed to construct the adjacent dam.

A total of 119 plant species were recorded on sites A & B (see Appendix 4), most of these species occurred in small undisturbed patches within these two sites. This probably represents about 70-80% of the total number of species that occur in the affected areas. Many of the

seedlings found were too small to identify with certainty (especially the Ericaceae). Only two of the species recorded are threatened species, *Diastella thymelaeiodes ssp. thymelaeiodes* (status = Near Threatened and *Otholobium thomii* (status = Endangered). It is unlikely that any other threatened plant species occur at these two sites.

Photo 1: Typical example of the previously ploughed site A. Note the dominance of pioneer species such as *Athanasia trifurcata* and the few seedlings of *Protea repens* and *P. compacta* that established recently.

Photo 2: Typical example of the disturbed site B. Note the sparse cover, consisting mostly of graminoids (Cyperaceae, Poaceae and Restionaceae).

A small part of site A and the southern boundary of site B consists of wetlands, with indicator species such as *Capeochloa cincta*, *Carpha glomerata*, *Drosera capensis*, *Platycaulis callistachyus*, *Erica perspicua*, etc. locally abundant (see Photo 3). These wetland areas have been invaded by *Acacia longifolia*, but not in dense stands.

Photo 3: Wetland vegetation within site A. Those at the southern boundary of site B is similarly dominated by *Capeochloa cincta*.

Both the renosterveld sites at C & D also consist of previously ploughed areas. Both areas have not been tilled for a number of years (about 3-5 years). A total of 57 species were recorded on these two sites (see Appendix 5), most of which are indigenous 'weedy' species (see Photos 4 & 5). No threatened species were noted, or are expected to occur on these two sites.

Photo 4: Disturbed renosterveld vegetation at site C. Note the dominance of indicators of disturbance such as *Stoebe plumosa* (grey shrub) and *Anthospermum aethiopicum* (thin upright plant).

Photo 3: Disturbed renosterveld vegetation at site D. On this southern slope the dominant disturbance plants are *Helichrysum cymosum* and *H. pandurifolium*.

CONCLUSIONS AND RECOMMENDATIONS

Only the margins of the proposed development areas A & B intersects sensitive botanical and wetland areas. No sensitive areas are intersected by the proposed development areas C & D.

Despite being located immediately to a World Heritage site, there is no indication that the proposed establishment of additional apple orchards holds an immediate threat to the adjacent nature reserve. The current apple orchards bordering the nature reserve seems to have minimal effect on the vegetation of the adjacent nature reserve.

Impacts of the proposed development can be easily mitigated by means of limiting the development outside water drainage areas, wetlands and the sites where threatened species are present. The threatened species fortunately all occur immediately next to the water drainage areas. The only mitigation action hence required is that establishment of the proposed apple orchards at sites A & B must ensure that the sensitive areas indicated on Map 4 are not negatively affected during the construction and operational phases. This mitigation action will also ratify the recommendation for the intersected ESA2 area.

Map 4: The sensitive areas that should not be disturbed are outlined in red.

REFERENCES

Mucina, L., Rutherford, M.C. and Powrie, L.W. (eds.), 2006. Vegetation Map of South Africa, Lesotho and Swaziland. 1:1 000 000 scale sheet maps. SANBI, Pretoria.

Raimondo, D., Von Staden, L., Foden, W., Victor, J.E., Helme, N.A., Turner, R.C., Kamundi, D.A. & Manyama, P.A., 2009. Red List of South African plants. Strelitzia 25, SANBI, Pretoria.

Pence, G.Q.K., 2014. Western Cape Biodiversity Framework 2014. Status Update: Critical Biodiversity Areas of the Western Cape. Unpublished CapeNature report.

Appendix 1

THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I J.H.V. Vlok 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: Regalis Environmental Services

Date: 26/01/2018

Appendix 2: Impact Assessment for development.

Without proposed mitigation actions

Impact description	Extent	Magnitude	Duration	Probability	Confidence	Reversibility	Significance
Disturbance of an ESA2 wetland area.	Local	Low	Long term	Definite	Certain	Irreversible	High
Loss of threatened plant populations.	Local	Medium	Long term	Definite	Sure	Irreversible	Medium

Mitigation action required:

1. Ensure that the sensitive areas indicated on Map 3 are not negatively affected during the construction and operational phases.

With proposed mitigation actions

Impact description	Extent	Magnitude	Duration	Probability	Confidence	Reversibility	Significance
Disturbance of an ESA2 wetland area.	Local	Low	Long term	Probable	Certain	Reversible	Low
Loss of threatened plant populations.	Local	Low	Short term	Probable	Sure	Reversible	Low

Appendix 3: CV of botanist who conducted the survey and prepared the report.

CURRICULUM VITAE

Johannes Hendrik Jacobus Vlok

Biographical Information

Birth: 6th December 1957, Calvinia, South Africa.
Identity Number: 571206 5133 089
Criminal Record: None.
Married to Anne Lise Schutte-Vlok and we have one daughter, Marianne Helena Vlok.

Education

1975 Matriculated at Bellville High School.
1982 Diploma in Forestry, Saasveld Forestry College.
1997 MSc (*Cum Laude*), University of Natal.

Employment

1982-1990. Department of Forestry (later Water Affairs, Forestry and Environmental Affairs), as research technician.
1990-1997. Cape Nature Conservation, as regional botanist.
1997-present. Self employed as environmental advisor (Regalis Environmental Services).

Research Output

One book and more than 30 scientific and popular articles published in international & national journals as primary or as co-author. Delivered three keynote and >20 other verbal papers at scientific forums on ecological and floristic studies. Delivered >300 presentations to civil society in public meetings and *via* other media (radio, newspaper and television) on plant ecology and conservation. Current ResearchGate rating = 24.9 with >1100 citations of my papers.

Awards

2003. Leslie Hill medal. **Succulent Society of South Africa**.
2006. Gold award. **C.A.P.E.**
2006. Certificate of Appreciation. **Western Cape Conservation Stewardship Association**.
2008. Special Award. **CapeNature**
2010. Marloth medal. **Botanical Society of South Africa**.

Consultation & Advisory Capacity

Consultant to WWF-SA, Cape Nature and SANPARKS to determine conservation status of land. Several of the studies resulted in the purchase of the properties, now amounting to a value of >R50 million.

Consultant to National, Provincial and private institutions for vegetation restoration projects, environmental impact assessment and environmental management plans. Some of these assignments won national awards.

Referee for international and national scientific articles and donor funded grants.

Classified, described and mapped Forest, Subtropical Thicket, Fynbos and Succulent Karoo vegetation units in four major donor funded projects.

Expert witness in Magistrate and Supreme Court cases.

Research associate and subject moderator for NMMU (Saasveld campus).

Appendix 4: List of species recorded at sites A & B.

Shrubs: *Aspalathus acuminata, A. attenuata, A. biflora, A. cephalotus, A. ciliaris, A. divaricata, A. filicaulis, A. hirta, A. hispida, A. neglecta, A. pigmentosa, A. serpens, A. spinosa, Aulax umbellata, Berzelia commutata, Cliffortia ruscifolia, Diosma hirsuta, Diospyros glabra, Elytropappus adpressus, Erica curviflora, E. perspicua, Leucadendron salignum, L. xanthoconus, Mimetes cucculatus, Montinia caryophyllacea, Muraltia squarrosa, Osteospermum moniliferum, Passerina vulgaris, Pelargonium cucculatum, Phaenacoma prolifera, Phylica diosmoides, P. imberbis, P. virgata, Protea amplexicaulis, P. burchellii, P. compacta, P. longifolia, P. repens, Roella incurva, Serruria fasciflora* and *Trichocephalus stipularis.*

Herbs: *Acrosanthes humifusa, Anthospermum aethiopicum, Arctotis acaulis, Athanasia trifurcata, Carpobrotus edulis, Crassula lactea, Dischisma ciliatum, Drosera aliciae, D. capensis, Edmondia fasciculata, Erepsia anceps, Helichrysum cymosum, H. panduriforme, Felicia tenella, Lampranthus furvus, Lobelia comosa, L. coronopifolia, Merciera leptoloba, M. tenuifolia, Microdon dubius, Nidorella ivifolia, Pelargonium candicans, P. capitatum, P. grossulareoides, P. incarnatum, P. suburbanum, Pseudoselago gracilis, Rumex saggitata, Senecio burchellii, S. pubigerus, S. rosmarinifolius, Stoebe plumosa, Ursinea anthemoides, U. paleacea* and *Vellereophyton niveum.*

Graminoids: *Capeochloa cincta, Ehrharta bulbosa, E. villosa, Eragrostis capensis, E. curvula, E. plana, Ficinia acuminata, F. bulbosa, F. capillifolia, F. oligantha, F. truncata, Geochloa rufa, Hypodiscus aristatus, Lanaria lanata, Mastersiella digitata, Pentameris airoides, P. ampla, P. aspera, P. aurea, P. colorata, P. pallens, P. malouiensis, P. obtusifolia, Platycaulis callistachyus, Restio festuciformis, Setaria sphacelata, Sporobolus africanus, Staberoha cernua, Tetraria bromoides, T. cappilacea, T. involucrata, T. thermalis* and *Tribolium uniolae.*

Geophytes: *Albuca cooperi, Aristea africana, Bobartia gladiata, Cyanella hyacinthoides, Disa bracteata, Gladiolus carneus, Hesperantha falcata, Satyrium coriifolium, Wachendorfia paniculata* and *Watsonia borbonica*.

Threatened species: *Diastella thymelaeiodes ssp. thymelaeiodes* (status = Near Threatened and *Otholobium thomii* (status = Endangered).

Appendix 5: List of species recorded at sites C & D.

Shrubs: *Aspalathus cephalotus, A. spinosa, Berkheya barbata, Berzelia commutata, Buddleja saligna, Cliffortia ruscifolia, Diospyros glabra, Elytropappus rhinocerotis, Erica quadrangularis, Montinia caryophyllacea, Osteospermum moniliferum, Rubus pinnatus* and *Searsia tomentosa.*

Herbs: *Anthospermum aethiopicum, Arctotis acaulis, Athanasia trifurcata, Carpobrotus edulis, Cassythia ciliolata, Chironia baccifera, Dischisma ciliatum, Helichrysum cymosum, H. panduriforme, L. anceps, L. coronopifolia, Nidorella ivifolia, Pelargonium candicans, P. capitatum, P. suburbanum, Sebaea aurea, Senecio pubigerus, S. rosmarinifolius, Stoebe plumosa,* and *Ursinea anthemoides*.

Graminoids: *Aristida diffusa, Cynodon dactylon, Cymbopogon plurinodes, Ehrharta bulbosa, E. villosa, Eragrostis capensis, E. curvula, E. plana, Hyparrhenia hirta, Pentameris airoides, P. ampla, P. pallens, P. malouiensis, Setaria sphacelata, Sporobolus africanus, Tribolium hispidum and T. uniolae.*

Geophytes: *Albuca cooperi, Aristea africana, Cyanella hyacinthoides, Disa bracteata, Gladiolus liliaceus, Hesperantha falcata, Micranthus alopecuroides* and *Satyrium coriifolium.*

Threatened species: None.