SUMMARY

Four land parcels have been identified for vegetation clearing and cultivation of new vineyards on farm DeGoree No.100/19, Robertson. The proposed sites comprise natural Worcester Renosterveld Karoo vegetation, which is considered least threatened. No rare or endangered plant species were recorded. Some of the areas fall within the western edge of a terrestrial CBA identified to meet biodiversity thresholds. The vegetation appear to be in a good condition over a large area. The clearing of natural vegetation, however, will be conducted across an area that include many patches that have had some previous disturbance and on exposed areas where moderate erosion is evident.

The proposed development will have a low impact on vegetation type but will significantly reduce the sandy habitat type occurring on the proposed sites. This may impact on indigenous plant species occurring in the immediate area. Indirectly the proposed development will have minimal impact on ecological processed but will contribute to a small extent in the reduction of a large continuous natural biodiversity corridor (CBA).

Mitigation is proposed to limit land clearing to disturbed areas as far as possible, to preserve some natural habitat and to maintain an un-interrupted north-south trending natural vegetation corridor towards the west of the proposed sites.
1. INTRODUCTION

This botanical basic assessment was commissioned in order to help inform decisions regarding the proposed development of up to 30 ha of new agricultural land on the farm De Goree, Farm 100/19, in the Langeberg Municipal Area, 7km west of Robertson (Figure 1).

Four land parcels (total of 30 ha) which flank the Goree/Riversode road (Divisional Road No. 1364) and railway line on De Goree Farm are targeted for the cultivation of new vineyards. The entire property is 138 ha in extent of which approximately 50 ha is already under cultivation (western portion) (Figure 2). Existing roads and infrastructure will be utilised by the proposed development. The identified land parcels are currently vacant and comprise natural vegetation which need to be cleared. The proposed sites targeted for cultivation are bordered by vineyards to the west and south, and by natural vegetation towards the north and east (Figure 2).

Surrounding land uses are predominantly agriculture related and include vineyards and orchards, farm dams, farm workers housing, the Vinkrivier (western border of the property), the railway line, untransformed field and the two “koppies” (Skurwekop and Gorees Hoogte) bordering the eastern side of the property.

Figure 1: Location of Farm De Goree (red polygon) in relation to Robertson, sourced from 1:50 000 Government topo-cadastral map 3319dd.
2. TERMS OF REFERENCE

Standard CapeNature and Botanical Society of South Africa Terms of Reference for biodiversity assessments were used as a basis for this report:

- Produce a baseline analysis of the botanical attributes of the property as a whole.
- This report should clearly indicate any constraints that would need to be taken into account in considering the development proposals further.
- The baseline report must include a map of the identified sensitive areas as well as indications of important constraints on the property. It must also:
  - Describe the broad ecological characteristics of the site and its surrounds in terms of any mapped spatial components of ecological processes and/or patchiness, patch size, relative isolation of patches, connectivity, corridors, disturbance regimes, ecotones, buffering, viability, etc.
  - In terms of biodiversity pattern, identify or describe:

  **Community and ecosystem level**
  a. The main vegetation type, its aerial extent and interaction with neighbouring types, soils or topography;
  b. The types of plant communities that occur in the vicinity of the site

*Figure 2: Aerial view of the study area showing the four land parcels (A-D) considered for clearing. Google Earth Image dated 7 January 2010.*
c. Threatened or vulnerable ecosystems (cf. SA vegetation map/National Spatial Biodiversity Assessment)

**Species level**

a. Red Data Book (RDB) species (provide location if possible)

b. The viability of and estimated population size of the RDB species that are present (include the degree of confidence in prediction based on availability of information and specialist knowledge, i.e. High=70-100% confident, Medium 40-70% confident, low 0-40% confident)

c. The likelihood of other RDB species, or species of conservation concern, occurring in the vicinity (include degree of confidence).

**Other pattern issues**

b. Any significant landscape features or rare or important vegetation associations such as seasonal wetlands, alluvium, seeps, quartz patches or salt marshes in the vicinity.

c. The extent of alien plant cover of the site, and whether the infestation is the result of prior soil disturbance such as ploughing or quarrying (alien cover resulting from disturbance is generally more difficult to restore than infestation of undisturbed sites).

d. The condition of the site in terms of current or previous land uses.

- In terms of biodiversity process, identify or describe:
  
a. The key ecological “drivers” of ecosystems on the site and in the vicinity, such as fire.
  
b. Any mapped spatial component of an ecological process that may occur at the site or in its vicinity (i.e. corridors such as watercourses, upland-lowland gradients, migration routes, coastal linkages or inland-trending dunes, and vegetation boundaries such as edaphic interfaces, upland-lowland interfaces or biome boundaries)
  
c. Any possible changes in key processes, e.g. increased fire frequency or drainage/artificial recharge of aquatic systems.

- What is the significance of the potential impact of the proposed project – with and without mitigation – on biodiversity pattern and process at the site, landscape, and regional scales?

- Provide a map, at suitable scale, of key conservation areas and corridors.
• Recommend actions that should be taken to prevent or mitigate impacts. Indicate how these should be scheduled to ensure long-term protection, management and restoration of affected ecosystems and biodiversity.
• Indicate limitations and assumptions, particularly in relation to seasonality.

3. LIMITATIONS AND ASSUMPTIONS

The site visit was undertaken in September 2010. There were thus some seasonal constraints regarding Autumn flowering geophytes. Evidence of *Haemanthus* leaves were recorded but it was not possible to identify these plants during the time of the site visit.

4. METHODOLOGY

An overview of the existing land use, vegetation, ecosystem status and occurrence of sensitive areas on the identified land parcels were obtained through SANBI GIS, NSBA 2004 and The Vegetation Map of South Africa. Lesotho and Swaziland (Mucina and Rutherford 2005), the most recent Google Earth imagery and the CAPE Fine Scale Project, Critical Biodiversity Areas Map (Pence, G. Q. K, 2008), and - Integrated Vegetation Map (Helme, N. A. and Freshwater consulting Group, 2007) for the Langeberg Municipal Area.

De Goree Farm was visited on the 17th of September 2010 to confirm vegetation types and the sites were surveyed for habitat quality and the presence of rare species, whilst recording all evident plant species. The sites were walked and various reference points marked using a handheld global positioning system (GPS) while aspects such as the condition of the vegetation and levels of disturbance were noted and photographed.

5. THE VEGETATION

5.1 Regional Context

The proposed development site is located within the Cape Floristic Region, within the Central Breede River Valley.

According to the SA Vegetation Map, the entire area intended for cultivation of new vineyards consists of Robertson Karoo vegetation which is considered least threatened (NSBA 2004) and forms part of the Succulent Karoo Biome. Breede Alluvium Renosterveld (prior to human disturbance) and North Sonderend Sandstone Fynbos are also presented on the property but excluded from any future development sites (Figure 3). The vegetation on the proposed sites
were classified more recently, and at a fine scale as Worcester Renosterveld Karoo by the CAPE Fine Scale Mapping Project (Figure 4). This vegetation type is considered Least Threatened (NSBA 2009).

**Figure 3:** Extract from the South African Vegetation Map (Mucina & Rutherford 2006) indicating the track walked during the site visit (dotted line), the land parcels targeted for vegetation clearing (black polygons A-D) and vegetation types of the immediate surroundings. The boundary of Farm DeGoree is also shown (red polygon).

**Figure 4:** Extract from the CAPE Fine Scale Project: Integrated Vegetation Map for the Langeberg Municipality, showing the farm boundary (red polygon) and the land parcels targeted for vegetation clearing.
Figure 5: Extract from the CAPE Fine Scale Project: Critical Biodiversity Areas Map for the Langeberg Municipality, showing critical biodiversity areas (cba), other ecological support areas (oesa), no natural remaining areas and untransformed areas. The farm boundary (red) and location of the proposed sites for agricultural development (black polygon A-D) are also shown.

Figure 6: Extract from the 1:250 000 Government topo-cadastral map 3319 overlain with the terrestrial critical biodiversity areas map layer to see the broad context.
Figure 5 represent aquatic and terrestrial sites identified as Critical Biodiversity Areas (CBAs) through the systematic assessment conducted by the C.A.P.E. Fine-Scale Biodiversity Planning (FSP) project. Any development within these CBAs will have the cumulative impact of an irreversible reduction or fragmentation of a network of natural sites (landscape corridor) identified to meet pattern and process thresholds of vegetation types. Although the vegetation is not considered endangered, approximately 16 ha of the proposed sites for land clearing fall within a terrestrial CBA. These areas have been identified to meet vegetation type thresholds. The remainder of the target areas for cultivation consist of areas where no natural vegetation remain or areas identified as other natural areas.

The proposed development sites are small, flat parcels of land located on the western section of a large, continuous network of natural sites identified as CBAs. Refer to Figure 6 for the broader context of the proposed development site in relation to the network of CBAs. The target areas are bordered by transformed areas towards the west and south, and by steeper natural areas, which are unfavorable for cultivation, to the north and east (remainder of the CBA).

### 5.2 Overview of the vegetation on site

Four sites are targeted for the clearing of natural vegetation and subsequent cultivation of new vineyards.

- Site A – 10 ha
- Site B – 6 ha
- Site C – 9 ha
- Site D – 5 ha

The vegetation predominantly comprise karoid shrubland including medium and tall shrubs with thicket elements, scatters of succulents (many vygies) and a small number of geophytes. Very few herbaceous species were recorded. A species list is included in Section 5.3. Apart from a number of disturbed patches (sand quarry, overgrazing and a dump site), the vegetation is in a good condition over most of the target areas on the property.
Figure 7: Google Earth image dated January 2010 showing the approximate sites targeted for vegetation clearing and cultivation with vineyards (yellow) and the condition of the vegetation on site.
5.2.1 Site A

Site A is located adjacent to and south of Goree/Riverside road. The site comprise sandy soil and is crisscrossed by paths. This site falls within a terrestrial CBA. Natural areas (Figure 8) are dominated by *Lampranthus haworthii* (pers vygie), *Lebeckia spinescens* (sand gannabos), *Dodonaea viscosa* (sandolien) (especially in the upper portion which is more sandy) and *Euphorbia mauritanica* (geelmelkbos) with scatters of *Carissa haematocarpa* (noem-noem) and *Euclea undulata* (gwarriebos). Clumps of *Gasteria brachyphylla* were commonly found underneath noem-noem and gwarriebos. No rare or endangered plant species were found. Refer to Section 5.3 for a list of plant species recorded on the property.

In the eastern (upper) portion there is a large area that is completely transformed into an old sand borrow pit (Figure 9). Towards the westernmost corner, the site is severely degraded with larger patches of bare soil, stone piles and rubble and *Galenia africana* (kraalbos) which is typically occurring in disturbed sites (Figure 10). Further west of Site A, outside the target area, there is a small section which is severely degraded (Figure 11). This area does not form part of the CBA and is recommended for cultivation.

Towards the south-east, this site is bordered by a steep, natural, rocky area (Skurwekop) that is unfavourable for cultivation. It is highly unlikely that the proposed vineyard development will extent beyond the target area of Site A, further into the CBA.

*Figure 8:* Natural areas on Site A (looking SE) with *Lampranthus haworthii* (pers vygie) and *Lebeckia spinescens* (sand gannabos) dominant features in the fore front, *Dodonaea viscosa* (sandolien) towards the back and steep natural areas, unfavourable for cultivation, further back (south-east of the site).
5.2.2 Site B

Site B is located adjacent to and north of Goree/Riverside road. This site falls entirely within a terrestrial CBA. Site B is located above a small dam and comprise shale derived soil as well as sandy patches.

The eastern half of Site B consist of dense, natural vegetation which is in a good condition (Figure 12). This section should preferably be excluded from the development as it forms part of a larger continuous natural area (CBA). Dominant plant species include Salsola aphylla (gannabos), Pteronia incana (asbos), Pteronia paniculata (gombossie), Felicia filifolia (draaibos), Lampranthus haworthii (persvygie) and scatters of Lebeckia spinescens (sand gannabos), Euphorbia mauritanica (geelmelkbos), Carissa haematocarpa (noem-noem) and Euclea undulata (gwariebos). No rare or endangered plant species were found.
The lower half of Site B (west), directly above the farm dam, is partly degraded (overgrazed) with open/bare areas (Figure 13) and evidence of severe erosion (Figure 14). Should this section be left intact (not cultivated) erosion will continue and may result in further degradation of the site and surrounding CBA.

**Figure 12:** Dense, natural vegetation on the eastern half of Site B (looking SE). Skurwekop and Sandberg are located towards the back.

**Figure 13:** Degraded section on the western half of Site B with the farm dam further towards the back (looking W towards dam).

**Figure 14:** Erosion sites further up on the western half of Site B (looking E from degraded section above farm dam). Goreeshoogte is located towards the left.

### 5.2.3 Site C

Site C is located south of the railway line and surrounded by existing vineyards on the property. The site comprise shale derived soils and does not form part of a CBA. The site
comprise a large area which show signs of overgrazing/disturbance (abundance of *Galenea africana* (kraalbos)) and the site is crisscrossed by farm roads.

The natural vegetation in the lower parts, adjacent to existing vineyards (Figure 15), is dominated by *Felicia filifolia* (draaibos), *Lampranthus haworthii* (persvygie), *Pteronia incana* (asbos), *Elytropappus rhinocerotis* (renosterbos) and *Eriocephalus* sp (kapokbos). The north-eastern section contains denser vegetation (Figure 16) with many *Euryops tenuissimus* (groot harpuisbos) and *Euclea undulate* (gwarriebos). A narrow strip of land on site C, directly adjacent to the railway line is severely disturbed (cut down tree debris, rubble) (Figure 17, 18).

**Figure 15:** Open natural vegetation adjacent to vineyards on Site C (looking W).

**Figure 16:** Dense natural vegetation in north-eastern section of Site C (looking N).

**Figure 17:** Disturbed section below the railway line on Site C.

**Figure 18:** Dump site below railway line on Site C.
5.2.4 Site D

Site D is located north of the railway line and is bordered by natural vegetation on steeper areas which are unfavourable for cultivation (Gorees Hoogte) towards the north and east. The site comprise shale derived soils and the target area falls partly within a terrestrial CBA. The target area is a flat, open area (with sparse natural vegetation) which contains degraded patches (bare areas) and show clear signs of erosion (Figure 19 & 20). Dominant plant species include *Felicia filifolia* (draaibos), *Galenia africana* (kraalbos), *Lampranthus haworthii* (persvygie), patches of *Pteronia incana* (asbos), *Pteronia paniculata* (gombossie) and *Euclea undulata* (gwarriebos).

Adjacent natural areas towards the North and towards the East (CBA) consist of denser vegetation which is in a good condition. The areas predominantly contain *Euryops tenuissimus* (groot harpuisbos), *Dodonaea viscosa* (sandolien), *Lebeckia spinescens* (sand gannabos), *Euphorbia mauritanica* (geelmelkbos), *Carissa haematocarpa* (noem-noem), and *Euclea undulata* (gwarriebos). These areas of denser vegetation are excluded from the target site (towards the east) and typically resemble the vegetation of the adjacent vegetation corridor identified as a terrestrial CBA. The boundary of dense natural vegetation is shown on Figures 7 & 21. The northern boundary of this target area should also be limited to the flat, open area (spare vegetation).

![Figure 19](image1.png) **Figure 19**: Degraded areas on Site D looking N towards adjacent natural areas.

![Figure 20](image2.png) **Figure 20**: Erosion sites on Site D looking S towards the railway line.
### 5.3 Species recorded on Sites A-D

<table>
<thead>
<tr>
<th>Herbs</th>
<th>Shrubs</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Arctopus echinatus</em> (sieketroos)</td>
<td><em>Asparagus capensis</em> (katdoring)</td>
</tr>
<tr>
<td><em>Arctotis acaulis</em> (renostergousblom)</td>
<td><em>Athanasia trifurcata</em> (klaaslouwbos)</td>
</tr>
<tr>
<td><em>Gazania krebsiana</em> (botterblom)</td>
<td><em>Carissa haematocarpa</em> (noem-noem)</td>
</tr>
<tr>
<td></td>
<td><em>Dodonaea viscole</em> (sandolien)</td>
</tr>
<tr>
<td></td>
<td><em>Elytropappus rhinocerotis</em> (renosterbos)</td>
</tr>
<tr>
<td><strong>Grasses:</strong></td>
<td></td>
</tr>
<tr>
<td><em>Eragrostis curvula</em> (lovegrass)</td>
<td><em>Eriocephalus</em> sp. (kapokbos)</td>
</tr>
<tr>
<td><em>Cynodon dactylon</em> (fynkweek)</td>
<td><em>Euclea undulata</em> (gwariebos)</td>
</tr>
<tr>
<td></td>
<td><em>Euryops tenuissimus</em> (groot harpuisbos)</td>
</tr>
<tr>
<td></td>
<td><em>Felicia filifolia</em> (draaibos)</td>
</tr>
<tr>
<td><strong>Succulents:</strong></td>
<td></td>
</tr>
<tr>
<td><em>Aloe microstigma</em></td>
<td><em>Galenia africana</em> (kraalbos)</td>
</tr>
<tr>
<td><em>Cotyledon orbiculata</em> (plakkie, pigs ear)</td>
<td><em>Helichrysum</em> sp.</td>
</tr>
<tr>
<td><em>Crassula capitella</em></td>
<td><em>Hermannia odorata</em></td>
</tr>
<tr>
<td><em>Crassula ruprestis</em> (sosatiebos)</td>
<td><em>Hermannia cuneifolia</em> (geelpleisterbos)</td>
</tr>
<tr>
<td><em>Drosanthemum speciosum</em></td>
<td><em>Hirpicium alienatum</em> (kleinhaarbossie)</td>
</tr>
<tr>
<td><em>Euphorbia mauritanica</em> (geelmelkbos)</td>
<td><em>Lebeckia spinescens</em> (sand gannabos)</td>
</tr>
<tr>
<td><em>Gasteria brachyphylla</em> (beestong)</td>
<td><em>Lycium oxycarpum</em> (wolwedoring)</td>
</tr>
<tr>
<td><em>Haworthia pumila</em> (vratjiesaalwyn)</td>
<td><em>Oedera squarrosa</em> (vierkantperdekaroo)</td>
</tr>
<tr>
<td><em>Lampranthus haworthii</em> (persvygie)</td>
<td><em>Pelargonium</em> sp.</td>
</tr>
<tr>
<td><em>Ruschia multiflora</em> (wit vygie)</td>
<td><em>Pteronia incana</em> (asbos)</td>
</tr>
</tbody>
</table>

**Figure 21**: Boundary of dense natural vegetation along the CBA corridor towards the right and sparse vegetation containing degraded areas towards the left (target area).
Senecio radicans (kraaltjies)  
Stapelia hirsuta (aasblom)  
Tylecodon paniculatus (botterboom)  

Bulbs:  
Cyanella lutea (geelraaptol)  
Drimia capensis (maerman)  
Eriospermum capense (bobbejaanoor)  
Ferraria variabilis (spinnekopblom)  
Massonia depressa (bobbejaanboek)  
Trachyandra falcata (veldkool)  

Pteronia paniculata (gombossie)  
Salsola aphylla (gannabos)  
Searsia (Rhus) sp.  
Zygophyllum sp.  

Trees:  
Acacia karroo

5.4 Conservation Value

The natural vegetation on the target areas for cultivation is well connected to the same vegetation type towards the North (large continuous area of natural Worcester Renosterveld Karoo) and with McGregor Arid Fynbos on steep areas towards the South (Skurwekop and Sandberg), both considered least threatened. The proposed development will therefore not have a severe impact on vegetation types.

Parts of the target areas fall within a terrestrial CBA that forms part of a large north-south trending natural biodiversity corridor (Figure 6). The target areas are located on the western edge of this natural corridor and comprise low-lying flat areas, adjacent to existing vineyards on the property. Although the proposed land clearing will result in the fragmentation of this natural corridor, the loss of natural vegetation would largely be on areas that have had some previous disturbance and on some exposed areas where moderate erosion is evident. It is highly unlikely that agricultural development will encroach further into the adjacent natural areas, as these steeper, rocky areas are unfavourable for cultivation.

Although no rare/endangered species were recorded and the sites are well connected to adjacent natural vegetation, the sites are bordered by steeper areas. Some of the plant species that occur within these sandy, low-lying, flat areas, may thus not occur within the immediate adjacent natural area. Natural areas, where the vegetation is in a good condition, therefore have a moderate to high conservation value. From a purely botanical perspective the site has a Medium - High local and Low regional (Central Breede River Valley) conservation value.
6. IDENTIFICATION OF ISSUES AND IMPACTS

The development of new vineyards on the proposed sites (30 ha in total) will cause permanent loss of the vegetation and natural habitat in the immediate area.

6.1 Direct Impacts

Potential direct impacts identified are:

- Loss of indigenous plant species
- Loss of vegetation type
- Loss of habitat

6.1.1 Loss of indigenous plant species

Fourty-eight plant species were recorded during the site visit. It is highly likely that more species can be found within the target areas. Although the target areas are bordered by an extensive area of natural vegetation, some species restricted to sandy, lower-lying areas could be lost from the immediate area (bordered by steeper areas). The distribution range of the recorded plant species do however extent much further than the immediate site. No rare or endangered species were recorded.

Table 1. Impact: loss of indigenous plant species

<table>
<thead>
<tr>
<th>Nature</th>
<th>Extent</th>
<th>Duration</th>
<th>Intensity</th>
<th>Probability</th>
<th>Status</th>
<th>Confidence</th>
<th>Significance</th>
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</thead>
<tbody>
<tr>
<td>Loss of indigenous plant</td>
<td>Local</td>
<td>Long term</td>
<td>Medium</td>
<td>High</td>
<td>Negative</td>
<td>Medium</td>
<td>Medium</td>
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<td></td>
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<td></td>
<td></td>
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<td>Low</td>
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</tbody>
</table>

6.1.2 Loss of vegetation type: Worcester Renosterveld Karoo

Worcester Renosterveld Karoo (previously known as Robertson Karoo) is found over an extensive area in the Breede River Valley around Worcester, Robertson and Ashton. This vegetation type is considered least threatened with approximately 83.09% natural vegetation remaining (preliminary NSBA 2009 data). This localised loss of vegetation type due to the proposed development of new vineyards on DeGoree Farm will have a small overall effect and will in no other way endanger the future of this vegetation type.
### Table 2. Impact: loss of Worcester Renosterveld Karoo

<table>
<thead>
<tr>
<th>Nature</th>
<th>Extent</th>
<th>Duration</th>
<th>Intensity</th>
<th>Probability</th>
<th>Status</th>
<th>Confidence</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of vegetation type</td>
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<td>Low</td>
<td>Definite</td>
<td>Negative</td>
<td>High</td>
<td>Medium-Low</td>
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<tr>
<td>Without mitigation</td>
<td>With mitigation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of vegetation type</td>
<td>Low</td>
<td></td>
<td>Medium-High</td>
<td>Highly probable</td>
<td>Negative</td>
<td>High</td>
<td>Medium-Low</td>
</tr>
<tr>
<td>Without mitigation</td>
<td>With mitigation</td>
<td></td>
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</tr>
</tbody>
</table>

### 6.1.3 Loss of habitat

The target areas for cultivation are flat, low-lying areas which consist of shale derived clay soils and in some places sandy soil (wind blown / alluvium deposits overlain on shale formations). Adjacent natural areas consist of shale, with deep, red, stony soil and more rocky areas. The development of the proposed target areas will lead to a localised loss of this isolated, low lying sandy habitat. Most of the fauna and other organisms that occur in the target areas will have other similar habitat still available to them. Some may however require this currently isolated sandy, low-lying habitat.

### Table 3. Impact: loss of habitat

<table>
<thead>
<tr>
<th>Nature</th>
<th>Extent</th>
<th>Duration</th>
<th>Intensity</th>
<th>Probability</th>
<th>Status</th>
<th>Confidence</th>
<th>Significance</th>
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<tbody>
<tr>
<td>Loss of habitat</td>
<td>Site</td>
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<td>Highly probable</td>
<td>Negative</td>
<td>High</td>
<td>Medium-Low</td>
</tr>
<tr>
<td>Without mitigation</td>
<td>With mitigation</td>
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</tbody>
</table>

### 6.2 Indirect Impacts

Indirect impacts are associated with the operational phase and would act on the remaining natural vegetation.

### 6.2.1 Loss of ecological processes

Despite the loss of a localised area of Worcester Renosterveld Karoo, it is unlikely that the development will have a significant effect on ecological processes such as pollination and migration in the remaining natural areas. The proposed development will not lead to small vegetation fragments. Ecological processes will still be able to take place over extensive areas and the north-south trending CBA will remain intact. It is essential that the
development does not extent further eastward into the CBA to maintain ecological
cnectivity along this biodiversity corridor.

Table 4. Impact: loss of ecological processes

<table>
<thead>
<tr>
<th>Nature</th>
<th>Extent</th>
<th>Duration</th>
<th>Intensity</th>
<th>Probability</th>
<th>Status</th>
<th>Confidence</th>
<th>Without mitigation</th>
<th>With mitigation</th>
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<tbody>
<tr>
<td>Loss of ecological</td>
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<td>Long term</td>
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<td>Medium</td>
<td>Negative</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>processes</td>
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</table>

6.2.2 Reduction of CBAs

A large portion of the target areas are located within a terrestrial CBA identified to maintain vegetation threshold. Any development within these CBAs will have the cumulative impact of an irreversible reduction or fragmentation of a network of natural sites (landscape corridor) identified to meet biodiversity pattern and process thresholds.

Although the area intended for cultivation is degraded and previously disturbed in many sections, the development will result in a small reduction of a larger continuous natural corridor identified to maintain biodiversity thresholds. The development will however occur along the edge of this CBA network and the north-south trending biodiversity corridor will remain intact. Most of the target areas for cultivation are bordered by steeper areas which are unfavourable for cultivation. It is essential that the development does not extent further eastward into the CBA.

Table 5. Impact: reduction of CBAs

<table>
<thead>
<tr>
<th>Nature</th>
<th>Extent</th>
<th>Duration</th>
<th>Intensity</th>
<th>Probability</th>
<th>Status</th>
<th>Confidence</th>
<th>Without mitigation</th>
<th>With mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction of</td>
<td>Regional</td>
<td>Long term</td>
<td>Medium</td>
<td>Definite</td>
<td>Negative</td>
<td>High</td>
<td>Medium</td>
<td>Medium-Low</td>
</tr>
<tr>
<td>CBAs</td>
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6.3 Cumulative Impacts

Cumulative impacts of the proposed cultivation of 30 ha on the DeGoree Farm 100/19 will result in the loss of an area of Worcester Renosterveld Karoo (previously known as Robertson Karoo) and the habitat it provides. Since this vegetation type is widespread and least threatened and surrounded by the same vegetation, which is in better condition to that
on the proposed site, the cumulative effect of this loss on a regional and national scale is negligible.

The proposed development will have a small cumulative effect of reducing a large continuous CBA corridor.

6.4 The No Go Alternative
The No Go alternative, where no agricultural development will occur on the proposed sites, would have no direct negative impacts on the vegetation and the ecological connectivity will remain as it currently is. This alternative, however, would result in the ongoing negative impact of soil erosion on degraded areas where soil is exposed. This may lead to the further degradation of the CBA and adjacent natural areas. Without strategic erosion management, this alternative is not preferred in the context of this site.

7. RECOMMENDATIONS AND PROPOSED MITIGATION

The following recommendation is given to allow for continuous areas for cultivation as far as possible, as well as continuous natural areas that should be safeguarded from any development. In addition these recommendation are giver to prevent the development of small patches of cultivated areas on disturbed sites located in between natural section causing fragmentation and edge effects.

- The development should be limited to the western sections as far as possible, to allow for a continuous natural corridor along the east (CBA).
- The degraded section towards the west of Site A (currently excluded from the target area) should be considered for inclusion in this site, and the eastern periphery of this site should be retracted to the north-eastern outer edge of the area transformed by the old sand quarry (refer to Figure 22). This will allow for the maintenance of a natural section of the sandy habitat within the immediate location.
- The development should be limited to the areas where disturbance is most evident, as far as possible (western section of Site B, above dam). It is recommended that the eastern periphery of Site B be retracted to maintain a larger section of dense natural vegetation within the CBA which also include a section of the sandy habitat type (refer to Figure 22).
- From a botanical perspective Site C is recommended for new vineyards.
• Development on Site D should be limited to flat areas where vegetation is sparse. Adjacent natural, steeper areas should be excluded from any development.

• Existing tracks should be used to access the site to prevent further damage to adjacent natural vegetation. Disturbance of adjacent vegetation should be restricted, especially in the areas included in the CBA.

• Rocks and vegetation debris should not be dumped on adjacent natural vegetation.

• Dust levels should be kept to a minimum to avoid smothering of sensitive areas by windblown sediments.

• Effective measure must be implemented to prevent soil erosion within the new cultivated areas.

• The Manager of the Vrolijkheid Nature Reserve (McGregor) as well as the Curator of the Karoo-Desert National Botanical Garden (Worcester) should be contacted prior to any development activities and given the opportunity to collect any plants on the target areas of the property which are of value for translocation to the nature reserve, botanical garden or another appropriate refuge.

Contacts:

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• Karoo-Desert National Botanical Garden, PO Box 152, Worcester, 6849, Tel: 023 347 0785, Fax: 023 342 8719, Email: Karoo-Desert-NBG@sanbi.org.za.
Figure 22: Areas recommended for clearing and subsequent cultivation of new vineyards on DeGoree Farm 100/19, Robertson.
8. REFERENCES


