

PROPOSED ESTABLISHMENT OF 21 HECTARES, ROOIBOS CULTIVATION LANDS AT ZONDERWATERKRAAL, FARM  
951/0, NIEUWOUDTVILLE  
DRAFT ENVIRONMENTAL IMPACT REPORT

(DENC REFERENCE NUMBER DENC Ref NR: NC/BA/01/NAM/HAN/NIE1/2017)

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**PROPOSED ESTABLISHMENT OF 21 HECTARES, ROOIBOS CULTIVATION LANDS AT  
ZONDERWATERKRAAL, FARM 951/0, NIEUWOUDTVILLE**

**(DENC REF NO. NC/BA/01/NAM/HAN/NIE1/2017)**



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(DENC REFERENCE NUMBER DENC Ref NR: NC/BA/01/NAM/HAN/NIE1/2017)

Prepared for: Department of Agriculture and Rural Development

Prepared by:



Reg.: Cederberg Conservation Services CC – Reg. No 2009/056651/23

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(DENC REFERENCE NUMBER DENC Ref NR: NC/BA/01/NAM/HAN/NIE1/2017)

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| <b>REPORT STATUS:</b>           | Draft Environmental Impact Assessment Report (DEIAR)   |
| <b>SUB-CONSULTANTS</b>          | Jonathan Kaplan – Agency for Cultural Resource Management<br><br>Nick Helme - Nick Helme Botanical Surveys<br><br>M. Pretorius - Bvi Engineering Procurement Management – Soil Analysis for Zonderwaterkraal |
| <b>SUBMISSION DATE</b>          | XXXXX  |
| <b>REFERENCE TO THIS REPORT</b> | FOOTPRINT Environmental Services, Environmental Impact Report :<br>PROPOSED ESTABLISHMENT OF 21 HECTARES, ROOIBOS CULTIVATION LANDS AT ZONDERWATERKRAAL, FARM 951/0, NIEUWOUDTVILLE                          |

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## PURPOSE OF THE EIR

An Environmental Impact Assessment is currently being undertaken on Farm 951/0, Zonderwaterkraal, Nieuwoudtville (Northern Cape) by the Department of Agriculture and Rural Development to assess the significance of impacts and determine the cost benefit and feasibility of a 21 hectare expansion of Rooibos Tea lands for an emerging commercial farmer. FOOTPRINT Environmental Services (Registered as Cederberg Conservation Services CC – No 2009/056651/23) were appointed by the Department of Agriculture and Rural Development as independent Environmental Assessment Practitioners to undertake the EIA in accordance with the requirements of the NEMA Act; Act No. 107 of 1998.

Adherence to these requirements will ensure that all key stakeholders identified as well as Interested and Affected Parties have adequate opportunity to scrutinise the Draft EIA report and provide comment and input into the report through a robust and consultative public participation process. All inputs will be collected, collated and where practically possible and reasonable incorporated into the Final EIA report for submission to the Northern Cape Department of Environment and Nature Conservation (DENC) as the competent authority in this instance.

The EIA phase of the assessment process follows on from the Scoping Phase in which the potential environmental impacts were identified and highlighted as well as the potential positive impacts of the proposed development. This phase additionally provided for the identification of, and guidance on, mitigation measures which could be employed to reduce the significance of environmental impact.

The EIA report is comprised of eight sections and addresses the following aspects:

**Section 1 : Introduction** – Provides a broad overview of the project, highlights the outcomes of the Scoping Phase, sets out the requirements for the impact assessment process and the details, qualifications of the EAP's and finally provides background information on the specialists used in the assessment process.

**Section 2 : Overview** – Provides an overview of the proposed agricultural development - thus a description of the proposed facility with associated infrastructure, outline on the need and desirability, investigates the various alternatives for the project including the “no-go” option,

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provides an overview of the development, operational and decommissioning phases of the proposed development.

**Section 3 : Environmental Authorisation Process** – This section provides an overview of the regulatory and legislative context for an assessment such as this, the legislative guideline for the process, the aims and objectives of the EIA and the methodology which will be used for the EIA process.

**Section 4: Receiving Environment** – This section places the proposed development in a regional and local scale context and provides an overview of the geo-physical, agricultural, ecological, heritage, socio-economic and visual values present on the site and in the surrounding landscape.

**Section 5 : Assessment of Impacts** – This section provides information on the methodology employed to assess impact significance, the assumptions and limitations of the study, an assessment of the potential impacts identified for the development, operational and decommissioning phases of the development.

**Section 6 : Assessment of Cumulative Impacts** – This section provides for the assessment of cumulative impacts associated with the development, operational and decommissioning phases of the development.

**Section 7 : Discussion, Recommendations and Conclusions** – This section provides an summary of the impacts associated with ecosystem pattern and process, the geo-physical attributes, landuse change, heritage resources, visual impacts, the socio-economic values, the project alternatives and the cost benefit of the proposed development. It additionally provides the impact statement and recommendations.

**Section 8 : References** - List of references used in the report.

The primary aim of the EIA report is to provide sufficient information to the competent authority to make an informed decision on the feasibility of the proposed project from a sustainability perspective.

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**INVITATION TO COMMENT ON THE DRAFT EIR**

This **Draft EIR** will be available for public review at the Hantam Municipality in Nieuwoudtville **from the 5 June 2017**.

***Please submit all comments to:***

FOOTPRINT Environmental Services

PO Box 454, Porterville, 6810

Fax : 086 608 8304

Email : charlduplessis2@afrihost.co.za

**The closing date for comments on the Draft EIA Report is the 6<sup>th</sup> July 2017**

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## **EXECUTIVE SUMMARY**

Section 1 of this report provides an overview of the proposed agricultural development and a detailed description of the activities associated with the development of the site for this purpose. Thereafter the findings of the Scoping Phase are discussed in terms of identified impacts. The section proceeds to outline the requirements in terms of the environmental impact assessment process. Finally the section concludes with the details of the Environmental Assessment Practitioners and specialists used in compiling the Scoping and Environmental Impact Report.

Section 2 of the report focuses on the description of the proposed agricultural development in terms of its locality, project components and associated infrastructure. The need and desirability of the proposed activity is discussed in detail in relation to the planning frameworks from national, provincial and at local level. Detail is provided on the project alternatives in terms of site selection, activity, layout and design, technology and operational activities. The option not to proceed “no-go option” is additionally assessed. This is followed by a detailed overview of the construction, operational and decommissioning phases of the proposed agricultural development.

Section 3 of the report provides a summary of the legislative enabling framework relevant to the assessment of environmental impact. Detail is provided on the methodology used during the environmental impact assessment phase in terms of specialist input into the process, the preparation of the draft impact report, the methodology used for the quantification of impact significance, the consultation with key stakeholders and I&AP's as part of the public participation process and the drafting of the public participation report and Environmental Impact Report.

Section 4 provides more detail on the receiving environment in terms of the regional context of the site in question, access to the site, the geophysical environment, climatic conditions, hydrology, soils, agricultural profile, biodiversity profile, heritage, socio-economic and visual profile of the proposed site.

Section 5 provides a detailed assessment of impact significance in terms of the receiving environment. Impact significance being calculated in accordance with the methodology outlined in Section 3. Impact significance is assessed in terms of the three identified phases of development described in Section 2 of this report.

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Section 6 provides a concise summary of all impacts identified and their significance for all phases of the proposed activity as well as a summary of the assessment of the no-go alternative and the cumulative impact associated with the proposed activity.

Section 7 provides the conclusions and recommendations for all identified significant impacts for all phases of the development from planning and design, construction, operational and potential decommissioning phases of the proposed activity. This concludes in the impact statement and EAP recommendations for the proposed activity.

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## ACRONYMS AND ABBREVIATIONS

|       |   |
|-------|---|
| CBA   | Critical Biodiversity Areas                       |
| DENC  | Department of Environment and Nature Conservation |
| DWA   | Department of Water Affairs                       |
| EAP   | Environmental Assessment Practitioner             |
| EIA   | Environmental Impact Assessment                   |
| ECR   | Extra Cape Sub-region                             |
| ECO   | Ecological Control Officer                        |
| EMP   | Environmental Management Programme                |
| ESA   | Ecological Support Areas                          |
| FES   | FOOTPRINT Environmental Services                  |
| GDP   | Gross Domestic Profit                             |
| GIS   | Global Information System                         |
| GG    | Government Gazette                                |
| GN    | Government Notice                                 |
| HDI   | Historical Disadvantaged Individuals              |
| I&AP  | Interested and Affected Parties                   |
| IDP   | Integrated Development Plan                       |
| NEMA  | National Environmental Management Act             |
| NFEPA | National Freshwater Ecosystem Priority Areas      |



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- NGO Non Governmental Organisation
- PSDF Provincial Spatial Development Framework
- SAHRA South African Heritage Resource Agency
- SANBI South African National Botanical Institute

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## TERMINOLOGY AND DEFINITIONS

*Alternatives* – are different means of meeting the general purpose and need for the proposed activity. It includes location/site alternatives, technology or process alternatives, design or lay out alternatives and the “do nothing” alternative.

*Cumulative impacts* – the impact of an activity by itself may not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

*Direct impacts* – these are impacts caused directly by the activity and occur at the same time and at the locality of the activity and are associated with the development, operation and or maintenance of the activity.

*“Do go option” alternative* – is the option of not undertaking the proposed activity or any of its alternatives and is the baseline which impacts and alternatives are compared too.

*Endangered species* – are species in danger of extinction and whose survival is unlikely if these causal factors continue operating. This to include species whose numbers and habitats have been so drastically reduced that they are deemed to be in immediate danger to extinction.

*Endemic species* – is species that exists in a particular area and has restricted distribution.

*Environmental Impact* – is any action or series of actions that may affect the environment.

*Environmental Impact Assessment* – as defined by the NEMA EIA Regulations and in relation to an application to which scoping must be applied, it is the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application.

*Environmental Management Programme* –An operational plan that organises and coordinates mitigation, rehabilitation and monitoring measures in order to guide implementation and maintenance of the development.

*Indirect Impacts* – are impacts that may occur as a result of an activity.

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*Interested and Affected Parties* – are individuals or groups concerned with or affected by an activity and its consequences.

Rare species – are species with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline.

*Red data species* – are listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species and or in terms of the South Africa Red Data List.

*Significant impact* – by its magnitude, duration, intensity, or probability of occurrence the impact may have a notable effect on one or more aspects of the environment.

Strategic Integrated Projects (SIPS) - address the provision of agricultural development to support and stimulate Local Economic Development (LED).

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## 1. INTRODUCTION

### 1.1 PROJECT OVERVIEW

The landowner, Mr Gerrie Koopman wishes to expand his organic rooibos tea (*Aspalathus linearis*) production capacities with another 21 hectares. Rooibos is an endemic plant to the Fynbos Biome that includes the most northerly section of the Biome – the Nieuwoudtville Plateau in the Northern Cape. The express aim is to addressing economies of scale and ensuring financial sustainability in a market that is characterized by significant volatility in price year on year. Mr. Koopman is part of the Rooibos emerging farmers development Ilima Letsema project.

The Nieuwoudtville Plateau is recognized as one of the best Rooibos tea production areas within the natural distribution area of Rooibos. The demand and markets for organic Rooibos tea has been on a significant upward trend for decades but is characterised by price volatility. To deal with market volatility requires that a production concern is able to produce on a large enough scale to take advantage of the good years but also to be able to keep the business afloat on smaller profit margins by ensuring that enough volume is delivered to absorb losses of lower prices.

The primary driver of the upward trend in market size has been the significant growth in sophisticated international markets concerned with healthier and more responsible living. Rooibos has health benefits primarily due to the high levels of anti-oxidants which make it very popular in these types of markets. The product is sold in a bewilderingly varied number of products but the bulk of the produce is sold as fermented Rooibos, flavoured fermented tea and unfermented (“Green”) Rooibos. The products is also sold in herbal blends, iced tea, skincare products and toiletries.

The landowner seeks permission to develop 21 hectares for Rooibos tea production which will entail the clearance of natural vegetation for the preparation of the production areas. Two areas have been identified as suitable production areas after a comprehensive soil sample study undertaken by BVI Consulting Engineers in 2015.

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The establishment of the cultivation lands will entail the clearance of natural vegetation, firstly by brush cutting the vegetation and then ploughing it into the soil during the preparation phase. These areas will be cleared across the prevailing wind direction and >10m of natural vegetation strips will be retained between cultivated areas to serve as a refuge for beneficial insects and natural occurring plant species and more importantly to provide a wind break to prevent erosion, caused by wind. Cleared vegetation will be moved from the developed area and ploughed or distributed to the adjacent natural veld where it will decompose naturally. As the production will be based on organic conditions - there is no need for additional agricultural infrastructure by way of dams, soil drainage, irrigation and electricity systems etc.

## 1.2 FINDINGS OF THE SCOPING PHASE

Areas of environmental sensitivity were identified during the scoping phase these relate to:

- **Environmental sensitivity:** the activity has no significant impact potential at a locality scale as the site is located in an area that has low levels of development, thus the vegetation units present are extant over very large tracts and fully connected over large areas throughout the surrounding landscape. While biodiversity pattern will surely be lost as a result of the clearing of vegetation this impact is expected to be medium to low when considered in the context of the extent of the remaining ecosystem and the avoidance of the sensitive area in the alternative layout of Alternative 1 the preferred alternative. Vertebrate and invertebrate populations will be impacted at a site scale with smaller vertebrates suffering the loss of habitat, once again this impact is expected to have a low significance as the surrounding landscape has extensive areas of similar habitat that would provide refuge and habitat for displaced fauna. The area is currently used for the same landuse and disturbance to larger mammal fauna is not expected to result in increased significance in terms of disturbance as it remains the same as the current disturbance regime. In our assessment we consider any potential impact on faunal populations by development and operational labour during harvest. Furthermore no sensitive wetland and river drainage lines are evident or connected to the proposed site, thus no impacts from this perspective are expected.
- **Impacts on geology, soils and hydrology** will occur on site. The activity has the potential to physically disturb the soil profile but is undertaken at shallow levels thus no impacts on the underlying geology are expected. As such there exists the potential for the proposed

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development to have impacts associated with altered hydrology at a site scale and if incorrectly designed in terms of structural integrity and the management of surface and subterranean water flows could result in impacts in the form of erosion. The proposed development will not result in incursions into buffer areas around drainage lines nor impacts on ecological support areas associated with the ecological functioning of riverine buffer areas e.g. flood attenuation and corridors for vertebrates who move through the landscape using the well developed structure associated with the vegetation along riparian areas.

- **Impacts on land-use** could be in this instance primarily be associated with the increase of agricultural potential on the property and an expansion of the current landuse opportunity for the owners.
- **Impacts on Heritage** – No possible impacts were identified by the specialist (both archeologically and paleontological) and the decision from SAHRA is still pending. However if human remains should be found during the excavation phase this should be reported to the South African Heritage Resources Agency (SAHRA).
- **Visual impacts** - have the potential to change the physical appearance of the landscape and the quality of life of those living in the landscape. In this instance the proposed development is in line with similar developments in the surrounding landscape, thus while additive will not alter the visual landscape.
- The cost benefit assessment of identified variables for **socio-economic impacts** of the proposed development at this point in the assessment process was found to be positive in nature for the owner. The greatest sensitivity would relate to the preferential employment of local people, businesses and in particular favouring the employment and education of the youth.
- **Operational impacts** of the proposed development will range from none, low to negligible and will only be to a local scale. Importantly it should be noted that the great majority of impacts identified in the table below show that the extent of impacts will primarily be felt at site to local scales. **Waste generation** from the use of agricultural products (primarily herbicides and biocides) is possible for the operational phase.



**Table 1 : Impacts identified during the Scoping Phase**

**Potential impacts on ecosystem pattern and process**

| <p><b>Impacts on fauna:</b> While the site is located on an existing agricultural farm, as such there should be remnant populations or species present which are indigenous to the site. These would primarily be smaller vertebrates both faunal and avian. However larger species such as Leopard are present on site and have caused stock losses on the property. The site does therefore fall within the home range of a rare and threatened species, however the disturbance is expected to be similar to the current disturbance regime, transitory and relevant primarily during the development phase.</p> |   |   |  |
|---|---|---|--|
| <p><b>Impacts on vegetation:</b> As stated above the site has extant pristine vegetation associated with the ecosystem type present on site. The site will be fully transformed and the vegetation cover lost as a result of this development. Impacts on biodiversity pattern are therefore expected.</p>  |   |   |  |
| <p><b>Impact on processes:</b> Seen in the context of the broader landscape the proposed development covers a small spatial extent in an extensive natural system and we expect impacts on ecological process would be low in this instance.</p>  |   |   |  |
| <b>Impact</b>   | <b>Nature of Impact</b>   | <b>Extent of Impact</b>   | <b>No Go Areas</b>   |
| Loss of vegetation due to development activities  | Development activities could result in significant loss of indigenous cover vegetation. Impacts associated with the loss of vegetative cover could result in changes in water run-off characteristics over the denuded areas and increasing risk for erosion and an increasing risk associated with the | Impacts would be at a site scale and areas directly adjacent to the site only and would be associated with the development and operational phase. | No go areas would comprise areas which would be prone to erosion and for which no mitigation measures were possible. |

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|  |  |   |  |
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|  | <p>alien invasive plants that may colonise the site.</p> <p>Edge effects are considered possible as the site is located in extant vegetation on all sides in an operational agricultural farm.</p>   |   |  |
| <p>The habitat of threatened plants and faunal species lost or disturbed due development</p> | <p>The impact is relevant in this instance in relation to the presence of Leopards and the loss of habitat to their prey species through agricultural transformation. Plant species of conservation concern are located on site and alternative layouts will be assessed in the impact assessment phase of this process.</p> | <p>The extent of this impact would be associated with site scale impacts and altered habitat within the home range of these widely ranging animals.</p> | <p>No go areas would relate to the avoidance of preferential habitat for prey and for this large predator.</p> |
| <p>Destruction of indigenous trees</p>   | <p>Indigenous trees are associated with the elevated water and nutrient availability along drainage lines, loss of this ecological structure would impact on the</p>   | <p>Local impacts at a site scale.</p>   | <p>No go areas are not considered relevant in this instance.</p>   |

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|  |   |   |  |
|--|---|---|--|
|  | <p>functionality of the riparian and riverine buffer areas and thus their ability to function as ecological support areas. The site has no remaining indigenous trees either within or adjacent to the site and as such impacts from this quarter are not considered.</p> |   |  |
| <p>The habitat of threatened animals lost or disturbed due development</p> | <p>These impacts are considered to be of low significance due to the very low levels of transformation in relation to extant habitat even though there are species of conservation concern are recorded from the site.</p>  | <p>The extent of this impact is at a site scale.</p>                                    | <p>No go areas would relate to the avoidance of preferential habitat for prey and for this large predator.</p> |
| <p>Impacts on drainage lines</p>   | <p>The site is not located close to a drainage line as such no impacts are expected.</p>  | <p>None expected</p>  | <p>Not relevant.</p>   |
| <p>Establishment of alien invasive species</p>                             | <p>Invasive alien species are particularly well adapted to areas that have</p>  | <p>The impacts associated with invasive alien species would be associated with site</p> | <p>The entire site would be a no-go area as</p>  |

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|   | suffered from excessive levels of disturbance. These areas are then invaded and indigenous ecological communities are lost as a result. Areas with well developed vegetation cover and diversity are less prone to invasion by alien invasive species. | scale disturbance of the soil profile and denuding of vegetation cover associated with this development. | alien invasives would need to be removed immediately. |
| Impacts on Wetlands   | While seepage and wetland areas are mapped on the topographical maps these areas do not appear to exist on the site itself. The sites do not overlay these areas.  | N/A  | N/A   |
| <p>Gaps in knowledge and key recommendations for further studies needed:</p> <ol style="list-style-type: none"> <li>1.) There are no significant impacts that can be associated with this aspect of the assessment to date in our opinion no impacts will occur that cannot be dealt with through a dedicated management response and an EMPr.</li> <li>2.) The layout and design of the proposed development has been guided by the suitability of the site for Rooibos Tea production to date, the site itself does not appear to have any significant environmental features that could be impacted other than the potential for erosion and colonisation by invasive alien plants, both of which can be adequately mitigated through practical management intervention in an EMPr.</li> </ol> |  |  |   |

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- 3.) Databases, reports and publications are never 100% accurate; there are gaps in scientific knowledge, however the data has been obtained from reputable sources and in our opinion is robust enough for impact consideration at this site.
- 4.) To date specialist input has indicated that the site has medium to high sensitivity from a botanical perspective and thus potential significant impacts are possible if avoidance of these impact through alteration of the proposed sites for development were not possible. Alternative layouts within the low sensitivity areas will therefore be investigated further in the impact assessment phase.

**Potential impacts on geology, soils and hydrology**

General description:

Impacts on geology, soils and hydrology will occur on site. The impacts on soil would include physical disturbance of the soil profile to clear the area and establish the crop. The activity is undertaken in the soil and will not impact on geological formations. The denuded surface created on site could result in erosion of top soil and ultimately in the alteration of the site scale hydrology. These impacts however are considered to be low as the soils are highly porous and design (contouring if required) will take cognisance of these requirements on site. Finally impacts may be associated with the access roads to and within the site. These too are considered to be insignificant in terms of the potential impact as basic management interventions such as road contouring, hardening and maintenance are proven means to prevent erosion from road surfaces. The significance of agricultural impacts is influenced by the extent to which the development will increase the agricultural potential of the site and the relatively small spatial extent of the proposed development.

| Impact   | Nature of Impact  | Extent of Impact  | No Go Areas                                  |
|--|---|---|--|
| Soil erosion due to alteration of the surface run-off characteristics. | Alteration of run-off characteristics may be caused by development related land surface | The impact could extend to areas beyond the development site i.e. at a property scale and in a very | Any areas outside the demarcated development |

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|   |  |   |  |
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|   | disturbance, vegetation removal, the establishment of hard standing areas and roads, and the presence of panel surfaces. Erosion will cause loss and deterioration of soil resources and may occur during all phases of the project. | serious instance beyond the boundary of the property.                   | site.  |
| Degradation of veld and agricultural lands  | Vehicle trampling and other disturbance, during development phase.   | Extent will be limited to the development site and access roads.        | All areas outside the demarcated development site and existing access roads. |
| Loss of topsoil due to poor topsoil management and surface water flows during storms. | Soil profile disturbance (preparation of the Rooibos production areas).  | Extent will be limited to the development site.                         | All areas prone to erosion at a site scale.                                  |
| Contamination of groundwater  | Pollution of groundwater during the development phase.   | Extent will be limited to the development site and immediate surrounds. | All areas identified as important aquifers.                                  |

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|  |   |  |   |
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| Cumulative impacts.  | Loss of agricultural resources and production as a result of poor agricultural practice. Increased production from and agricultural property and increase in rural livelihoods. | Extent would extend for a site to local scale. | Sites that have low or no agricultural potential. Highly productive agricultural land, areas of natural vegetation identified as being sensitive. |
| <p>Gaps in knowledge and key recommendations for further studies needed:</p> <ol style="list-style-type: none"> <li>1) It should be noted that the site has a relatively small spatial extent and is within a portion of the property that has large tracts on natural vegetation with low agricultural potential. The field investigation and visual assessment of erosion and erosion potential on site, taking into account the specifics of the proposed development layout should suffice to provide guidance for recommendations in an EMP'r.</li> <li>2) In our assessment to date it is apparent that management guidelines in an EMP'r would suffice to mitigate environmental impact stemming from this source. Furthermore the soil suitability study has confirmed that the site is suitable for the development of a Rooibos production area.</li> <li>3) There are established solutions to the potential impacts identified in terms of the surface and subsurface water flows, soil and slope characteristics and seepages.</li> </ol> |   |  |   |

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**Potential impact on landuse**

| <p>General description</p> <p>Impacts on existing landuse could result from the physical displacement of the current natural vegetation and extensive agricultural activities with an intensive agricultural system.</p>   |  |  |  |
|--|--|--|--|
| Impact   | Nature of Impact   | Extent of Impact   | No Go Areas  |
| <p>Increase of agricultural land use due to clearing of natural vegetation for lands.</p>  | <p>Affected portions of land are no longer natural but within intensive agricultural production.</p> | <p>Limited to the site itself through the physical occupation of the land by the new production areas.</p> | <p>Sites that have no agricultural potential. Highly productive agricultural land.</p> |
| <p>Gaps in knowledge and key recommendations for further studies needed:</p> <ol style="list-style-type: none"> <li>1) The field investigation will involve a visual assessment of erosion, erosion potential and potential for degradation on site, taking into account the specifics of the proposed development layout.</li> <li>2) Additional information is required on the status of the vegetation and potential presence of rare and endangered plant species.</li> <li>3) The EIA phase will gather more detail on agricultural activity on the site and identify any locally important soil and agricultural issues. This will be done through interviews with farmers and agricultural role players in the area.</li> </ol> |  |  |  |



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**Potential impacts on Heritage Resources**

| <p>General description:</p> <p>The property was found to have an extremely low heritage signature with no impacts expected. However the potential remains that heritage resources may be unearthed during the development phase of the development.</p>  |  |   |  |
|--|--|---|--|
| Impact   | Nature of Impact   | Extent of Impact  | No Go Areas  |
| Irreplaceable loss of heritage resources.  | This impact would be applicable if heritage resources were unearthed during the development phase. | Extent would be site specific with a low heritage signature for the property. | Site and incident specific – all areas demarcated around unearthed heritage resources. |
| <p>Gaps in knowledge and key recommendations for further studies needed:</p> <ol style="list-style-type: none"> <li>1) Specific layout of the proposed development is not yet finalised.</li> <li>2) Any exhumation of aboriginal and other graves would require the ceasing of the activity and an application for the requisite permits dealing with human remains from the South African Heritage Resources Agency (SAHRA), and appointment of a qualified archaeologist.</li> <li>3) In our assessment with the guidance from the specialist (both paleontological and archaeological) we conclude that no further impact assessment will be required in the EIA phase.</li> </ol> |  |   |  |

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**Potential visual impacts**

| <p>General description</p> <p>A site assessment was undertaken to determine the presence of significant view corridors associated with the project site – line of sight from the surrounding landscape. The findings of impacts related to areas within the surrounding landscape indicate that the proposed site would not be visible from any of the surrounding residential areas, farms or roads in the area.</p> |  |                  |   |
|---|--|------------------|---|
| Impact  | Nature of Impact   | Extent of Impact | No Go Areas   |
| Potential visual impact of the proposed facility on sensitive observers within 1 km of the site.  | Visual impact stemming from the development of the agricultural lands. | Local            | The scoping phase indicates that no impacts are expected as the site is not visible from the surrounds. |
| Change in the character of the prevailing use of the area   | Visual impact stemming from the development of the agricultural lands. | Local            | The scoping phase indicates that no impacts are possible as the site is not visible from the surrounds. |
| <p>Gaps in knowledge and key recommendations for further studies needed:</p> <p>1) The intrinsic values associated with the extant ecosystems and the faunal and floral assemblages that they supported that occur on site will be lost this due to the transformation of the area to</p>   |  |                  |   |

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an agricultural landscape and the transformation of this more natural landscape by the development of large areas of agricultural production. The value system for the area would therefore be associated with the quality of the living environment in a rural agricultural setting and that of an operational Rooibos tea farm. Thus respectively strong linkages with the viewscape within the agricultural area and for those farms along the periphery the viewscape of an agricultural landscape and the scenic beauty of the extant natural areas in the surrounding landscape.

- 2) At an instrumental value level the proposed site should be viewed therefore from a perspective of what is it good for? In the absence of the intrinsic values of the historical state mentioned above the answer it appears would primarily be linked to its utilitarian value either as an agricultural area or for other pursuits related to the extant natural beauty of the area. It has however been established that the specific site has suitable agricultural value thus the proposed development does not constitute a negative impact from this instrumental value perspective i.e. no utilitarian agricultural value is lost on the contrary it is enhanced. The other utilitarian use would probably relate to the development of the site for tourism related activities, however at this juncture no infrastructure nor "must see" features that would differentiate this site and make it attractive for tourism are evident thus no net loss in potential utilitarian value from this aspect. It does however provide for another real utilitarian need that of improving the livelihoods of rural poor through improved agricultural production from suitable agricultural soils.
- 3) In considering the systemic value of the proposed development one would have to consider the relationship of the proposed agricultural production site with that of the intrinsic and instrumental values mentioned above. Here the visual profile should be considered by interpreting the addition of the agricultural lands in an agricultural viewscape and its potential to erode the value of the viewscape for the owners of the farm and those of the adjacent farms. Here the extent to which the agricultural lands are visible from the surrounding landscape would be the key consideration. Considering the fact that the proposed site is distant from any neighbours translates into a visual profile that is invisible to the adjacent farms and roads. From our perspective therefore the visual profile is considered to have a very low to no potential intrusive impact as it is fully aligned with the current viewscape of those people inhabiting the

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landscape. The site would not impact on the current instrumental values of agricultural production and would have no discernible influence on the systemic values but for site scale impacts as the proposed production areas are only visible over distances of a couple of hundred metres and when planted to Rooibos would in our opinion not fundamentally change or be significantly intrusive into the viewscape.

**Potential impacts on the social environment**

| <p>General description</p> <p>Possible impacts during the development, operational and decommissioning phases considered for each phase are:</p> <ul style="list-style-type: none"> <li>• Quality of living environment – changes in sense of place as a result of the proposed development (increase in noise and dust levels).</li> <li>• Economic and Material Well being – improved skills levels and increased employment opportunity, income and benefits to the local economy.</li> <li>• Family and community life – Increased family stability, increased opportunity for education and access to education opportunities.</li> </ul> |  |                   |  |
|--|--|-------------------|--|
| Impact   | Nature of Impact   | Extent of Impact  | No Go Areas                              |
| Skills level increase  | On the job or formal skills training                             | Local to national | Preferential employment to outsiders.    |
| Employment   | Skilled, semi-skilled and unskilled permanent job opportunities. | Local to National | Preferential employment to outsiders.    |
| Job reservation for women.   | Women are preferentially employed.                               | Local             | No preferential jobs allocated to women. |
| Increased income   | Semi-permanent and   | Local to National | Preferential employment to outsiders. No |

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|   |  |       |  |
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|   | permanent income   |       | preferential jobs allocated to women.              |
| Increased noise & dust levels   | Decrease in family health due to increased noise and dust levels.  | Local | No dust and noise mitigation measures.             |
| Sense of place change   | From an unutilised unproductive portion of an agricultural farm covered in natural vegetation to a productive intensive agricultural site. | Local | No adherence to visual impact mitigation measures. |
| <p>Gaps in knowledge and key recommendations for further studies needed:</p> <ol style="list-style-type: none"> <li>1) Capitalise on the positive impacts by ensuring that local people and businesses are appointed and contracted for the development phase through preferential employment.</li> <li>2) At a local and community scale ensure that young women are employed.</li> <li>3) Ensure that skills development and occupational training benefits the local communities.</li> <li>4) Ensure that noise and dust levels are minimised during the development phase.</li> </ol> |  |       |  |

**Potential impacts associated during the operational phase**

**Potential impacts on ecosystem pattern and process**

Impacts on fauna: On completion of agricultural lands the development would be characterised by low noise levels primarily associated with the presence of management and periodically harvesting staff on site thus impacts from disturbance of this nature are considered to be low to negligible.

Impacts on vegetation: The aim in terms of the layout for the proposed development was to ensure

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| <p>that the placement of the agricultural lands would be located in the most highly productive soils on the property to avoid significant impact and potential failure of the project aimed at improving agricultural production capacities for the rural poor. As natural vegetation associated with the historical ecosystem occur extensively on site no further impacts from this activity are foreseen if adherence is ensured with the conditions of the EMPr.</p> |  |  |   |
|--|--|--|---|
| <p>Impact on processes: As above the proposed development has a relatively small spatial scale and can have no conceivable significant impact on ecological process.</p>   |  |  |   |
| Impact   | Nature of Impact   | Extent of Impact   | No Go Areas   |
| <p>Loss of vegetation due to development activities</p>  | <p>Potential species composition changes may result from the fact that the agricultural land will create a disturbance that may be colonised over time by invasive alien plants. The change in community structure could result in alterations in the rate of erosion within the site and invasion into the natural vegetation is the surrounds.</p> | <p>Highly localised with no significant impacts on ecological process due to the very small size of the proposed development and the level of current transformation of the site and the surrounds.<br/>Adherence to an EMPr in terms of the removal of invasive species would limit impact to the developed sites only and then only temporarily.</p> | <p>Anywhere outside the demarcated site development area.</p> |

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|   |   |  |  |
|---|---|--|--|
| The habitat of threatened plants lost or disturbed due development  | NONE  | NONE   | NONE   |
| Destruction of indigenous trees                                     | No indigenous trees are evident on or adjacent to the site.   | None   | None   |
| The habitat of threatened animals lost or disturbed due development | With the layout design responding to the baseline high suitability of the site and the findings of the scoping phase that the site has little or no biodiversity sensitivity impacts on remaining faunal species would be low to insignificant. | Localised to the site itself.                                    | Anywhere outside the demarcated site development area. |
| Impacts on drainage lines   | NONE – the site is not located near to a drainage line.   | NONE.  | Anywhere outside the demarcated site development area. |
| Establishment of alien invasive species                             | With an increased disturbance created from the development and the operational phase may be sensitive to invasion by alien invasive plant species. Invasive species control   | Local and if allowed to establish to areas adjacent to the site. | Positive impact.                                       |

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|  | projects will be identified as part of the Environmental Management Programme.  |                     |  |
| Too frequent fires   | Reduced diversity resulting from too frequent fires and an inability from plant communities to regenerate after fire. | Site to local scale | Any vegetation that is below the recommended threshold for a controlled burn |
| Gaps in knowledge and key recommendations for further studies needed:  |   |                     |  |
| <p>1.) Altered run-off and potential erosion risk resulting from this run-off has not been tested or determined under local conditions, this will require an established monitoring and evaluation process as part of the Environmental Management Programme of the site. Here a learning by doing approach seems appropriate.</p> <p>2.) Changes in plant species communities as a result of disturbance and associated impacts (run-off and fire) are unknown and should be monitored as part of the EMPr.</p> |   |                     |  |

**Potential impacts on geology, soils and hydrology**

General description:

The denuded surface created for the production of Rooibos tea could result in erosion of top soil and ultimately in the alteration of the hydrology of the area and loss of agricultural potential. These impacts however are considered to be low as the layout and design will take cognisance of site specific features. Impacts may be associated with the access roads to and within the site. These too are considered to be insignificant in terms of the potential impact as basic management interventions



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| <p>such as road contouring and maintenance are proven means to prevent erosion from road surfaces.</p> <p>From an agricultural impact point of view, some sensitive areas were identified during scoping that should be avoided for inclusion in the development. Land capability is the combination of soil suitability and climate factors and in this instance are suitable for the production of Rooibos Tea.</p> |  |   |  |
|---|--|---|--|
| <b>Impact</b>   | <b>Nature of Impact</b>  | <b>Extent of Impact</b>   | <b>No Go Areas</b>   |
| Soil erosion due to alteration of the surface run-off characteristics.  | Alteration of run-off characteristics may be caused by development related land surface disturbance and vegetation removal. Erosion will cause loss and deterioration of soil resources. | Local - The impact could extend to areas beyond the development site i.e. at a property scale and in a very serious instance beyond the boundary of the property. | Steep slopes and areas with unstable soil.   |
| Degradation of vegetative cover adjacent to the site development.   | Vehicle trampling and other disturbance, during operational phase.   | Local - Extent will be limited to the Rooibos cultivated areas and access roads.  | All areas outside the demarcated Rooibos production areas and existing access roads. |
| Loss of topsoil due to poor topsoil management.   | Soil profile disturbance caused by wind erosion that may resultant in the decrease in that soil's agricultural suitability.  | Local - Extent will be limited to the property.   | Steep slopes and areas with unstable soil.   |
| Cumulative impacts.   | Loss of agricultural resources and   | Site to Regional Scale.   | Low productivity agricultural land,  |

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|   |   |  |  |
|---|---|--|--|
|   | production as a result of poor agricultural practice and loss of rural livelihoods. |  | areas of natural vegetation identified as being sensitive. |
| <p>Gaps in knowledge and key recommendations for further studies needed:</p> <ol style="list-style-type: none"> <li>1) Ongoing visual assessment of erosion, erosion potential and vegetation degradation on site should be continued for the duration of the operational phase.</li> <li>2) Implement mitigation measures, monitoring requirements and provide a rehabilitation guideline for all identified impacts in the EMPr.</li> </ol> |   |  |  |

**Potential impact on landuse**

| <p>General description</p> <p>Impacts on existing landuse would result from the replacement of extensive agricultural activity with the intensive agricultural use by owner.</p>   |   |  |  |
|--|---|--|--|
| Impact   | Nature of Impact  | Extent of Impact   | No Go Areas  |
| Loss of agricultural land use due to direct occupation of extensive veld with Rooibos tea lands.   | Affected portions of land are currently out of agricultural production and used for extensive pursuits. | Limited to the site itself through the physical occupation of the land by the new Rooibos lands. | All areas outside the demarcated development site and existing access roads. |
| <p>Gaps in knowledge and key recommendations for further studies needed:</p> <p>To ensure that the current landuse is not lost should operations be halted will require the custodianship of the agricultural resource in this instance the retention of the fertility of the soil within the production</p> |   |  |  |

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area.

- 1) Visual assessment of erosion, erosion potential and veld degradation on site should be maintained throughout the operational phase.
- 2) Clear recommendations for mitigation measures, monitoring requirements, and rehabilitation guidelines for all identified impacts must be available to the proponent in the EMPr.

**Potential impacts on Heritage Resources**

|   |                         |                         |                    |
|---|-------------------------|-------------------------|--------------------|
| General description   |                         |                         |                    |
| <b>Impact</b>   | <b>Nature of Impact</b> | <b>Extent of Impact</b> | <b>No Go Areas</b> |
| NONE  | NONE                    | NONE                    | NONE               |
| This assessment assumes that no impacts can occur post development. |                         |                         |                    |

**Potential impacts on the social environment**

|  |   |                         |  |
|--|---|-------------------------|--|
| General description  |   |                         |  |
| The following socio-economic aspects may change during the operation phase: An increase in skills levels, work environment, employment levels, income, sense of place and economic activity. These changes may affect the health and social well being, quality of living environment and economic and material well being of the receiving community. |   |                         |  |
| <b>Impact</b>  | <b>Nature of Impact</b>                         | <b>Extent of Impact</b> | <b>No Go Areas</b>   |
| Increased skills levels.   | Opportunity to improve skills levels of labour. | Local                   | Preferential employment of people from outside of the community. |

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|  |   |       |  |
|--|---|-------|--|
| Image of young women.  | Young women become role models in community.    | Local | Preferential employment of males and outsiders.                  |
| Employment.  | Creation of permanent employment opportunities. | Local | Preferential employment of people from outside of the community. |
| Income.  | Minimal increased income.                       | Local | Preferential employment of people from outside of the community. |
| Sense of place.  | Permanent change in sense of place.             | Local | No adherence to visual impact mitigation.                        |
| Gaps in knowledge and key recommendations for further studies needed:  |   |       |  |
| 1) Capitalise on the positive impacts by ensuring that local people are appointed and contracted during the operational phase At a local and community scale ensure that young women are employed. |   |       |  |

**Potential visual impacts**

|   |   |   |   |
|---|---|---|---|
| General description: Impacts to be determined during the EIA phase. |   |   |   |
| <b>Impact</b>   | <b>Nature of Impact</b>                                 | <b>Extent of Impact</b>                                 | <b>No Go Areas</b>                                      |
| As for visual impact under the development phase above.             | As for visual impact under the development phase above. | As for visual impact under the development phase above. | As for visual impact under the development phase above. |

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Gaps in knowledge and key recommendations for further studies needed:

- 1.) As for visual impact under the development phase above.

### **Potential cumulative impacts**

#### **General description:**

Cumulative impacts may result through the addition of other similar or diverse impacts within the broader landscape. Cumulative impacts however can additionally stem from low impact activities that are amplified through the increased frequency of the activity taking place. Cumulative impacts for the proposed production are will be viewed from the perspective of:

- 1.) Scale dependent impacts of the proposed development where cumulative impacts occur as a result of incremental addition of impact, impacts that are interactive or synergistic with other activities, or impacts that amplify overall impact related to the sequence in which activities are undertaken.

Canter and Sadler (1997) use the following methodology to address cumulative impacts during an EIA:

- 1.) Delineate sources of potential change;
- 2.) Identify pathways of possible change;
- 3.) Identify non-linear or synergistic changes.

The final process would be to classify the resultant cumulative changes.

In terms of scale the proposed Zonderwaterkraal development would extend over an area of >20 ha's. Cumulative impacts would be associated with physical disturbance to areas of extant natural vegetation and if other similar developments were to occur in the surrounding landscape these site scale impacts would result from the cumulative transformation of natural vegetation which in turn would contribute to the fragmentation of ecosystems.

Adequate layout and design has occurred in this instance where the sites identified is highly suitable for the production of Rooibos Tea. These areas are at a premium and not present uniformly over the landscape, full transformation and fragmentation of the habitat in this instance has a low probability.

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Similarly the transformation and permanent loss of vegetation cover could cumulatively alter drainage dynamics and accelerate erosion from the site and similar sites, cumulatively these could alter sediment loads in surface flows, retard soil formation and result over time in changes in soil nutrient balance.

Cumulative visual impacts would change the character and cultural landscape and potential the visual aesthetic appeal of an area. Cumulatively developments such as these will provide for an expanding employment market as a positive impact to incomes for the rural poor. Cumulative visual impacts however would primarily be related to impacts on the communities sense of place. However from the scoping phase it is apparent that cumulative impacts from developments of this nature in a position where visual impacts are not possible would translate into low to insignificant negative cumulative environmental impact.

| Impact   | Nature of Impact   | Extent of Impact   | No Go Areas  |
|--|--|--|--|
| Loss of biodiversity at regional scales.                                 | Cumulative impact on biodiversity through fragmentation of ecosystems.   | Numerous sites and specific impacts at those sites at regional scales. | Any sensitive and critical biodiversity or ecological support areas identified in conservation planning.                 |
| Loss of soil nutrient status resulting from erosion and altered run-off. | Cumulative impact of loss of soil from numerous sites and loss of agricultural potential or the ability of the site to be restored or rehabilitated. | Numerous sites and specific impacts at those sites at regional scales. | Any sensitive and critical biodiversity or ecological support areas identified in conservation planning. Any areas where |

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|   |  |  |   |
|---|--|--|---|
|   |  |  | there are steep slopes and / or unstable soils or soils prone to erosion. |
| Gaps in knowledge and key recommendations for further studies needed:   |  |  |   |
| 1.) As cumulative impacts are not expected with the implementation of the guidelines in an EMPr no further studies are recommended. |  |  |   |

From this it is evident that the site was approached in a focused manner in terms of understanding its unique nature, the resultant uniqueness, spatial pattern of impacts and the hierarchy of the impacts associated with it. Property alternatives were not feasible as this is the only property available at present, however at the site scale alternatives were possible due to the differing sensitivity across the property from a botanical perspective.

The impacts for the different phases (development, operation and decommissioning) may be summarised as follows:

- *Development phases (impacts are similar during these phases)*, impacts may occur to - the natural environment during site preparation through the removal of extant vegetation from agricultural production, altered soil chemistry, change in land use, the soil profile during the preparation of the lands, increased potential for erosion, heritage resources, waste generation, visual and social aspects.
- *During the operational phase*, impacts on the ecosystem may occur in terms of visual impacts of the development, physical barriers to localised faunal movement, positive or negative socio-economic impacts, increased potential for soil erosion from the denuded surface and potential pollution or impacts from machinery and agricultural chemicals that may be used.
- *Decommissioning phase*, primarily regarded as a positive net impact through the slow rehabilitation and restoration of the site to its natural state.

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Impacts associated with each of these areas were further un-bundled during the assessment process as will be discussed further on in this report.

**Public Participation Process**

The public participation process commenced on submission of the Draft Scoping Report to the DENC Case Officer to allow the competent authority the opportunity to inform key stakeholders of the initiation of the public participation process and the availability of the draft Scoping Report for public comment. The following activity schedule was completed:

**Table 2 : Public Participation Activities – Scoping Phase**

| DATE               | TASK/PROCESS/ACTIVITY   |
|--------------------|---|
| 5 July 2016        | Notification to landowner <b>(See Attachment 1)</b>   |
| 13 January 2017    | Application for Scoping / EIA Application submitted to DENC   |
| 3th February 2017  | DENC acknowledge the Application and awarded the Case Number for the Scoping / EIA Process  |
| 8 February 2017    | Draft Scoping Report sent to Case Officer   |
| 9 February 2017    | Notification about the availability of the draft BAR and the timeframes to register and to provide comments, the background information document as well as a document to register as an Interested and Affected Party and to provide comments were sent out to 5 neighbouring properties, the landowner and 8 Government Institutions. |
| 14th February 2017 | Public Participation started  |
| 17th February 2017 | Advertisement of the Draft SR published in "Ons Kontrei   |
| 16th March 2017    | Public Participation Process ended  |



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|               |                                  |
|---------------|----------------------------------|
| 23 March 2017 | Scoping Report submitted to DENC |
| 9 May 2017    | DENC accepted the SR.            |

The initial registration of Key Stakeholders and Interested and Affected Parties resulted in the following the comments and issues being received:

**Table 3 : Comments and responses – Scoping Phase**

| Name / Organization   | Comment/Issue   | Response  |
|---|---|---|
| Natasha Higgitt<br>SAHRA - 6<br>March 2017  | <i>Interim Comment</i> - A signed letter from Dr Almond must be supplied regarding his assessment of palaeontological resources. Additionally, the project area must be mapped on the GIS layer of the SAHRIS Case application. Further comments will be issued upon receipt of the above.  | As soon as we receive the signed letter from the palaeontological expert it will be loaded on the SAHRIS system. The .kml files for the proposed development were uploaded on SAHRIS. We await further comments from SAHRA. |
| National Department of Agriculture, Forestry and Fisheries.<br>Landuse and Soil Management<br>MR Maboia<br>10/03/2017 | Since the development will involve the removal or disturbance of top soil according to CARA (Act 43 of 1983), cultivation in relation to land, means any act by means of which top soil is disturbed mechanically. Virgin land is defined as any land which is in the opinion of the executive officer has never been cultivated or mechanically disturbed in the past proceeding ten years. CARA supplication for clearing the proposed area for development is required prior as stated in the ACT. | Noted once the Environmental Authorization process is completed and Authorisation is granted a CARA application will be lodged.   |
|   | The proposed development may result in erosion, therefore the land user need to take care consideration of the following stipulation in regulation 4(1)&5(1) of CARA. Every land user shall by means of as many as the measures as are necessary in his situation, protect the cultivated land  | During the operation phase the landowner will minimize erosion by the following management practices;<br><br><i>The following activities should be implemented to avoid impact soil;</i>                                    |

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|  |   |   |
|--|---|---|
|  | <p>on his farm unit effectively against excessive soil loss as a result of erosion through wind or water.</p> | <ul style="list-style-type: none"> <li>• <i>Ensure that the natural strips remains intact and are not disturbed;</i></li> <li>• <i>Ensure that no negative impacts occur on the remaining natural areas e.g. driving off roads, overgrazing, too frequent fires;</i></li> <li>• <i>Regular monitoring of the site for signs of wind, sheet and gully erosion and implement mitigatory measure immediately;</i></li> <li>• <i>Maintain drainage and erosion control systems (run-offs, drainage channels, contours) on a monthly basis during the rainy season.</i></li> </ul> <p style="text-align: right;"><i>This will be formalised in the EMPr.</i></p> |
|--|---|---|

Please see **Appendix E – Public Participation**

**Table 4 : Late comments and responses – Scoping Phase**

| Name / Organization | Comment/Issue | Response |
|---------------------|---------------|----------|
| NONE                | NONE          | NONE     |

### 1.3 CONDITIONS OF APPROVAL OF THE SCOPING REPORT

The Scoping Report for the proposed Rooibos tea land development was received by DENC on the 23 March 2017. The acceptance of the Scoping Report was received by the proponent and the EAP on the 09 May 2017.

### 1.4 REQUIREMENT OF AN ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

As this development is a proposed expansion of the agricultural footprint of an emerging farmer, it is considered to be of national importance. The Northern Cape: Department of Environment and Nature Conservation (DENC) is the competent authority for decision making and issuing of the environmental authorisation in this instance.

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According to Sections 24 and 24D of NEMA, as read with the EIA Regulations (Listing Notices 1,2 and 3 as amended) the listed activities, in Table 1, may be triggered by the proposed agricultural development. See Table 5: Listed Activities Triggered.

**Table 5 : Listed Activities Triggered.**

| Activity No             | Description of Listed Activity   | FOOTPRINT description of the listed facility                                |
|-------------------------|--|---|
| <b>Listing Notice 2</b> |  |   |
| Activity 15             | <p>The clearance of an area of 20 hectares or more of indigenous vegetation, except where such clearance of indigenous vegetation is required for-</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p> | <b><i>The size of the footprint for the development is 21 hectares.</i></b> |

The required EIA Phase was undertaken in the following way:

- **EIA Phase** – during this phase the detailed assessment of environmental (positive, negative, direct, indirect and cumulative impacts) as identified in the Scoping Phase have been undertaken. The “no-go option” will additionally be assessed. As required this will be undertaken through an assessment of potential impacts, specialist studies, sensitivity analyses and public participation. On conclusion of the required public participation process the EIA Report and the Environmental Programme (EMPr) will be submitted to DENC for consideration and authorisation.

The EIA allows the proponent to assess the significance of impact resulting from the commencement of activities listed in **Table 5 – Listed Activities Triggered**. This was achieved through independent Environmental Assessment Practitioners and Specialists. The process made provision for the avoidance of impact, if unavoidable to minimise impact or mitigate impacts to acceptable levels. In our opinion the

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Final EIA report will contain enough detailed and independently derived information to provide the competent authority with sufficient information to reach a decision on the feasibility of the proposed development.

Furthermore the process allowed for the robust engagement with key stakeholders and Interested and Affected Parties through a public participation process and provided them with an opportunity to contribute by commenting on the outcomes of the draft EIA. Importantly, and in recognition of the rural nature of the area, particular effort was expended to physically deliver and personally communicate the proposed development to the surrounding landowners, communities and community organisations to ensure that the communication products reached their intended target and that the proposed development was understood by all. In the event that a key stakeholder or an Interested and Affected objected to the decision issued by the competent authority then they were within their rights to lodge an objection in accordance with the provisions for such an appeal under NEMA, Act 107 of 1998.

Furthermore the general objectives of Integrated Environmental Management as set out in Section 23 of NEMA have been taken into account:

***1. to promote the application of appropriate environmental management tools in order to ensure the integrated environmental management of activities.***

This is addressed through the provision of an Environmental Management Programme (EMPr) with this EIA Report where the roles and responsibilities of the applicant and the Environmental Control Officer (ECO) are articulated in detail to ensure that the development happens in an integrated and well managed fashion.

***2 (a) promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment;***

Ensuring that the recommendations for mitigation of environmental impact contained within this report under Section F adhere to the principles of a precautionary approach that aims first to avoid environmental impact and secondly where impacts are unavoidable to mitigate environmental impact for an activity that will have significant impact on the environment. To consider the opportunity cost in proceeding with the development. Furthermore that these mitigatory measures are made practicably

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implementable in the EMPr and monitored to ensure compliance with the requirements. Finally to recognise in the recommendations supplied that the environment is interlinked and to give adequate consideration to these linkages and how they proposed development may impact over the short term but also cumulatively over the long term.

***(b) identify, predict and evaluate the actual and potential impact on the environment, socioeconomic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2;***

The identification of potential impacts is contained within this report through the Scoping Phase. The evaluation of the identified impact follows a process of predicting the actual or potential impact in terms of sustainability criteria for each of the alternatives being considered. Thereafter the impact is quantified in terms of its severity in the absence of any mitigatory measures to avoid an impact, mitigation measures are then proposed that would or could reduce the impacts to within acceptable levels, in instances where environmental impacts cannot be suitably mitigated to weigh the opportunity costs of proceeding against those of the potential benefit to people and the economy, to evaluate the linkages that exist between identified impact and determine if these linkages have the potential to amplify impact through synergies that may exist between them and after this process always follow the option that delivers the best possible benefit for the least possible impact. In instances where the cost significantly outweighs the opportunity to consider a recommendation for not proceeding with the proposed development.

***(c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;***

This is addressed through the process of identifying and evaluating environmental impacts either individually or through complimentary associations that may amplify the severity of impacts. Proposing mitigatory measures and translating those mitigatory measures into practically implementable actions within an EMPr and incorporating potential offsets that may contribute dealing with the loss of biodiversity attendant to the proposed development.

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***(d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;***

To follow the guidelines for public participation in accordance with the requirements of NEMA legislation, to honour and reflect all reasonable objections raised by key stakeholders and other interested and affected parties, to propose solutions to address those concerns and present them for further comment and to resolve all reasonable objections as a matter of process.

***(e) ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and***

This is addressed through the provision of an EMP that must be implemented as part of the operational and maintenance phase of the development.

***(f) identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.***

This is addressed through the provision of an EMP that must be implemented as part of the operational and maintenance phase of the development.

**Section 2 of NEMA** is addressed through the involvement of all key government stakeholders in the public participation process to allow time and opportunity for them to adequately comment on a proposal and act on their mandate to respect, promote and protect people's social, developmental, physical, cultural and economic rights. The requirement is further addressed through the engagement with I&AP's as part of the public participation process, and the provision of an opportunity for all I&AP's to provide input into the assessment process and respond to all reasonable comments on an individual basis. Responses and decisions made must and do take cognisance of the individual concerns of I&AP's. Adherence to these principles are addressed through the execution of the Guidelines on Public Participation. Consultation and consideration of the planning documentation of the DEA, Conservation Authority, SANBI and the Local Authorities are also included to address this principle.

As this assessment rests on the three tenets of sustainability adequate consideration is given to the interaction between the environment that forms the basis for the delivery of goods and services to the

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economic sector which in turn delivers social benefit and livelihoods to people. In particular that the process of assessment attempts first to avoid negative environmental impact (including pollution, disturbance to the landscape, impacts on cultural heritage, the generation of waste and its disposal) and if impacts are unavoidable to mitigate these impacts or remedied. Here the assessment would make use of the guideline on needs and desirability of the proposed development to assess the cost/benefit equation for the proposed development and through the evaluation of the different alternatives available to the proponent and through this process the determination of the best possible practically implementable alternative.

The assessment will also address the type of resources being used whether renewable or non-renewable and assess the resource availability in terms of equitable distribution of resource allocation or to ensure that every effort is made to ensure that the demand on the resource does not exceed its ability to regenerate, as is the case with ecologically based environmental goods and services. Here too consideration will be given to the improvement of resource use efficiencies. In particular investigate the conservation status of the particular ecosystem or special habitat that may be impacted by the development by investigating the National Spatial Biodiversity Assessment, Biodiversity Sector Plan for the local authority, Fine-scale Conservation Plans, National Freshwater Ecosystem Priority Areas and the listed ecosystems in Government Notice 1477 of 2009. Here also consideration is given to the DEA Guidelines on Alternatives. To ensure that a precautionary approach is followed at all times with due consideration to knowledge gaps and assumptions that are made in relation to the proposed development. In instances where impacts are anticipated to ensure that these are mitigated or remedied to a point that they do not infringe on basic human rights.

Furthermore this section of NEMA is addressed through the provision of an EMPr that aims to provide an integrated environmental management programme that recognises the linkages between environmental elements and puts forward the most applicable and practically reasonable means to achieve the objectives of the EMPr. In particular the EMPr must ensure environmental health and safety, not only to the broader community but also to workers involved in the execution of the activity to ensure that their rights are not ignored. As and where necessary include environmental education to skill those responsible for the implementation of the EMPr to undertake the required training to fully dispense with their responsibility in terms of requirements of the EMPr. The assessment addresses

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issues that extend well beyond the borders of the property concerned to ensure that environmental impacts resulting from a development are not disproportionately felt by a person while always ensuring that equitable access to environmental resources to meet basic human needs is ensured for all persons.

## **1.5 DETAILS OF THE ENVIRONMENTAL IMPACT ASSESSMENT PRACTITIONERS**

The Department of Agriculture and Rural Development appointed FOOTPRINT Environmental Services (FES), as the independent environmental consultants, to undertake the EIA, in accordance with the requirements of the National Environmental Management Act (Act No.107 of 1998). Neither FES nor any of the specialist sub-consultants are subsidiaries of / or affiliated to the Department of Agriculture and Rural Development or have any interest in secondary developments that may arise out of the authorisation of the development.

FES offers a broad range of professional biodiversity and environmental management related services and products. Our aim is to deliver quality service that is aligned to legislative & certification requirements and sets the standard for biodiversity & environmental best practice. FES has a diversified business offering in this sector. Under the ENVIRONMENTAL IMPACT ASSESSMENT portfolio FES provides environmental consulting services to ensure adherence to the requirements of the National Environmental Management Act (NEMA), NEMA Waste Act and in accordance with the NEMA EIA and Listed Activity regulations thus the assessment, avoidance and mitigation of potential environmental impact resulting from development and conducting PPP as specified in Regulation 42(2) of G'N no. R. 326 of 2014 as amended.

***The FES EAP's for the proposed Zonderwaterkraal agricultural development are Sean Ranger and Charl du Plessis;***

***Sean Ranger*** – Is a certified Environmental Practitioner, Ecological Scientist and member of IAIA. He holds a Masters degree in Sustainable Ecological Management. His first eight years were spent in Research & Development for Bayer (Pty) Ltd. Thereafter he embarked on a short career as a freelance writer and guided a number of eco-tours in wilderness areas of Southern Africa. Following this he was contracted to CapeNature and gained experience in conservation initiatives & strategic planning, project management and implementation. While contracted to CapeNature he was involved in developing new and innovative ways to encourage conservation within civil society, particularly the agricultural sector.



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Included here would be the development and piloting of the CapeNature Stewardship Program, strategic planning of the Greater Cederberg Biodiversity Corridor and project conceptualisation, design and implementation as a Senior Project Manager and land negotiator. During this period he designed and developed the Biodiversity Best Practice Projects for Potatoes South Africa and the South African Rooibos Council.

**Charl du Plessis** - Holds National Higher Diploma in Nature Conservation and has 25 years' experience in conservation management on statutory conservation areas as well as on private and communal properties. He was the manager of the Cederberg Wilderness, a World Heritage Site for 12 years. He compiled various strategic policies and management plans for the Wilderness Area, private land and conservancies, while responsible for the management of staff, contractors, ecological systems and processes (aliens, fire and erosion) and tourism development and infrastructure maintenance. During his involvement in the establishment of the Greater Cederberg Biodiversity, he was actively involved during the strategic planning, project conceptualisation and implementation phase.

**As a Directors of FOOTPRINT Environmental Services (FES)** a broad range of projects have been undertaken including: Biodiversity Report for the Bergrivier Municipality, Operational Management Plan for the Cederberg Conservancy, Rehabilitation and Erosion Management Plan for the Groot-Winterhoek Wilderness Area, Facilitation of the Public Participation Process for various CapeNature Protected Areas, a number of Integrated Fire and Alien Clearing Plans, Integrated Environmental Management Plans aligned to international certification organisations in the agricultural sector, GIS based Area-wide Planning for the Nieuwoudtville Plateau. Capacity Audit of Resource Departments in the Western Cape, GIS Planning for the WWF, 2x Environmental Application for the development of a weir in the Krom River and another in the Rondegat River to prevent the upstream movement of alien fish, Environmental Authorisation of Rooibos Cultivation in Clanwilliam, Environmental of Agricultural Developments in Paleisheuwel, Clanwilliam, Citrusdal and the Cederberg, Environmental Authorisation for Bulk Water Supply with the Dept of Public Works, Environmental Authorisation for Hospital at Saldanha, Environmental Assessments for Ecotourism Developments, among others.

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Please see **Appendix G - Details of EAP's** or refer to [www.footprintservices.co.za](http://www.footprintservices.co.za) to view the business profile and projects completed by FOOTPRINT Environmental Services.

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**1.6 DETAILS OF THE SPECIALISTS**

**1.6.1 Archaeological & Heritage Specialist**

**CURRICULUM VITAE**

**Name:** Jonathan Michael Kaplan

**Profession:** Archaeologist/Heritage Practitioner

**Date of Birth:** 23-09-1961

**Name of Company:** Agency for Cultural Resource Management (ACRM)

**Position:** Director

**Nationality:** South African

**ID Number:** 6109235177089

**Marital status:** Married with two children

**Languages:**

First language: English

Other: Afrikaans

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**Contact details:** 5 Stuart Road  
Rondebosch  
7700  
Phone/Fax (021) 685 7589  
Mobile 082 321 0172  
E-mail [acrm@waccess.co.za](mailto:acrm@waccess.co.za)

**Qualifications:**

- MA (Archaeology) University of Cape Town, 1989.

**Professional registration:**

- Association of Southern African Professional Archaeologists (ASAPA) Membership No. 253
- Registered with the South African Heritage Resources Agency (SAHRA)
- Association of Professional Heritage Practitioners (APHP)

**Publications:**

- Kaplan, J. & Mitchell, P. 2012. The archaeology of the Lesotho Highlands Water Project Phases 1A and 1 B. South African Humanities 24:1-32. KwaZulu Natal Museum.
- Sealy, J., Maggs, T., Jerardino, A. & Kaplan, J. 2004. Excavations at three shell middens at Melkbosstrand: variability among herder sites on Table Bay. South African Archaeological Bulletin 59:17-28.
- Kaplan, J. 1993. The state of archaeological information in the coastal zone from the Orange River to Ponta do Ouro. Report prepared for the Department of Environmental Affairs and Tourism. Agency for Cultural Resource Management.
- Kaplan, J. 1990. The Umhlatuzana Rock Shelter sequence: 100 000 years of Stone Age history. Natal Museum Journal of Humanities 2:1-94.
- Kaplan, J. 1989. 45 000 years of hunter-gatherer history at Umhlatuzana Rock Shelter: South African Archaeological Society Goodwin Series 6:7-16
- Kaplan, J. 1987. Settlement and Subsistence at Renbaan Cave. In Parkington, J. & Hall, M (Eds). Papers in the Prehistory of the Western Cape, South Africa. British Archaeological Reports International Series 332:237-261

**Countries of work experience:**

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South Africa, Lesotho, Swaziland, Namibia, Botswana, Mozambique

**Services offered:**

- Archaeological Impact Assessments
- Heritage Impact Assessments
- Heritage Management Plans
- Heritage tourism
- Rock art recording
- Excavation and data analysis
- Monitoring of construction activities

**Company profile:**

ACRM was founded by Jonathan Kaplan in 1992 and is one of the oldest heritage consultancies in the country. Jonathan has completed more than 1500 Archaeological and Heritage Impact Assessments (HIA & AIAs), specialising in Stone Age, rock art and herder studies. He has undertaken baseline studies on large infrastructure projects, including the Lesotho Highlands Water Project, Maguga Dam (Swaziland), Namibia/Botswana Water Transfer Project, Sasol/ACO Gas Pipeline (South Africa & Mozambique), Corridor Sands (Mozambique) and numerous utility projects for Eskom, the Department of Transport and Public Works, local and provincial authorities, as well as private developers. Since 2010, ACRM has conducted baseline studies (Scoping and full EIA) on a large number of alternative energy (wind and photo-voltaic) projects in the Western and Northern Cape Provinces.

Jonathan has a MA degree in Archaeology (UCT 1989) and is an Association of Southern African Professional Archaeologists (ASAPA) accredited Cultural Resources Management (CRM) practitioner (Membership No 253).

ACRM has been registered since 1992.

**Declaration:**

I confirm that the above CV is an accurate description of my experience and qualifications.



**Signature**

**Date:** 24 June, 2015

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### **1.6.2 Engineering Specialist**

Please refer to **Appendix D – Abridged CV of the BVI Group.**

### **1.6.3 Botanical Specialist**

Please refer to **Appendix D – Abridged CV - Nick Helme.**

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## 2. OVERVIEW OF THE PROPOSED ROOIBOS CULTIVATION LANDS

### 2.1 DESCRIPTION OF THE PROPOSED ROOIBOS CULTIVATION LANDS

#### 2.1.1 Locality

The site is situated within the agricultural farm of Zonderwaterkraal Farm 951/0, see **Appendix 1 – Locality Map**. The SG digit code for the cadaster is C0150000000095100000 and the site is located at GPS coordinates 31° 51' 35.48" S & 19° 03' 50.78" E.

#### *Access to the site:*

Turn right on the R27 (road between Vanrhysdorp and Calvinia), towards the town of Nieuwoudtville, pass Nieuwoudtville and travel towards the Papkuilsfontein turn off, turn right and follow the dirt road towards Zonderwaterkraal. The farm can be reached after travelling 55 kilometres from Nieuwoudtville. See also **Appendix 1 – Locality Map**.

#### 2.1.2 Project component and associated infrastructure

The establishment of the cultivation lands will entail the clearance of 21 hectares natural vegetation, firstly by brush cutting the vegetation and then ploughing it into the soil during the preparation phase. These areas will be cleared across the prevailing wind direction and >10m of natural vegetation strips will be retained between cultivated areas to serve as a refuge for beneficial insects and natural occurring plant species and more importantly to provide a wind break to prevent erosion, caused by wind. Cleared vegetation will be removed from the developed area and ploughed or distributed to the adjacent natural veld where it will decompose naturally. As the production will be based on organic conditions - there is no need for additional agricultural infrastructure by way of dams, soil drainage, irrigation and electricity systems.

## 2.2 THE NEED AND DESIRABILITY FOR THE PROPOSED ROOIBOS TEA LANDS

### 2.2.1 Alignment with the National Development Plan for 2030 (NDP)

The NDP 2030 calls for faster and more inclusive economic growth, in particular transforming the economy and creating sustainable expansion for job creation which entails that the rate of economic growth needs to exceed 5 percent a year on average.

To bring this about it proposes to increasing exports, focusing on those areas where South Africa already has endowments and comparative advantage, such as mining, construction, mid-skill manufacturing, **agriculture** and agro-processing, higher education, tourism and business services.

The apartheid system forced much of the African population into barren rural areas. The result was an advanced and diversified commercial farming sector relying on poorly paid farm labour, and impoverished, densely populated communities with limited economic opportunities and minimal government services. To change this, the NDP 2030 proposes a multifaceted approach one of which is directly aligned to the proposed project:

- *Creating more jobs through agricultural development, based on effective land reform and the growth of irrigated agriculture and land production.*

Finally in Chapter 5: Environmental Sustainability and Resilience the stated objective of the NDP is:

*Increased investment in new agricultural technologies, research and the development of adaptation strategies for the protection of rural livelihoods and expansion of commercial agriculture.*



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### 2.2.2 Alignment with a national programme to address an issue of national concern or importance.

The establishment and support to emerging farmers is a national priority. This is supported through the National Strategy for Sustainable Development under the Goal: *Implement skills development, in particular the youth, in the green economy sector, with the interventions in;*

- Agriculture, food production and forestry and
- Supporting programmes to ensure the protection of agricultural land, sustained food security and local economic development.

The proposed development is additionally addressed under *Strategic Infrastructure Investment 11 – Agri-logistics and rural infrastructure*. This strategic investment seeks to improve investment in agricultural and rural infrastructure that supports expansion in production and employment, small scale farming and rural development. The proposed development is therefore fully align to these strategic objectives as this is for the benefit of an emerging farmer by providing opportunities for local economic development.

### 2.2.3 Alignment with Provincial Spatial Development Framework (PSDF)

The PSDF states in the planning that efficient resource (capital) management. The efficient appropriation and use of the various forms of capital of the Northern Cape is imperative for the achievement of long-term sustainability and the vision set for the province as it relates to 'enhancing our future'. This is to be achieved through *inter alia* coherent local economic development, and efficient performance of economic sectors such as agriculture, mining, industry, science and technology, and tourism.

In terms of settlement patterns within the province the recent move to a global economy has been detrimental for many settlements because of the loss of manufacturing jobs, the vulnerability of export agriculture, and the increased competition in the energy and mining sectors. Securing better economic potential for producers such as this would therefore be aligned.

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The agricultural sector contributed 5.8% to the Northern Cape GDP per region in 2007, which was approximately R1.3 billion, and it employs approximately 19.5% of the total formally employed individuals (LED Strategy). The sector is experiencing significant growth in value-added activities, including game-farming (PGDS, July 2011). Food production and processing for the local and export market is also growing significantly. The Rooibos Tea sector in line with this, has similarly demonstrated market growth over time.

However agriculture is seen as a key component of the provincial GDP but is increasingly under pressure and its contribution has decreased steadily over time. Rejuvenation and support to this sector is required in the province. In the PSDF agriculture saw a decrease from 7.5% of GDP to 6.0% between 2008 and 2010. Increasing the production potential on farms through appropriate development would therefore contribute to the reversal of this trend.

Section C5 of the PSDF (Ensuring Sustainable Use of SPC : Agricultural Areas states as a clear objectives:

- a) *Develop the Northern Cape agricultural sector into a national and international asset.*
- b) *Develop and utilise the comparative economic advantages vested in agriculture.*
- c) *Protect high potential agricultural land from non-agricultural development.*
- d) *Utilise agricultural land in terms of the principles of sustainable agriculture.*
- e) *Utilise natural agricultural resources for the benefit of all (e.g. through partnerships).*

To a greater or lesser extent the proposed development has elements of each of these stated objectives.

The Spatial Plan for Agriculture identifies the area as having intermediate suitability for arable agriculture. Thus the area is located in an area that is considered suitable for agricultural production of this nature. The strategy flowing from this planning layer States the following - C.6.1.4(a) - Ensure that development scale and design are determined by the carrying capacity of the environment, including the following: - ***f) Potential of the site for sustainable agriculture or other productive land-use (i.e. the instrumental value of the site).***

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#### *2.2.4. Integrated Development Plan (IDP) and Spatial Development Framework (SDF)*

Currently there is no Local Authority SDF available for the Hantam Municipality – however in the IDP the Northern Cape Growth and Development Strategy reflects an opportunity for growth in the agriculture and agri-processing sectors. The IDP notes that agriculture forms the backbone of the local economy (contributing 11% to GDP) and the sector offers opportunities for growth and employment.

The project is registered in the IDP under section 6.3 – Facilitate economic development in the Hantam Municipal Area, in particular the Rooibos Tea : Emerging Farmers Development in Ward 4 as an ongoing project by the Department of Agriculture. This fully aligns with the current IDP and can therefore be demonstrated.

#### *2.2.5 Biodiversity Sector Plan for the Namakwa District Municipality*

In terms of identifying critical biodiversity areas and recommended planning categories for the areas to be cleared in terms of this plan. Investigation of the area shows that the areas identified will overlap with Critical Biodiversity Areas. These will be further evaluated in the impact assessment and through the evaluation of alternatives. The desired management objective would be sustainable development and management within general landuse principles and constitute favoured areas for development.

#### *2.2.6 Current land use rights and landuse practices*

Zonderwaterkraal is zoned for agriculture (Zonation Agriculture 1) and therefore the proposed activity is in line with existing land use rights. The region has a well-established history of being a successful Rooibos tea production area, due to its particular favourable climate and the suitability of its soils. The proposed development is characteristic of the surrounding landuse practices.

#### *2.2.7 Societal priority*

As shown above job creation, is one of the clear challenges that the local authority will face in the years to come, due in part to natural population expansion of the resident population and with migrant people immigrating into the area seeking gainful employment and an income able to provide a sustainable livelihood.

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Nieuwoudtville, the town closest to the proposed development has low potential to develop both in terms of economic and social development. Hence the *status quo* of agriculture being the mainstay for future employment from these centres will remain a long term reality. Small towns such as Nieuwoudtville, will be the source for low skilled labour that will move to the agricultural sector either as temporary labour or to find permanent employment. Additionally the agricultural industry is the one sector with the ability to absorb large numbers of unskilled labour that are otherwise for the most part unemployable. Through increase of the production volume possible from this property have direct links to the provision of sustainable low skilled jobs. Finally additionally it will provide more financial security to the emerging farmer through greater production volume potential and income generation.

The proposed development is fully aligned with the strategic forward planning for the area and is appropriate and fully aligned with the current land use practice on site.

The primary environmental impact of this development is associated with the loss of biodiversity due to the clearance of natural vegetation - this is however mitigated in two ways;

- *The development is located in an area where the land use option is compatible with the SPC's for the preservation of biodiversity pattern and process. Moreover the mapped vegetation type is regarded as Least Threatened. However the specialist botanist has indicated that the vegetation unit has been incorrectly mapped and should be mapped as Nardouw Sandstone Fynbos which has the status of being vulnerable in the latest assessment of ecosystem status.*
- *Rooibos production systems, lends itself to the retention of biodiversity pattern and process due to the strip cultivation practice that is followed as a matter of course i.e. cleared strips being alternated with retained strips of natural vegetation that serve as wind break, act as safe refuge for species and allowing movement of biota. To this could be added the low chemical inputs required to successfully produce a crop of Rooibos.*

On the opportunity side we should consider that the proposed development will support the emerging farmer by establishing a more secure business and creating more job opportunities. The opportunity in this instance therefore does appear to outweigh the environmental cost.

## 2.3 PROJECT ALTERNATIVES

### 2.3.1 Site alternatives

In this instance Site Alternatives are not available as the farm is the only site on which the development can take place as it is the only property owned by the applicant.

| <b>Alternative 1 (preferred alternative)</b>  |                  |                  |
|---|------------------|------------------|
| Description   | Lat (DDMMSS)     | Long (DDMMSS)    |
| Locality 1: The farm Zonderwaterkraal is located in the extreme south of the Nieuwoudtville Plateau, the southern boundary of the property is along the Doring River which drains from east to west, see also APPENDIX A– Locality Map. | 31° 51' 35.48" S | 19° 03' 50.78" E |

**Alternative 2 : Property Scale – NONE - As stated above no feasible property alternative is possible.** As outlined above no location for an alternative on any other property that may be available to the proponent is possible and therefore no feasible or reasonable alternative is available. Accordingly no further assessment of a property alternative is possible.

**Alternative 3 : No-go alternative** To pursue the no go option is not considered feasible. From an economic perspective this land use option is aligned with provincial and local forward planning and directly aligned with the national agenda to uplift PDI farmers - the mix of intensive and extensive use of the land does translate into the most economically sustainable landuse for this locality and is aligned with the landuse on the surrounding properties. At this juncture it would appear that the opportunity cost weighs in favour of the proposed development due to the extent of the development itself in relation to its impacts on biodiversity.

### 2.3.2 Site scale alternatives

In this instance Layout Alternatives are possibly available and will need to be investigated in more detail in the Impact Assessment phase of the proposed development. This stems from the assessment by the botanical expert and the finding that a portion of the property in which the agricultural sites have been placed contain threatened plant species of conservation concern. The sites identified by the DENC have

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had the agricultural potential confirmed by a soil analysis, refer to **Appendix D – Specialist Reports** and are considered the best possible areas for the optimal production of Rooibos Tea on the property from a soil suitability point of view. However large portions of the site would result in a high significance impact on important floral diversity. To this end two alternatives will be assessed in terms of the potential to cause significant impact. At this juncture the first alternative (Alternative 1) will remain the areas that have been identified through the soil capability study undertaken by the DENC and the proposed layout provided by the specialist botanist will be Alternative 1 and will be considered as the preferred alternative when proceeding with the assessment process, please refer to **Appendix A – Site Plans:**

| <b>Alternative 1 (preferred alternative)</b>  |                   |                   |
|---|-------------------|-------------------|
| Description   | Lat (DDMMSS)      | Long (DDMMSS)     |
| A1S1: The site is located ± 420 m to the west of site 1 (measures at the closest distance between them). This is the most westerly site and comprising 2.6 ha's. The site is located on a plateau that slopes gently from north to south. | 31° 52' .043" S   | 19° 02' 44.925" E |
| A1S2: This site lies adjacent to the identified sensitive area on its western flank.  | 31° 51' 54.841" S | 19° 03' 5.786" E  |
| A1S3: This site lies adjacent to the identified sensitive area on its northern flank.   | 31° 51' 49.351" S | 19° 03' 19.236" E |
| A1S4: This site lies adjacent to the identified sensitive area on its north eastern flank.  | 31° 51' 47.933" S | 19° 03' 26.625" E |
| A1S5: This site lies to the north east of the sensitive site being displaced by approximately 371 m.  | 31° 51' 47.521" S | 19° 03' 40.120" E |
| Suitable Area demarcation will form part of the preferred alternative as additional sites will require investigation to provide for the required area for production of Rooibos tea.  | 31° 51' 54.841" S | 19° 03' 5.786" E  |

Please refer to **Appendix A – Site Map Alternative 1 (preferred alternative)**

|  |
|--|
| <b>Alternative 2 (preferred alternative)</b> |
|--|

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| Description   | Lat (DDMMSS)      | Long (DDMMSS)     |
|---|-------------------|-------------------|
| A2S1: The site is located ( $\pm$ 1.14km) to the west of the farm building at Zonderwaterkraal. This is the largest site comprising an area of 18 ha's. The site is located on a plateau that slopes gently in the direction south, north and east. | 31° 51' 54.866" S | 19° 03' 12.013" E |
| A2S2: The site is located $\pm$ 420 m to the west of site 1 (measures at the closest distance between them). This is the most westerly site and comprising 2.6 ha's. The site is located on a plateau that slopes gently from north to south.       | 31° 52' 4.992" S  | 19° 02' 45.236" E |

Please refer to **Appendix A – Site Map Alternative 2**

**Alternative 3 : No-go alternative** To pursue the no go option is not considered feasible. From an economic perspective this landuse option is aligned with provincial and local forward planning - the mix of intensive and extensive use of the land does translate into the most economically sustainable land use for this locality. The opportunity cost weighs in favour of the proposed development due to the conservation status of the ecosystem type and the extent of the development itself in relation to its impacts on biodiversity.

### 2.3.3 Technology Alternatives

Rooibos Tea is grown with very few inputs in terms of chemicals, fertilisers and or other plant nutrients on dry land conditions. The use of minimum till / conservation tillage is still in its research phase for this agricultural crop with no clear indication of its viability or benefit and as such recommendations in this regard would be premature. Another technological advance in the agricultural sector over the last number of years in South Africa has been the emergence of precision farming. However the expense associated with precision farming is prohibitively costly, in particular in this instance because by comparison to other intensive crops, Rooibos is a low net earner that would not be able to support the costs associated a high technology input farming system such as this at this point.

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#### 2.3.4. Activity alternatives

The mix of intensive and extensive use of the land does translate into the most practicable and economically sustainable landuse for this locality. In our evaluation the opportunity cost weighs in favour of the proposed development due to the conservation status of the ecosystem type and the distance from any important pattern or process biodiversity features and the ability to mitigate impact through the use of strip cultivation and buffering of more sensitive habitats – in this area drainage lines identified as buffer areas for the Doring River. The area is economically active due to its suitability for the cultivation of an indigenous plant that does not grow in any other part of the world.

Sustainable landuse options for people in this location are limited to intensive and extensive agricultural pursuits and in our consultation appear to be closely linked to the ability of a producer to respond to the vagaries of the market place by ensuring that;

- *diversification of small stock and Rooibos production provides the most sustainable option in terms of an economic model for a farm, and*
- *that enough area needs to be made available to intensive production to ensure enough product volume is available to ride out market fluctuations and increase the amount of land available to use as productive grazing to bolster the small stock side of the business.*

Therefore on evaluation as an activity we believe it to be a feasible alternative.

#### 2.3.5. Operational alternatives

**Alternative 1 – Preferred Alternative** - In an operational sense the farming system for the production of Rooibos is well established and tested over many years. Operationally disturbance would firstly be caused by vehicles accessing the site, during the preparation of the lands for cultivation, planting, the harvesting of the crop and the transport of the crop to the processing area located on another property. Operational guidelines would therefore be associated with the management of these potential impacts and could adequately be addressed in an EMPr.

The harvesting and processing of Rooibos occurs once a year and is dependent on temporary harvest labour to get the crop off the lands, a more mechanised approach to harvesting is unfeasible as an estimate of the amount that may be cut from individual Rooibos plants needs to be taken i.e. a pre set



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mechanical harvester is not possible as each plant must be cut at a different height depending on its own dimensions. Plants harvested too severely (cut too low to the ground) die off quicker and therefore reducing the number of years that an individual plant remains productive, which in turn would have significant impacts on the yield per hectare and the economic viability of the business.

Currently producers are highly dependent on the advisory services that are housed within the agro-chemical industries in terms of recommendations for biocide and fertiliser use, to shift the farming operation away from this support service would require an effective and independent extension service from a statutory source. Currently this is wholly unfeasible due to a chronic lack of capacity within state institutions to fulfil this role.

Members of the Heiveld Co-op is well supported through NGO's such as the Environmental Monitoring Group for extension and regulated in terms of the use of biocides (through international certification organisations) and therefore has to adhere to international requirements in terms of biocide use and maximum residue levels due to the fact that the product is exported, primarily to Europe in bulk for further processing. These are sophisticated markets that require high levels of traceability and product safety. Current operational practice allows for a number of years for a land to lie fallow after a crop is harvested to provide soils with the opportunity to rest and remain sustainably productive. This is good practice and well established within this sector. The combination of strip cultivation and the sowing of cover crops is also a well established operational procedure to combat and protect soils from wind erosion.

#### 2.3.6 The no go option

While the no go option will be fully assessed during the EIA portion of the assessment process, there are a number of facts evident at this stage which may indicate that the no go option could in fact prove to be unfeasible in this instance.

It must be noted here that the planning documentation identifies this portion of the landscape as suitable for intensive agricultural pursuits. Additionally that the locality is characterised in the conservation planning by a low regional impact on the ecosystem. This would perpetuate the current situation and would translate into the utilisation of the sites for extensive agricultural pursuits such as

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grazing by small stock. Fynbos ecosystems are characterised by the fact that they have very low nutrient status and are not able to support enough stock units per hectare to provide a sustainable livelihood. Moreover by lucky coincidence the more rocky areas do support relatively more palatable plants by comparison to deeper sandy soils, thus the mix of deeper more arable soils and rocky areas used for grazing are the most efficient means of utilising any given area for an economic pursuit. It must also be noted that disturbance within these vegetation types is essential for its health, in Fynbos by far the greatest source of necessary disturbance comes from fire which is essential for the rejuvenation of the ecosystem and to a lesser extent from the physical action of grazers hooves breaking up the soils surface and from the grazing on palatable shrubs and forbes. **To pursue the no go option is not considered feasible. From an economic perspective this landuse option is aligned with provincial and local forward planning - the mix of intensive and extensive use of the land does translate into the most economically sustainable landuse for this locality. The opportunity cost weighs in favour of the proposed development due to the conservation status of the ecosystem type and the extent of the development itself in relation to its impacts on biodiversity. The area is economically active due to its suitability for the cultivation of an indigenous plant that does not grow in any other part of the world. Sustainable landuse options for people in this location are limited to intensive and extensive agricultural pursuits and in our consultation appear to be closely linked to the ability of a producer to respond to the vagaries of the market place by ensuring that (1.) diversification of small stock and Rooibos production provides the most sustainable option in terms of an economic model for a farm in this region, and (2.) that enough area needs to be made available to intensive production to ensure enough product volume is available to ride out market fluctuations and increase the amount of land available to use as productive grazing to bolster the small stock side of the business.**

## **2.4 OVERVIEW OF THE DEVELOPMENT PHASE**

### 2.4.1 Conduct Surveys

BVI Consulting Engineers was appointed by the Northern Cape Department of Agriculture, Land Reform and Rural Development to compile a soil investigation survey to ascertain the suitability for the cultivation of virgin soil for the production of Rooibos tea at Zonderwaterkraal. The engineers were therefore responsible for the identification of the 2 most suitable sites on this property. **See Appendix D – Specialist Reports.**

#### 2.4.2 Access to the sites

Farm machinery such as tractors, tractor driven brush cutters and ploughs will be driven to these two sites using the existing road networks on the property. No new roads is therefore needed. **See Appendix A – Locality Map.**

#### 2.4.3 Site preparation

Site is to be cleared and grubbed of all vegetation, firstly by brush cutting the vegetation and then ploughing it into the soil during the preparation phase. These areas will be cleared across the prevailing wind direction and >10m of natural vegetation strips will be retained between cultivated areas to serve as a refuge for beneficial insects, natural occurring plant species and more importantly to provide a wind break to prevent erosion, caused by wind. Cleared vegetation will be removed from the developed area and ploughed in or distributed to the adjacent natural veld where it will decompose naturally. As the production will be based on organic dryland conditions - there is no need for additional agricultural infrastructure by way of dams, soil drainage, irrigation and electricity systems.

### **2.5 Operational phase**

In an operational sense the farming system for the production of Rooibos is well established and tested over many years. Operationally disturbance would firstly be caused by people and vehicles accessing the site during the harvesting of the crop and the transport of the crop to the processing area that is located on another property. The harvesting and processing of Rooibos occurs once a year and is dependent on temporary harvest labour to get the crop off the lands, as each amount that may be cut from individual Rooibos plants needs to be taken into consideration - Plants harvested too severely (cut too low to the ground) will die off reducing the number of years that an individual plant remains productive, which in turn would have significant impacts on the yield per hectare, economic viability of growing the crop and the sustainability of the business.

The owner is a member of the Heiveld Co-op – that is well supported through NGO's such as the Environmental Monitoring Group with extension and regulated in terms of the use of biocides (through international certification organisations and fair trade “niche markets”) and therefore has to adhere to international requirements in terms of biocide use and maximum residue levels due to the fact that the

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product is exported, primarily to Europe in bulk for further processing. These are sophisticated markets that require high levels of traceability and product safety (as a producer of Heiveld Co-op, the proponent is accredited at various accreditation institutions). Current operational practice allows for a number of years for a land to lie fallow after a crop is harvested to provide soils with the opportunity to rest and remain sustainably productive. This is good practice and well established within this sector. The combination of strip cultivation and the sowing of cover crops is also a well-established operational procedure to combat and protect soils from wind erosion.

Operational guidelines would therefore be associated with the management of these potential impacts and could adequately be addressed in an EMPr.

## **2.6 Decommissioning phase**

As this application is an important part of growing the landowner financial capacity and to secure long term financial and business sustainability it is not foreseen that the cultivated lands will be decommissioned.

### 3. ENVIRONMENTAL AUTHORISATION PROCESS

The Environmental Impact Assessment Process (EIA) referred to that process that is aligned with the requirements of the EIA Regulations and which involves the identification and assessment of all direct, indirect and cumulative environmental aspects of a proposed development.

This EIA process is comprised of two phases, the **Scoping Phase** and the **EIA Phase**. The EIA process is concluded when the EIA Report with an Environmental Programme is submitted to the competent authority for decision-making and environmental authorisation.

#### 3.1 REGULATORY AND LEGISLATIVE CONTEXT

##### 3.1.1 Regulatory Agencies - National level

- Department of Environmental Affairs (DEA) – is responsible for the environmental policies and enforcement of the NEMA and the EIA Regulations.
- South African Heritage Resource Agency (SAHRA) – is responsible for the National Heritage Resources Act (Act 25 of 1999) as well as provincial regulations that protect various listed and proclaimed heritage resources and values.

##### 3.1.2 Regulatory Agencies - Provincial Level

- Northern Cape : Department of Environment and Nature Conservation is the main regulatory Department and will be a commenting authority for this proposed development.

##### 3.1.3 Regulatory Agencies - Local level

At a local regulatory level, planning, land-use and environmental concerns are the responsibility of the Local and District Municipalities; in this case the proponent is the applicant and is the municipality. Generally these responsibilities include aspects such as the legislative mandatory Integrated Development Plans (IDP's), Spatial Development Frameworks (SDF's) and enforcement of by-laws and policies – alluded to in the needs and desirability section of this report.

### 3.2 LEGISLATIVE GUIDELINES

This section describes all the legislation and guidelines that are used to inform the scope and content of this Draft Scoping Report:

- National Environmental Management Act (Act 107 of 1998) (NEMA);
- EIA Regulations, published in Chapter 5 of NEMA (Listing Notice 1, 2 & 3 of 2017) as amended;
- Relevant guidelines, published in terms of NEMA, such as the Guideline on involving a specialist in an EIA process (DEA&DP 2005)

Where relevant various other Acts, guidelines and standards will be used in addition to those mentioned above to inform the assessment process of the proposed development, the scope of issues addressed in the Scoping Report and which will in turn be addressed in the EIA. The applicability of these acts, guidelines and standards and the competent authority responsible for their implementation are summarised in **Table 6 - Review of applicable legislation, policies and guidelines applicable to the proposed Zonderwaterkraal Rooibos Cultivation lands.**

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**Table 6 : Review of applicable legislation, policies and guidelines applicable to the proposed Zonderwaterkraal Rooibos Cultivation lands.**

| Legislation   | Applicable Sections   | Responsible authority               |
|---|---|-------------------------------------|
| The Constitution of the Republic of South Africa (Act 108 of 1996)        | (S2) Bill of Rights<br>(S24) Environmental rights - the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that – prevent pollution and ecological degradation;   |                                     |
| The National Environmental Management Act (NEMA) (Act 107 of 1998)        | Environmental Impact Assessment (EIA) Regulations have been promulgated in terms of Chapter 5 of the Act. Everyone wishing to undertake an activity listed in these Regulations (Listing Notices 1, 2 and 3 of Dec 2014 as amended) needs an environmental authorization.<br>S24(1) of the Act stipulates that the potential impact on the environment associated with these listed activities must be assessed and reported to the competent authority.<br>According to S28(1) – the Duty of Care Provision – the project proponent must ensure that reasonable measures are in place to ensure that pollution and or degradation of the environment are avoided, stopped and or minimised. This is applicable for the entire life cycle of the proposed agricultural development. | Department of Environmental Affairs |
| The National Environmental Management : Biodiversity Act (Act 10 of 2004) | In terms of S 56(1) a list of threatened & protected species has been published in Government Gazette 29657;<br>Additional to this; GN R 150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R 151 (list of critically endangered, vulnerable and protected species) and GN R 152 (Threatened or protected Species Regulations) has been   | Department of Environmental Affairs |

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|   |  |   |
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|   | <p>published.</p> <p>Under this Act, a permit is required for any activity which may negatively impact on the survival of a listed protected species.</p>  |   |
| Environmental Conservation Act (Act 73 of 1989)     | National Noise Control Regulations (GN R154 – 10 <sup>th</sup> January 1992)   | Department of Environmental Affairs, NC<br>Department of Environment and Nature Conservation as well as the Local Authorities |
| National Water Act No 36 of 1998                    | <p>S19 – Duty of Care that stipulates that the project proponent must ensure that reasonable measures are in place to prevent and mitigate to effect of pollution of water resources.</p> <p>S20 – describes the procedures to be followed in an emergency situation which may impact water resource.</p> <p>S21 – Definition of water use.</p> <p>S22 – Any water use that is not Schedule 1 as stipulated in terms of this Section must be authorised.</p> <p>S151 - unlawfully and intentionally or negligently commit any act or omission which detrimentally affects or is likely to affect a water resource.". A "water resource includes "a water course, surface water, estuary or aquifer".</p> | Department of Water Affairs   |
| National Heritage Resources Act (Act No 25 of 1999) | S38 - Stipulates that any person who intends to undertake a development such as-(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length; (b) the construction of a bridge or similar structure exceeding 50m in length; any  | South African Heritage Resource Agency  |



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|   |   |                           |
|---|---|---------------------------|
|   | development or other activity which will change the character of a site-(i) exceeding 5 000 m <sup>2</sup> in extent; or (ii) involving three or more existing erven or subdivisions thereof; (d) the re-zoning of a site exceeding 10 000 m <sup>2</sup> in extent; - must at the very earliest stages of initiating such a development inform the local resource authority of such development. |                           |
| Conservation of Agricultural Resources Act (Act 43 of 1983) | Regulation 15 has been promulgated and makes it unlawful to allow various species of weeds and invader plants to grow.  | Department of Agriculture |

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### 3.3 AIMS AND OBJECTIVES OF THE EIA PHASE

The EIA phase of the assessment process is intended to achieve the following:

- With due consideration of the sustainability paradigm undertake an assessment of the proposed development from a biophysical and socio-economic perspective for all three phases of the development and with due consideration for the “no-go” or “do-nothing” alternative.
- In as robust a manner as practicably possible gain an understanding of the significance of impact identified (positive, neutral and negative) resulting from direct, indirect and cumulative impact of activities associated with all phases of the development.
- In an instance where site, technology and operating alternatives are possible assessing the comparative significance of impact for each of these alternatives.
- Wherever practically possible ensure that impact on the environment is avoided.
- Where impact is unavoidable develop and make recommendations for implementable mitigation measures that reduce the significance of impact to within acceptable levels
- Provide for a fully inclusive public participation process to ensure that the relevant resource use departments as key stakeholders and all I&AP's have the opportunity to participate in the proposed development by raising issues and concerns, contributing and/or providing their support to the project.
- In instances where impact significance results in a fatal flaw that by this virtue cannot be mitigated to make the recommendation not to proceed with the proposed activities of the development.
- Provide the competent authority with enough information to make an informed decision on the feasibility of the proposed development.

### **3.4 METHODOLOGY TO BE USED DURING THE EIA PHASE**

The EIA Phase has been undertaken in accordance with the EIA Regulations as published in Government Notice 982 of NEMA. The following key activities were undertaken:

#### **3.4.1 Undertaking Specialist Studies**

In adherence to Appendix 6 of the EIA Regulations the following was required of the specialists appointed to undertake the studies in this report

A specialist report or a report on a specialised process prepared in terms of these Regulations must contain

(a) details of

- (i) the person who prepared the report; and
  - (ii) the expertise of that person to carry out the specialist study or specialised process;
  - (b) a declaration that the person is independent in a form as may be specified by the competent authority;
  - (c) an indication of the scope of, and the purpose for which, the report was prepared;
  - (d) a description of the methodology adopted in preparing the report or carrying out the specialised process;
  - (e) a description of any assumptions made and any uncertainties or gaps in knowledge;
  - (f) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment;
  - (g) recommendations in respect of any mitigation measures that should be considered by the applicant and the competent authority;
  - (h) a description of any consultation process that was undertaken during the course of carrying out the study;
  - (i) a summary and copies of any comments that were received during any consultation process;
- and
- (j) any other information requested by the competent authority.

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In this instance only a Heritage and Botanical Expert were appointed by FES to complete the required assessments.

### 3.4.2 Preparation of the draft EIA report

An environmental impact assessment report must contain all information that is necessary for the competent authority to consider the application and come to a decision on the application, and must include the following information.

(a) details of—

- (i) the EAP who prepared the report; and
- (ii) the expertise of the EAP, including a curriculum vitae;

(b) the location of the activity, including;

- (i) the 21 digit Surveyor General code of each cadastral land parcel;
- (ii) where applicable, the physical address and farm name; and;
- (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;

(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or if it is –

- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;
- (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;

(d) a description of the scope of the proposed activity, including –

- (i) all listed and specified activities triggered and being applied for; and
- (ii) a description of the associated structures and infrastructure related to the development;

(e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;

(f) a motivation for the needs and desirability of the proposed development, including the need and desirability of the activity in the context of the preferred location;

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(g) a motivation for the preferred development footprint within the approved site;

(h) a full description of the process followed to reach the proposed development footprint within the approved site, including:

(i) details of the development footprint alternatives considered;

(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;

(iii) a summary of the issues raised by I&AP, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;

(iv) the environmental attributes associated with the development footprint alternatives focussing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

(v) the impacts and risks identified including the nature, significance, consequences, extent, duration and probability of the impacts, including the degree to which these impacts –

(aa) can be reversed;

(bb) my cause irreplaceable loss of resources; and

(cc) can be avoided, managed or mitigated;

(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(vii) positive and negative impacts that the proposed activity and alternative will have on the environment and on the community that may be affected focussing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

(viii) the possible mitigation measures that could be applied and level of residual risk;

(ix) if no development locations of the activity were investigated, the motivation for not considering such;

(x) a concluding statement indicating the preferred alternative development location within the approved site;

(i) a full description of the process undertaken identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including-

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- (i) a description of all environmental issues and risk that were identified during the environmental assessment process and
  - (ii) an assessment of the significance of each issue and risks and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;
- (j) an assessment of each identified potentially significant impact and risks, including
- (i) cumulative impacts;
  - (ii) the nature, significance and consequences of the impact and risk;
  - (iii) the extent and duration of the impact and risk;
  - (iv) the probability of the impact and risk occurring;
  - (v) the degree to which the impact and risk can be reversed;
  - (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
  - (vii) the degree to which the impact and risk can be mitigated;
- (k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 of the regulations and an indication on how these findings and recommendations have been included in the final assessment report;
- (l) an environmental impact statement which contains
- (i) a summary of the key findings of the environmental impact assessment;
  - (ii) a map at an appropriate scale which superimpose the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and
  - (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;
- (m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of the proposed impact management objectives, and the impacts management outcomes for the development for inclusion in the EMP as well as for inclusion as conditions of authorisation;
- (n) the final proposed alternatives which respond to the impact management measures. Avoidance, and mitigation measures identified through the assessment;
- (o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;

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- (p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;
- (q) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of the authorisation;
- (r) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finished;
- (s) an undertaking under oath or affirmation by the relation to:
  - (i) the correctness of the information provided in the reports;
  - (ii) the inclusion of comments and inputs from stakeholders and I&AP;
  - (iii) the inclusion of inputs and recommendations from the specialist reports where relevant;
  - (iv) any information provided by the EAP to the interested and affected parties and any responses by the EAP to comments or inputs made by the interested or affected parties;
- (t) where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing decommissioning management of negative impacts;
- (u) an indication of any deviation from the approved scoping report, including the plan of study including –
  - (i) any deviation from the methodology used in determining the significance of potential environmental impacts and risk and
  - (ii) a motivation for the deviation;
- (v) any specific information that may be required by the competent authority;
- (w) any other matters required on terms of section 24(4)(c) and (b) of the Act

### **3.4.3 Methodology used for the impact assessment**

It is expected that the most significant environmental impacts will occur during the development phase of this agricultural development. It is noted though that environmental impacts may additionally occur during the operational and the decommissioning phases the former to a much lesser extent and in our opinion the latter and significantly less than the development phase.

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The following methodology was applied in identifying and determining the potential impacts across all three phases of the proposed development.

- 1.) Site sensitivity – the determination of the sensitivity of the proposed sites was assessed by firstly spatially overlaying in ArcGIS10 the proposed areas for the development with all known and available spatial planning products which included SANBI conservation planning products such as the National Spatial Biodiversity Assessment, Critical Biodiversity Areas and Ecological Support Areas, the National Freshwater Ecosystem Priority Areas, landuse, agricultural and geological information.
- 2.) Thereafter terms of reference were drawn up for the appointment of specialists to further assess the site for sensitivity at sub-property scale and identify potential impacts in terms of direct, indirect and cumulative impacts that would be likely to occur on site.
- 3.) Both the EAP's and the specialists commissioned to undertake the assessments on site focussed on determining the nature and extent of the potential impacts on site across all phases of the proposed development. This included physically visiting the site to confirm the scope of work required.
- 4.) The sensitivity analysis as outlined above provided an overview of the property in terms of those areas with low sensitivity, medium sensitivity and high sensitivity and those that constituted no-go areas.
- 5.) Thereafter impacts were assessed in terms of the duration of the impact, the extent of the impact, the intensity of the impact, the probability of the impact and the degree of confidence and a significance rating was determined for all identified impacts and phases of the proposed development. This was used to provide a short concise summary of the potential impacts associated with the different phases of the proposed development.
- 6.) Mitigation measures were identified for each of the identified impacts where applicable.
- 7.) Cumulative impacts stemming from each of the identified impacts were additionally assessed.
- 8.) Issues were identified that extended beyond the borders of the proposed site and which may impact key stakeholders or I&AP's beyond the property scale.



### **3.4.4 Framework for the determination of impact significance**

In determining impact significance the following framework was used.

*The objectives of the Impact Assessment Method were to;*

- Assess the overall impact on the social and biophysical environment that will be effected by the proposed agricultural development;
- Assess significant impacts that are associated with the proposed agricultural development;
- Identify and make recommendations for mitigation measures for potentially significant environmental impacts;
- Undertake comprehensive public participation process that will ensure that Key Stakeholders and I&AP's are participating and that their comments, issues and concerns are recorded;
- Address environmental impacts and benefits (direct, indirect and cumulative) associated with the design, construction, operational and decommissioning and;
- Provide adequate information to the DENC as the competent authority to make an informed decision on the proposed development.

#### *Potential Impact Assessment Methodology Criteria*

For this proposed agricultural development, direct, indirect and cumulative impacts will be assessed using the following seven generic rating scales;

- Duration
- Extent
- Intensity
- Significance
- Status of the impact
- Probability
- Degree of confidence.

#### *Duration of impacts*

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The duration will determine the lifetime of the impact – this will be rated from low score (impact will have a very short lifetime e.g. 0-1yr) to a high score (impact will be permanent).

**Table 7 : Duration of Impact rating**

| Rating     | Description   | Score |
|------------|---|-------|
| Short term | The lifetime of the impact will be for a short duration (0-5 yr)                                  | 1     |
| Medium     | The lifetime of the impact will be for a medium duration (5-15yr)                                 | 2     |
| Long term  | The lifetime of the impact will be for a long duration (>15 yr)                                   | 3     |
| Permanent  | The impact will occur even after the operational and decommissioning of the project has occurred. | 4     |

*Extent of impacts*

Extent defines the physical or spatial scale of the impact on the receiving environment. The score will be low where impacts are limited to the site and its immediate surroundings and will increase as the extent increases to a regional and national level.

**Table 8 : Extent of Impact**

| Rating   | Description   | Score |
|----------|---|-------|
| Local    | The impact is limited to the site and its immediate surroundings                  | 1     |
| Regional | The impact extended beyond the boundary of the site                               | 2     |
| National | The impact is widespread and will have an impact on a Regional to National Scale. | 3     |

*Intensity of impacts*

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The evaluation of the intensity is used to measure or establish whether the impact would be destructive or the level of destruction particular impacts will have on the receiving environment.

**Table 9 : Intensity of Impacts**

| Rating | Description  | Score |
|--------|--|-------|
| Low    | Impacts have no effects on the processes and functions of the natural, cultural and social environment.                              | 1     |
| Medium | The affected environment is altered but natural, cultural and social functions and processes continue – although in a modified way.  | 2     |
| High   | The natural, cultural and social functions or processes are altered to the extent where they will be temporary or permanently cease. | 3     |

*Probability of impacts*

Probability describes the likelihood of the impact occurring during the proposed development, during the operational phase and after the development. Scoring will vary from low (improbable) to high (definite that the impact will occur - regardless of any preventative measures)

**Table 10 : Probability of Impacts**

| Rating          | Description  | Score |
|-----------------|--|-------|
| Improbable      | The possibility of the impact occurring is very low.                     | 1     |
| Probable        | There is a possibility that the impact will occur.                       | 2     |
| Highly Probable | The impact will definite occur - regardless of any preventative measures | 3     |

*Status of the Impact*

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The status of the impact is used to describe whether the impact would be negative, positive or no effect on the receiving environment.

*Degree of confidence*

The degree of confidence measures the level of reliability of the impact predictions subject to the availability of relevant information.

**Table 11 : Degree of confidence**

| Rating | Description                                   |
|--------|---|
| High   | Greater than 70% sure of impact prediction    |
| Medium | Between 35% and 70% sure of impact prediction |
| Low    | Less than 35% sure of impact prediction       |

*Significance Rating*

Significance rating can be assessed as low, medium and high using a formula. The formula is  $S = (E+D+I)P$ .

S= Significance rating,

E=Extent, D=Duration, I=Intensity and P= Probability.

**Table 12 : Significance of Impacts**

| Rating | Description   | Score |
|--------|---|-------|
| Low    | <20. Impact would not have a direct influence on the decision to develop                    | 1     |
| Medium | 20 – 30. Impact could influence the decision to develop unless it is effectively mitigated. | 2     |
| High   | > 30. The impact must have an influence on the decision process to develop                  | 3     |

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|  |           |  |
|--|-----------|--|
|  | the area. |  |
|--|-----------|--|

### 3.4.5 Consultation with authorities and application for authorization

The agricultural development project has local significance, therefore the Northern Cape - Department of Environment and Nature Conservation is the competent authority in this instance.

The consultation process begins with the submission of an application for authorisation to the Northern Cape - Department of Environment and Nature Conservation as the competent authority. A copy of the Draft Scoping Report was sent to DENC and a detail public participation process followed. Details are contained in **Appendix E – Public Participation Report**.

### 3.4.6 Public Participation Process

A detail public participation process was followed during the application process (Scoping and IA phase). Details are contained in **Appendix E – Public Participation Report**.

## 4. THE RECEIVING ENVIRONMENT

### 4.1 REGIONAL CONTEXT

Zonderwaterkraal is located within the Hantam Municipal boundary of the Northern Cape. Regionally the Nieuwoudtville Plateau is well known for the production of organic Rooibos Tea, which flourish on sandy, acid Clovelly soils. Although Zonderwaterkraal is rather remote (55km south of Nieuwoudtville) the surrounding landscape with the already established Rooibos Tea cultivated lands clearly indicate that Rooibos tea is the economic key pin for the agricultural sector within the specific region.

### 4.2 LOCALITY

As stated above the proposed Rooibos Tea development is proposed on Zonderwaterkraal, Farm 951/0, Nieuwoudtville. The SG digit code for the cadastre is C01500000000095100000 and the site is located at GPS coordinates 31° 51' 35.48" S & 19° 03' 50.78" E (location of the farmstead) and is ± 55km south of Nieuwoudtville see **Appendix A – Locality Map**.

### 4.3 ACCESS

Turn right on the R27 (road between Vanrhysdorp and Calvinia), towards the town of Nieuwoudtville, pass Nieuwoudtville and travel towards the Papkuilsfontein turn off, turn right and follow the dirt road towards Zonderwaterkraal. The farm can be reached after travelling 55 kilometres south from Nieuwoudtville.

### 4.4 THE PHYSICAL ENVIRONMENT - TOPOGRAPHY AND GEOLOGY

The site is located in an area which grades from flat to gently undulating rounded hills and slopes associated with a granitic geological intrusion. The site itself is flat and located in a basin above an agricultural dam from the site the ground rises up on all sides but particularly there is a ridgeline to the east of the site, running roughly north east to south west and another to the west which runs generally east to west. The location of these two features are indicated by the outward bends in the contour lines on the map, **See Appendix A – Ecological Sensitivity Map**.

#### **4.5 CLIMATIC CONDITIONS**

Nieuwoudtville has a Mediterranean climate receiving more than 250 mm per annum. The rain peaks is in June, July and August with the least rain in December to February. The average temperatures are moderate to mild – with extreme temperatures in February (>35°C) however the winter months are cold (<17°C). Spring and autumn are shoulder seasons and daytime temperatures hover in the 20°C's. Winds are predominantly north westerly during winter as cold fronts are blown in from the Atlantic and predominantly south easterly in summer.

#### **4.6 HYDROLOGY**

As the soils are sandy water infiltration during rains will enhance the effectivity of rain. The rain water will be stored deep in the subsoil, limiting soil evaporation. However the water holding capacity is limited by the sandy nature of the soil but the soil depth and impermeable underlying quarzitic sandstone store large amounts of water. Redoximorphic features in the fractured rock are an indication that water accumulates on underlying impermeable rock. The slope of the land and the water table forming on the fractured rock – will cause the water to flow down the slope in the deep sub soil and fractured rock. This feature will be of great advantage to the establishment of Rooibos Tea at Zonderwaterkraal and will increase production (BVI 2014).

#### **4.7 SOILS**

The Clovelly soils with slightly darkened Orthic A horizons, yellow-brown apedal B horizons as subsoil and underlying fractured rock and are freely drained soils. Red accumulations in the fractured quartzite underlying the Clovelly varies from hardened concretions formed around quartzite fractures to hardened surfaces of quartzite fractures and soft impregnated quartzite fractures and soil rocks.

The pH of the soils varies from varies from very strongly acidic to neutral. It is generally low throughout the profile. The K and Ca contents are low and the Na and Mg concentration very low. The CEC is extremely low due to a low clay and humus content.

#### **4.8 AGRICULTURAL PROFILE**

Historically, sheep farming and grain cultivation were the primary driver of the agricultural economy within the area. The expansion of the wheat production reached its maximum after World War II, this coincide with the increased successes in the cultivation of rooibos tea. Today, sheep, goats as well as rooibos tea cultivation are the key agricultural activities within the South-Bokkeveld area, an area that is particularly arid (Louw 2006).

In the past poor infrastructure, bad roads, limited access to markets and oppressive employment conditions were key challenges for small-scale farmers to sustain their livelihoods in the past. However conditions have improved since political reform in 1994, but the improvements are slow. Since 2001, with the establishment of the Heiveld Co-op, members of the Co-op had access to markets that have a more secured premium and are able to supplement the low income of harvesters and tea producers by exporting wild and cultivated organic rooibos tea to “fair trade” niche markets around the world.

At Zonderwaterkraal above is also apparent but conflict with damage causing wildlife e.g Black Backed Jackal, Cape Mountain Leopard and Caracal have caused huge financial losses to domestic stock in particular sheep and goats. This have forced the landowner not only to reduce the number off stock units but also to reduce the total area that are available for grazing – currently only camps nearby the farmstead are used to avoid damage. The existing Rooibos cultivated lands, with the reduced small stock units in combination with the proposed new Rooibos cultivated land development will improve the financial sustainability of the owner

#### **4.9 ECOLOGICAL AND BIODIVERSITY PROFILE**

The site is part of the Northwest Fynbos bioregion (Mucina & Rutherford 2006), and this is part of the Fynbos biome, located within what is now known as the Core Region of the Greater Cape Floristic Region (GCFR; Manning & Goldblatt 2012). The GCFR is one of only six Floristic Regions in the world, and is the only one largely confined to a single country (the Succulent Karoo component extends into southern Namibia). It is also by far the smallest floristic region, occupying only 0.2% of the world's land surface, and supporting about 11500 plant species, over half of all the plant species in South Africa (on 12% of the land area). At least 70% of all the species in the Cape region do not occur elsewhere, and many have very small home ranges (these are known as narrow endemics). Many of the lowland

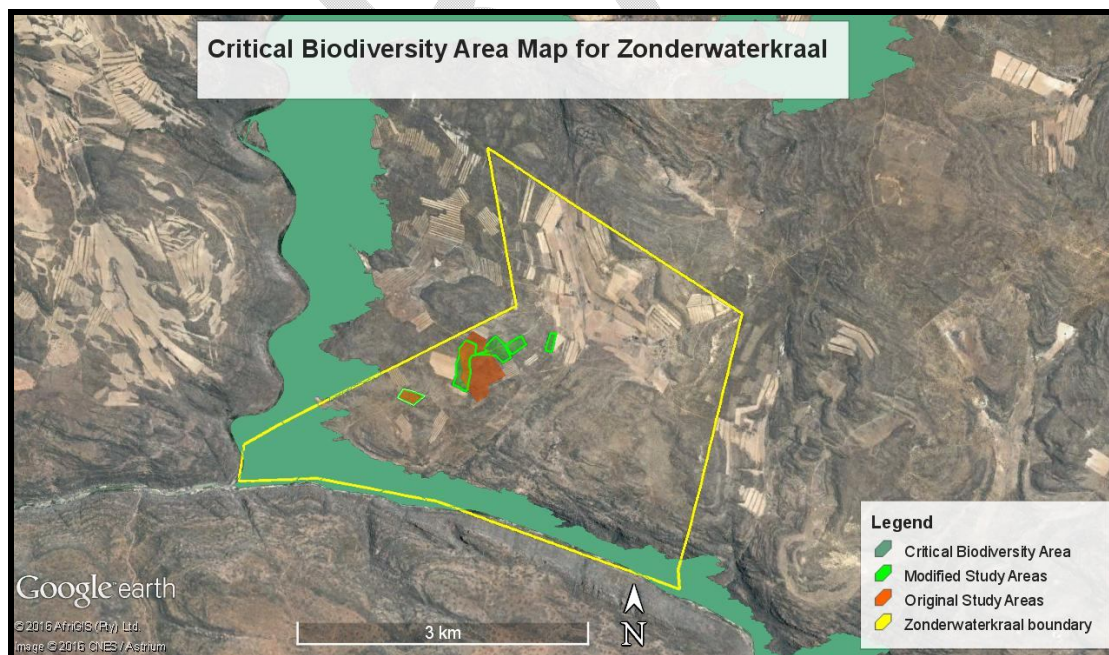


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habitats are under pressure from agriculture (typically the biggest habitat threat nationally), urbanisation and alien plants, and thus many of the range restricted species are also under severe threat of extinction, as habitat is reduced to extremely small fragments. Data from the nationwide plant Red Listing process undertaken is that 67% of the threatened plant species in the country occur only in the southwestern Cape (which for this analysis includes the Bokkeveld), and these total over 1800 species (Raimondo *et al* 2009). It should thus be clear that the southwestern Cape is a major national and global conservation priority, and is quite unlike anywhere else in the country in terms of the number of threatened plant species.

The study area falls within what is generally known as the Suid Bokkeveld, being part of the greater Nieuwoudtville Plateau. The Bokkeveld was identified by Raimondo *et al* (2009) and the C.A.P.E. (Cape Action for People and the Environment) project as an area under heavy transformation pressure, primarily from agriculture, and the latter consequently initiated (via CapeNature) a Fine Scale Vegetation Mapping and Conservation Planning project (FSP) in order to identify key conservation priorities in the region (large parts of which are within the Western Cape). The FSP has identified key conservation areas that are needed to meet species, habitat connectivity and process targets in the Bokkeveld and Sandveld – these are known as Critical Biodiversity Areas (CBAs). This was updated for the Hantam Municipality (which includes the study area) in 2012.



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**Figure 1 : Extract of the Critical Biodiversity Area (CBA) map for the Hantam Municipality (Pence 2012). The mapped terrestrial CBAs are shown in green shading (See Helme in Appendix 5 – Specialist Reports).**

Areas on Zonderwaterkraal that have been selected as CBAs have been selected for habitat representation, priority sub-catchments, edaphic interfaces and for ecological connectivity value.

- Regional context

Zonderwaterkraal has been categorised as CBA 2 – for the entire extent of the property. The land management objective for this category is identified as – the maintenance of near natural landscapes with some loss of ecosystem integrity and functioning. To the south of the property boundary, the Doring River is identified as an aquatic ESA and it should be managed to maintain a near natural landscape with minimal loss of integrity and functioning. According to the SA Vegetation map all proposed development areas are within Doringrivier Quartzite Karoo (Mucina & Rutherford 2012). This is however very clearly a mistake for the sandy areas. Would be best mapped as Nardouw Sandstone Fynbos. Nardouw Sandstone Fynbos was only recognised subsequent to drawing up of the national list of threatened habitats and is consequently not listed by DEA (2011). However, Pence (2014) re-assessed this and other habitats in the region for the Western Cape Biodiversity Framework Update, and found that it should be listed as a Vulnerable vegetation type (Pence 2014), and this classification is supported and is used in this report.

Furthermore, the area is consequently well overdue for a fire, with the vegetation showing extensive signs of senescence. There are various spatial elements of ecological processes on the property, including soil type gradients (ecotones or edaphic interfaces), where loamy sands meet the sandy soils, and small soil moisture gradients. No wetlands are found within or close to the study areas. Most of the study areas currently have good ecological connectivity in all directions.

Livestock trampling and grazing impacts are evident in many parts of the property, but are not pronounced within the various study areas. There is no alien invasive vegetation in the study areas - **See Appendix A - Ecological Sensitivity of Zonderwaterkraal.**

#### 4.10 HERITAGE RESOURCE PROFILE

In terms of archaeological heritage, the Nieuwoudtville area has not been very well documented, although one or two selective surveys have been undertaken. A few studies are listed on the SAHRIS website but these do not have any bearing on the current study. Numerous surveys have been undertaken near Loeriesfontein by this archaeologist and others, but the town is located more than 50kms north of the town **See Appendix D - Specialist Reports.**

An large number of rock art sites, including a few small artefact scatters occur at the Oorlogskloof Nature Reserve (Webley & Orton 2012, & personnel observation) a few kilometers outside Nieuwoudtville, alongside the R27 just before one enters the village, while rock art sites also occur on the Farms Papkuilsfontein and Sewefontein about 25kms south of the town. Dispersed scatters of Later Stone Age remains, and isolated Middle Stone Age implements have also been found by this archaeologist at Sewefontein - **See Appendix D - Specialist Reports.**

Hollmann (1993) did a survey of rock paintings in the Koebee River Valley, a tributary of the Doorn River, located to the south of Oorlogskloof, near Nieuwoudtville, while Humphreys *et al* (1991) have described rock art sites to the east of the Koebee River. At Oorlogskloof, Hollmann (1993) describes paintings of eland hartebeest, fat-tailed sheep scratches, palettes and handprints. Amschwand (2009) describes stone walling in the Onder Bokkeveld "which may indicate the presence of pastoralists", as well as pottery and rock art considered to be of Khoekhoen origin - **See Appendix D - Specialist Reports.**

According to Webley and Orton (2012), Khoisan presence in the 'Onder Bokkeveld' in the 1720s and 1730s discouraged early colonial settlement. In 1739 a Boer commando attacked Captain Jantje Klipheuwel's farm in the Bokkeveld. At least 13 Khoisan were killed during this raid. The place was subsequently named "Oorlogskloof" – a name it retains to this day. The commando continued to scour the Bokkeveld for any further kraals. A kraal was later attacked near Doorn River and 17 Khoisan were killed. These tactics eventually put an end to an independent Khoisan existence in the Bokkeveld. The trekboers later moved into the Onder Bokkeveld and by 1770s the Bokkeveld was completely settled by white colonists (Webley & Orton 2012; Penn 2005).

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The findings of the archaeologist were - one broken silcrete flake (Site 661 GPS reading 31°52'5.04"S 19°3'11.04"E), was located in Field A, while no archaeological heritage was encountered in Field B (Figure 9). No graves or typical grave markers were found. Grading of the archaeological resources: *low* (Grade 3C). **See Appendix D - Specialist Reports.**

From a heritage perspective the proposed activity (i. e. cultivation of new Rooibos tea fields) is not likely to impact on significant archaeological heritage. No settlement sites or evidence of human occupation were found during the study of the affected landholdings. Indications are that, in terms of archaeological heritage, the proposed new fields are not a sensitive landscape **See Appendix D - Specialist Reports.**

#### 4.11 SOCIO-ECONOMIC PROFILE

The Suid-Bokkeveld has approximately 1 000 inhabitants. In the Suid-Bokkeveld the population is comprised predominantly of white and coloured people and black migrant labourers only rarely enter the community as employed on contract work (e.g. construction of national roads), or less commonly as seasonal farm workers.

The level of formal education amongst adults in the Suid-Bokkeveld is on average 4 years for adults 50 years and older and 8 years for those aged 25 years and younger. Very few school leavers continue with tertiary education, due to a severe lack of funds, low grades limited access to tertiary education institutions while costs are also constraining factors (tertiary learning centres are far away, anything between 100 and 900 km).

Despite government initiatives to promote employment amongst women and youth, there are few employment opportunities, and these are limited to administrative work with local business and domestic or farm work in Nieuwoudtville, the Suid-Bokkeveld, Agter-Pakhuis, Clanwilliam and Wupperthal. In the coloured community, small-scale farmers work for between one and six months on their own properties (harvesting tea on their own land) and spend the rest of their time as seasonal labourers further afield (Louw 2006).

#### 4.12 VISUAL PROFILE

Each place has a specific intrinsic, instrumental and systemic value and such values need to be carefully considered when contemplating the current and future use of any particular place.

Broadly -speaking, two different philosophical perspectives are possible when considering the value of any place or object, namely **what is it good for?** And **what is its own good?** The first question relates to its instrumental value, while the second deals with intrinsic value. Instrumental value uses something as a *'means to an end'* while intrinsic value refers to being *'worthwhile in itself'* (Rolston,1994). Systemic value relates to the fact that *'things do not have their separate natures merely in, and for themselves, but they face outward and co-fit into broader natures. Value seeps out into the system and the individual lose its status as sole locus of value'* (Rolston, 1994:174). Systemic value refers to the relations that things have with other things, and to the role they play in larger wholes.

The intrinsic values associated with the extant ecosystems and the faunal and floral assemblages that they supported that historically occurred on site have been lost to some extent. This due to the transformation of the area to its current agricultural landuse. The value system for the area would therefore be associated with the quality of the living environment in a rural setting and that of an operational Rooibos tea farm. Thus respectively strong linkages with the viewscape within the farm and for those residents along the periphery the viewscape of an agricultural landscape and the scenic beauty of the broader surrounds.

At an instrumental value level the proposed site should be viewed therefore from a perspective of what is it good for? In the absence of the intrinsic values of the historical state mentioned above the answer it appears would primarily be linked to its utilitarian value as an agricultural area.

In considering the systemic value of the proposed development one would have to consider the relationship of the proposed Rooibos production area with that of the intrinsic and instrumental values mentioned above. Here the visual profile should be considered by interpreting the addition of the agricultural land into the agricultural viewscape and its potential to erode the value of the viewscape for

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the owners of the farm and its resident employees and those of the adjacent farming areas. Here the extent to which the production area is visible from the surrounding landscape would be the key consideration. Considering the fact that the proposed site is tucked away in a very remote setting means that the development is essentially out of sight. From our perspective therefore the visual profile is considered to have a very low to no potential intrusive impact as the historic ecological intrinsic values have been significantly impacted and the site would not impact on the current instrumental values of agricultural production and would have no discernible influence on the systemic values but for site scale impacts. This due to the fact that the proposed development would only be visible over distances of a couple of hundred metres.

The result from the Heritage Specialist and the finding that no cultural or heritage impacts should result from the proposed development further corroborate this opinion.

## 5: ASSESSMENT OF IMPACTS ASSOCIATED WITH THE PROPOSED ROOIBOS CULTIVATION LANDS

### 5.1 ASSUMPTIONS AND LIMITATIONS

The assessment rating of impacts is not an absolute measure. It is based on the subjective considerations and experience of the specialist, but is done with due regard and as accurately as possible within these constraints.

A knowledge gap would be related to the unpredictability of natural systems as very dynamic entities. The regular monitoring of the effects of the development and appropriate reactive responses where applicable guided by experts should provide the means to respond effectively to this knowledge gap.

It is assumed that the spatial planning for the PSDF SDF, Biodiversity and Biodiversity Sector Planning, National Freshwater Priority Areas planning in particular had sufficient expert input to be robust.

It is assumed that the anecdotal evidence of the restoration of diversity in old lands in the surrounding landscape show that these systems are able to regenerate some structural ecological integrity once decommissioned.

Finally it was assumed that the content of supporting documentation and specialist inputs that were consulted in compiling this assessment were robust. It is uncertain how the natural system will in fact react and continual monitoring is a requisite for early detection of irreversible degradation this would form part of the ongoing maintenance and management of the site by the proponent.

From a geophysical and agricultural perspective there are no specific constraints, uncertainties and gaps in knowledge for this study.

From an ecological perspective conservation value and sensitivity of habitats are a product of species diversity, plant community composition, rarity of habitat, degree of habitat degradation, rarity of species, ecological viability and connectivity, vulnerability to impacts, and reversibility of threats (which in this case generally refers to the rehabilitation potential of the habitat; high sensitivity habitats having

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low rehabilitation potential). For the purposes of the ecological assessment the terrestrial faunal sensitivity is assumed to depend on the botanical sensitivity, unless otherwise noted, on the generally acknowledged basis that intact natural habitat is the key requirement of any threatened or localised fauna. Incidental observations of fauna were made whilst surveying the site and its vegetation.

In the socio-economic study, all figures are projections based on the development figures and need verification and benchmarking when this phase has been planned in more detail. However it is anticipated that the impacts will not differ quantitatively.

## 5.2 IMPACT ASSESSMENT

### 5.2.1 Impacts resulting from the planning, design and development phase

#### 5.2.1.1 Geographical and Physical

**Description of Impact:** Impacts on geology, soils and hydrology will occur on site. The impacts on soil would include physical disturbance of the soil profile to clear the area and establish the crop. The activity is undertaken in the soil and will not impact on geological formations. The denuded surface created on site could result in erosion of top soil and ultimately in the alteration of the site scale hydrology. These impacts however are considered to be low as the soils are highly porous and design (contouring if required) will take cognisance of these requirements on site. Finally impacts may be associated with the access roads to and within the site. These too are considered to be insignificant in terms of the potential impact as basic management interventions such as road contouring, hardening and maintenance are proven means to prevent erosion from road surfaces. The significance of agricultural impacts is influenced by the extent to which the development will increase the agricultural potential of the site and the relatively small spatial extent of the proposed development.

**IMPACT: Soil erosion due to alteration of the surface run-off characteristics.**

|             | Rating without Mitigation | Rating with Mitigation |
|-------------|---------------------------|------------------------|
| Duration    | Long term (4)             | Short term (1)         |
| Extent      | Local (1)                 | Local (1)              |
| Probability | Probable (2)              | Improbable (1)         |



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|   |   |  |
|---|---|--|
| Intensity   | Medium (2)  | Low (1)  |
| Significance  | <b>Low (14)</b>   | <b>Low (3)</b>   |
| Status of the impact  | Negative –The impact is negative and without mitigation may have medium impacts at a local level.   | Negative – The impact is negative but will have no real effect on the receiving environment with well implemented mitigation measures.   |
| Degree of confidence  | High (>70% sure of the impact prediction).  | High (>70% sure of the impact prediction).   |
| Degree to which the impact can be reversed:   | High – the agricultural land may be decommissioned and over time it will rehabilitate. If other factors identified as impacts have been efficiently managed and / or mitigated then the current potential would conceivably be restored in the long term. | High – the agricultural land may be decommissioned and over time it will rehabilitate. If other factors identified as impacts have been efficiently managed and / or mitigated then the current potential would conceivably be restored in the long term |
| Degree to which the impact may cause irreplaceable loss of resources:   | Low – This is a reversible impact.  | Low – reversible impact.   |
| <p>Cumulative Impact Prior to Mitigation:</p> <p>Overall loss of agricultural landuse in the area due to fertile soils being washed away. This would be synergistic with the loss of biodiversity.</p>  |   |  |
| <p>Mitigation Measures:</p> <p>Ensure clear demarcation of the proposed areas for clearing of the agricultural lands. Ensure regular road maintenance which would include immediately stabilizing unstable portions of access roads. This can be achieved through an effective system of run-off control from hardened or denuded surfaces or where water flows down slope. Regular monitoring of the site for signs of sheet and gully erosion</p> |   |  |

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|   |
|---|
| <p>would be the most effective mitigatory measure. In instance where accelerated levels of erosion are occurring, stabilizing these areas either with natural vegetation, geo-textiles or with basket gabion structures could mitigate further soil loss and gulley erosion. Minimizing disturbance of denuded areas. Ensure adequate storm water management around the agricultural lands and the efficient routing of storm water to natural drainage lines or dissipating flow through diversion channels.</p> |
| <p>Cumulative Impact Post Mitigation:<br/>NONE i.e. impact levels should stabilise at natural background levels of intensity if the agricultural land was to be decommissioned.</p>   |

| <b>IMPACT: Loss of topsoil due to poor topsoil management and surface water flows during storms</b> |   |  |
|---|---|--|
|   | Rating without Mitigation   | Rating with Mitigation   |
| Duration  | Long Term (3)   | Short term (1)   |
| Extent  | Local (1)   | Local (1)  |
| Probability   | Probable (2)  | Improbable (1)   |
| Intensity   | Low (1)   | Low (1)  |
| Significance  | <b>Low (8)</b>  | <b>Low (3)</b>   |
| Status of the impact  | Negative – The impact is negative but will have no real effect on the receiving environment.  | Negative – The impact is negative but will have no real effect on the receiving environment. |
| Degree of confidence  | High (>70% sure of the impact prediction).  | High (>70% sure of the impact prediction).   |
| Degree to which the impact can be reversed:   | Low – Topsoil lost in an environment such as this would essentially be irreplaceable in terms of the amount of time it would take to generate new soil. | Low – If the impact has occurred it would be irreversible.                                   |
| Degree to which the impact may cause irreplaceable loss of  | High – These are essentially irreversible impacts at a local  | High – Irreversible impact at a local scale.   |

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|   |        |  |
|---|--------|--|
| resources:  | scale. |  |
| Cumulative Impact Prior to Mitigation:  |        |  |
| Loss of topsoil through sheet and gully erosion from denuded areas in and around the agricultural land and adjacent to access roads.  |        |  |
| Mitigation Measures:  |        |  |
| Clearly demarcate the development footprint and access roads. Ensure regular road maintenance which would include immediately stabilizing unstable portions of access roads. Regular monitoring of the site for signs of sheet and gully erosion would be the most effective mitigatory measure. In instance where accelerated levels of erosion are occurring, stabilizing these areas either with suitable indigenous vegetation, geo-textiles or in serious cases with basket gabion structures should mitigate further soil loss. Minimizing disturbance of denuded areas. Ensure that there is an effective run-off control system (storm water) that disseminates water from hardened, denuded and sloping areas throughout the site. |        |  |
| Cumulative Impact Post Mitigation:  |        |  |
| NONE i.e. impact levels should stabilise at natural background levels of intensity.   |        |  |

| <b>IMPACT: Contamination of groundwater</b> |   |   |
|---|---|---|
|   | Rating without Mitigation   | Rating with Mitigation  |
| Duration                                    | Short Term (1)  | Short term (1)  |
| Extent                                      | Local (1)   | Local (1)   |
| Probability                                 | Probable (2)  | Improbable (1)  |
| Intensity                                   | Low (1)   | Low (1)   |
| Significance                                | <b>Low (6)</b>  | <b>Low (3)</b>  |
| Status of the impact                        | Negative – This impact will have a low impact on the receiving environment at a scale that could extend beyond site boundaries. | Negative – This impact will have little no impact on the receiving environment at a site scale. |
| Degree of confidence                        | High (>70% sure of the impact)  | High (>70% sure of the impact)  |

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|  | prediction)  | prediction)  |
|--|--|--|
| Degree to which the impact can be reversed:  | High – in an instance where underground water is temporarily polluted one could surmise that dilution from the very small footprint would restore water quality within the short term without mitigation intervention. | High – in an instance where underground water is temporarily polluted one could surmise that dilution from the very small footprint would restore water quality within the short term without mitigation intervention. |
| Degree to which the impact may cause irreplaceable loss of resources:  | Low – pollutant levels would be of a spot nature for a very limited period of time. Dilution in the underground water would eliminate these pollutants over time.  | Low – pollutant levels would be of a spot nature for a very limited period of time. Dilution in the underground water would eliminate these pollutants over time.  |
| Cumulative Impact Prior to Mitigation:<br>Cumulatively water sources could be significantly polluted from numerous agricultural land within the water response areas of the underground water source.  |  |  |
| Mitigation Measures:<br>Clearing equipment - The contractor / owner must ensure that fuels and chemicals (e.g. drums of fuel, grease, oil, brake fluid, hydraulic fluid) are stored and handled in a bunded area to prevent spillage; In the event of a spill, appropriate steps must be undertaken to prevent widespread pollution; These areas shall comply with standard fire safety regulations; Drip trays must be put in relevant locations (inlets, outlets, points of leakage, etc) so as to prevent such spillage or leakage during transfer; Drip trays shall be cleaned regularly and shall not be allowed to overflow; Regular maintenance of vehicles and equipment is needed to prevent leaks - No equipment or vehicles with leaks should be allowed to work on the site; Substances, which cannot be reused, must be disposed at the nearest authorized landfill site. |  |  |
| Cumulative Impact Post Mitigation:   |  |  |

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NONE – Once mitigated these impacts should not have any cumulative impact.

| <b>IMPACT: Degradation of the agricultural lands and surrounding natural vegetation through trampling</b>   |  |  |
|---|--|--|
|   | Rating without Mitigation  | Rating with Mitigation   |
| Duration  | Long Term (3)  | Short term (1)   |
| Extent  | Local (1)  | Local (1)  |
| Probability   | Probable (2)   | Improbable (1)   |
| Intensity   | Low (1)  | Low (1)  |
| Significance  | <b>Low (8)</b>   | <b>Low (3)</b>   |
| Status of the impact  | Negative – The impact is negative but will have no real effect on the receiving environment. | Negative – The impact is negative but will have no real effect on the receiving environment.       |
| Degree of confidence  | High (>70% sure of the impact prediction).   | High (>70% sure of the impact prediction).   |
| Degree to which the impact can be reversed:   | Low – If left to continue the impact would remain and become more severe over time.          | High – removal of impacts by excluding any vehicular or other trampling would reverse this impact. |
| Degree to which the impact may cause irreplaceable loss of resources:   | High – These are essentially irreversible impacts at a local scale without mitigation        | Low – Exclusion of impacts would be an effective mitigation measure.                               |
| Cumulative Impact Prior to Mitigation:<br>Loss of topsoil through sheet and gully erosion from denuded areas in and around the agricultural land and adjacent to access roads. Loss of vegetative cover which would increase impacts of soil loss.                              |  |  |
| Mitigation Measures:<br>Clearly demarcate the access roads ensure that only these roads are used to gain access to the agricultural land. Ensure that the edges of the agricultural land are not impacted and prevent the situation where the edges slowly creep out over time. |  |  |

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Cumulative Impact Post Mitigation:

NONE i.e. impact levels should stabilise at natural background levels of intensity.

5.2.1.2 Biological and Ecological

**Background**

A detailed description of the ecological characteristics is contained in the report above under the heading of the receiving environment, which deals with the types and status of the ecosystems and sensitive habitats on the property. It should be noted at the outset that the site is currently totally transformed.

**IMPACT: Loss of vegetation due to development activities:** As stated above the site has extant pristine vegetation associated with the ecosystem type present on site. The site will be fully transformed and the vegetation cover lost as a result of this development. Impacts on biodiversity pattern are therefore expected.

|   | Rating without Mitigation  | Rating with Mitigation   |
|---|--|--|
| Duration                                    | Permanent (4)  | Permanent (4)  |
| Extent                                      | Local (1)  | Local (1)  |
| Probability                                 | Definitely (3)   | Improbable (1)   |
| Intensity                                   | Medium (2)   | Low (1)  |
| Significance                                | <b>Medium (21)</b>   | <b>Low (6)</b>   |
| Status of the impact                        | Negative – the removal of vegetation on site.  | Negative – the removal of vegetation on site.  |
| Degree of confidence                        | High (>70% sure of the impact prediction).   | High (>70% sure of the impact prediction).   |
| Degree to which the impact can be reversed: | High – the site is characterised by pristine natural vegetation and this will be lost permanently as long as the land remains in production. | High – the site is characterised by pristine natural vegetation and this will be lost permanently as long as the land remains in production. |

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|---|--|--|
| <p>Degree to which the impact may cause irreplaceable loss of resources:</p>  | <p>Low – There is extant vegetation on site.</p> | <p>Low – There is extant vegetation in large areas adjacent to the site. Species that occur are widespread hardy and very adaptable and would conceivably recolonise the site over time.</p> |
| <p><b>Cumulative Impact Prior to Mitigation:</b></p> <p>In an instance where no mitigation measures were put in place, the site would experience the loss of vegetative cover in and around the agricultural land, the disruption of the soil profile, the loss of topsoil through sheet and gully erosion, the increase in sediment load in run-off water would be associated impact. Alien invasive plants are well adapted to colonising disturbed areas and cumulatively could replace the current vegetation of the site, altering the diversity and structure of the vegetative community on the site. The vegetation types, habitats and species that will be impacted by the proposed development are both widespread and hardy cumulative impact would therefore be low.</p> |  |  |
| <p><b>Mitigation Measures:</b></p> <p>Clearly demarcate the development footprint and access roads. Ensure that ongoing monitoring detects accelerated levels of sheet and gully erosion and that these sites are stabilised either by packing a covering of cut vegetation or using geo-textiles and / or basket gabions. Ensure that a monitoring plan is available and is implemented. Monitor the colonisation of denuded areas by alien invasive plants and eradicate these as soon as they are noticed.</p>   |  |  |
| <p><b>Cumulative Impact Post Mitigation:</b> Once problem areas have stabilised cumulative impacts should in turn stabilise at normal background levels.</p>  |  |  |

**IMPACT: The habitat of threatened plants and faunal species lost or disturbed due to development.**

While the site is located on an existing agricultural farm, as such there should be remnant populations or species present which are indigenous to the site. These would primarily be smaller vertebrates both faunal and avian. However larger species such as Leopard are present on site and have caused stock

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|---|--|--|
| <p>losses on the property. The site does therefore fall within the home range of a rare and threatened species, however the disturbance is expected to be similar to the current disturbance regime, transitory and relevant primarily during the development phase. Additionally there are plant species of conservation concern on site and the layout has been adapted to avoid these populations.</p>   |  |  |
|   | Rating without Mitigation  | Rating with Mitigation   |
| Duration  | Medium(3)  | Medium(3)  |
| Extent  | Local (1)  | Local (1)  |
| Probability   | Improbable (1)   | Improbable (1)   |
| Intensity   | Low (1)  | Low (1)  |
| Significance  | <b>Low (5)</b>   | <b>Low (5)</b>   |
| Status of the impact  | Negative – Loss of species diversity.  | Negative – Loss of species diversity.  |
| Degree of confidence  | High (>70% sure of the impact prediction).   | High (>70% sure of the impact prediction).   |
| Degree to which the impact can be reversed:   | Low - at a site scale species once lost are usually lost permanently within a highly fragmented and impacted site. | Low - at a site scale species once lost are usually lost permanently within a highly fragmented and impacted site. |
| Degree to which the impact may cause irreplaceable loss of resources:   | High at a site scale but low over the total distribution area of the species.                                      | High at a site scale but low over the total distribution area of the species.                                      |
| <p><b>Cumulative Impact Prior to Mitigation:</b></p> <p>The vegetation types, habitats and species that occupy these habitats will be impacted by the proposed development. Due to the fact that the site has been chosen and the layout altered impacts on species of conservation concern are not expected.</p>   |  |  |
| <p><b>Mitigation Measures:</b></p> <p>No real mitigation possible. General mitigation would be relevant. Clearly demarcate the development footprint and access roads. Ensure that ongoing monitoring detects accelerated levels of sheet and gully erosion and that these sites are stabilised using geo-textiles and / or basket gabions. Monitor the colonisation of denuded areas by alien invasive plants and eradicate these as soon as they are noticed.</p> |  |  |



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Cumulative Impact Post Mitigation: Once problem areas have stabilised cumulative impacts should in turn stabilise at normal background levels.

| <b>IMPACT: Impacts on drainage lines</b>   |   |   |
|--|---|---|
|  | Rating without Mitigation   | Rating with Mitigation  |
| Duration   | Long Term (3)   | Short (1)   |
| Extent   | Local (1)   | Local (1)   |
| Probability  | Definitely (3)  | Improbable (1)  |
| Intensity  | Medium (2)  | Low (1)   |
| Significance   | <b>Low (18)</b>   | <b>Low (3)</b>  |
| Status of the impact   | Negative – Loss of attenuation and ecological functioning along the drainage line.  | Negative – Loss of attenuation and ecological functioning along the drainage line.  |
| Degree of confidence   | High (>70% sure of the impact prediction).  | High (>70% sure of the impact prediction).  |
| Degree to which the impact can be reversed:  | Low – storm water attenuation would continue to fail further eroding soils due to altered surface flows and ecological functioning. | High - storm water attenuation would continue to function and soil would not be lost due to altered surface flows and ecological functioning would persist. |
| Degree to which the impact may cause irreplaceable loss of resources:  | Low – without mitigation the ecological functioning of the drainage line would be lost permanently.                                 | High – with mitigation (storm water control) the ecological functioning would recover.  |
| Cumulative Impact Prior to Mitigation:<br>Over the short distance that storm water would impact on the drainage line impacts would be gully erosion and increased sediment load and reduced water quality to the drainage lines. |   |   |
| Mitigation Measures:   |   |   |

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| Ensure that drainage lines are identified as no-go areas. Monitor storm water diversion measures to assess the impact of increased water volumes being diverted to the drainage line. Institute management interventions if gully erosion or damage to the riparian area results. Areas should be stabilised as for mitigation measures for erosion and topsoil management above. |
| Cumulative Impact Post Mitigation:<br>Low – Ecological riparian function would be maintained.   |

| <b>IMPACT: Establishment of alien invasive plant species</b> |  |   |
|--|--|---|
|  | Rating without Mitigation  | Rating with Mitigation  |
| Duration   | Long (3)   | Short (1)   |
| Extent   | Local (1)  | Local (1)   |
| Probability  | Definitely (3)   | Definitely (3)  |
| Intensity  | Medium (2)   | Low (1)   |
| Significance   | <b>Low (18)</b>  | <b>Low (9)</b>  |
| Status of the impact   | Negative - The site has no alien invasive plant species present. The status could however change if the site was to become infested with other species which are more invasive and which could significantly impact on the status of the impact. | Negative to Neutral - The status with mitigation, i.e. the removal of the alien invasive plant species as soon as they are noticed on the site would keep the status of this impact as low for the duration of the developments life. |
| Degree of confidence   | High – the control of alien invasive plant species is possible, however full control is difficult at a local scale as the species have broad distributions and can invade from regional scales.  | High – the control of alien invasive plant species is possible, however full control is difficult at a local scale as the species have broad distributions and can invade from regional scales.                                       |
| Degree to which the impact can                               | Low – The alien invasive plant   | Low – With control measures   |

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|--|---|---|
| be reversed:   | species currently adjacent to the site are not aggressively invasive. | those alien invasive plant species present on the site would allow for the recolonisation of the area by indigenous species reversing the impact from the invasive species on the site. |
| Degree to which the impact may cause irreplaceable loss of resources:  | N/A   | N/A   |
| Cumulative Impact Prior to Mitigation: Potentially High - If left uncontrolled cumulatively these alien invasive plant species may be able to invade the site, the potential for more invasive species colonising the site would result in significant impacts on indigenous species complexes and populations through physical replacement. |   |   |
| Mitigation Measures: Eradicate all alien invasive plant species as soon as they are detected on site. All planting must be with indigenous species. Monitor re-growth of invasive species.   |   |   |
| Cumulative Impact Post Mitigation: Low –control would avoid the cumulative impacts stemming from alien invasive species.   |   |   |

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5.3.1.3 Socio-economic

At a broad level impacts on the overall welfare of a community should be investigated by considering the efficiency, equity and sustainability of the project as well as the trade-offs or 'opportunity cost' the various alternatives may yield.

| <b>IMPACT: Influx of Skilled People -</b>  |   |   |
|--|---|---|
|  | Rating without Mitigation   | Rating with Mitigation  |
| Duration   | Short term (1)  | Short Term (1)  |
| Extent   | Local (1)   | Local (1)   |
| Probability  | Highly Probable (3)   | Highly Probable (3)   |
| Intensity  | Low (1)   | Low (1)   |
| Significance   | <b>Low (9)</b>  | <b>Low (9)</b>  |
| Status of the impact   | Positive – The impact of the proposed development would be a low negative impact related to job creation and improved livelihoods to rural communities. | Positive – The impact of the proposed development would be low positive impact related to job creation and improved livelihoods to rural communities. |
| Degree of confidence   | Medium (35 – 70% sure of impact prediction).  | High (>70% sure of impact prediction).  |
| Degree to which the impact can be reversed:  | Low – the agricultural business will require these services.  | Low – the agricultural business will require these services.  |
| Degree to which the impact may cause irreplaceable loss of resources:  | N/A – The resource in question would be skilled people. As long as they hold those skills the resource remains.   | N/A – The resource in question would be skilled people. As long as they hold those skills the resource remains.                                       |
| Cumulative Impact Prior to Mitigation: Cumulative Impacts in this regard would relate to additional Rooibos tea lands being developed in the surrounds and further afield and the migration of temporary |   |   |

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| staff to these new development sites where skilled labour could find employment and gain more experience.   |
| Mitigation Measures: Preference to local service providers who are suitably qualified to undertake the clearing operations associated with the proposed development.  |
| Cumulative Impact Post Mitigation: If the mitigation measures were implemented and local people received preferential employment cumulative impact from the influx of skilled labour would remain positive through the increased experience and gainful employment of local people. |

|  |  |  |
|--|--|--|
| <b>IMPACT: Young women’s social well-being improves through employment.</b> It is highly possible that the proposed agricultural development will employ men in preference to women which translates into an impact where women have little to aspire to and reinforces their feeling of worthlessness. This cycle may be broken by preferentially appointing women which may lead to the women themselves and the community viewing them in a better light. |  |  |
|  | Rating without Mitigation  | Rating with Mitigation   |
| Duration   | Short term (1)   | Short Term (1)   |
| Extent   | Local (1)  | Local (1)  |
| Probability  | Probable (2)   | Highly Probable (3)  |
| Intensity  | Low (1)  | Low (1)  |
| Significance   | <b>Low (6)</b>   | <b>Low (9)</b>   |
| Status of the impact   | Negative – The impact of the proposed development would be a low negative impact related to women not breaking the cycle of hopelessness, improved self image and improved social status within the community. Empowering women will change the social well being of the | Positive – The impact of the proposed development would be a low positive impact related to women breaking the cycle of hopelessness, improved self image and improved social status within the community. Empowering women will change the social well being of the |

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|  |   |   |
|--|---|---|
|  | family.   | family.   |
| Degree of confidence   | Medium (35-70% sure of impact prediction)   | Medium (35-70% sure of impact prediction)   |
| Degree to which the impact can be reversed:  | Low – If the agricultural development was to be approved then these opportunities would be available. | Low – If the agricultural development was to be approved then these opportunities would be available. If women were preferentially employed then it is possible that the changed perception may last for the long term. |
| Degree to which the impact may cause irreplaceable loss of resources:  | N/A   | N/A   |
| Cumulative Impact Prior to Mitigation: Cumulative Impacts in this regard would relate to additional numbers of young women employed and an increase in the self esteem of these young women and elevated social status within the community.   |   |   |
| Mitigation Measures: Where practically possible reserve a set number of jobs for young women. Facilitate mechanisms to enable women to access these employment opportunities. Ensure that equity in remuneration for men and women doing the same job. Ensure that young women gain equal access to training and education opportunities to improve skills.  |   |   |
| Cumulative Impact Post Mitigation: If the mitigation measures were implemented and young women received preferential employment, cumulatively this could lead to the reversal of the trend of hopelessness and could possibly result in reduced early pregnancies and substance abuse. Social wellbeing of the mother in the family will change the wellbeing of the family the benefit could therefore be inter-generational. |   |   |

**IMPACT: Improved economic and material well being as the skills base of the local population expands**

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| <b>and deepens.</b>                         |   |  |
|---|---|--|
|   | Rating without Mitigation   | Rating with Mitigation   |
| Duration                                    | Short term (1)  | Short Term (1)   |
| Extent                                      | Local (1)   | Local (1)  |
| Probability                                 | Probable (2)  | Probable (2)   |
| Intensity                                   | Low (1)   | Low (1)  |
| Significance                                | <b>Low (6)</b>  | <b>Low (6)</b>   |
| Status of the impact                        | Positive / Negative – The impact of the proposed development would be a low positive impact related to an increase in skills capacity and the application of these skills on other projects in surrounding areas. Outsiders may join the community and could conceivably impact of safety and security. | Positive – The impact of the proposed development would be a low positive impact related to an increase in skills capacity and the application of these skills on other projects in surrounding areas.   |
| Degree of confidence                        | Medium (35-70% sure of impact prediction)   | Medium (35-70% sure of impact prediction)  |
| Degree to which the impact can be reversed: | Low – If the agricultural development was to be approved then these skills would be required and the opportunities would be available. Skills once obtained are embedded and the skilled individual will be able to use them further afield as opportunity dictates.                                    | Low – If the agricultural development was to be approved then these skills would be required and the opportunities would be available. Skills once obtained are embedded and the skilled individual will be able to use them further afield as opportunity dictates. |

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|   |                       |                       |
|---|-----------------------|-----------------------|
| Degree to which the impact may cause irreplaceable loss of resources:   | N/A – Positive impact | N/A – Positive impact |
| Cumulative Impact Prior to Mitigation: Cumulative Impacts in this regard would relate to the ability of the proposed project to facilitate the education of additional numbers of people and transferring to them an employable skills set.   |                       |                       |
| Mitigation Measures: Reserve a set number of jobs for local labour. Facilitate mechanisms to enable these local people to access these employment opportunities. Enhance formal and informal skills transfer through structured job shadowing.  |                       |                       |
| Cumulative Impact Post Mitigation: If the mitigation measures were implemented then people may leave the development site and find gainful employment elsewhere. The cumulative impact though is long term and inter generationally thus a significant cumulative impact is possible over time. |                       |                       |

|  |   |   |
|--|---|---|
| <b>IMPACT: Increased income into certain households.</b> The development phase will bring jobs to some locals. |   |   |
|  | Rating without Mitigation   | Rating with Mitigation  |
| Duration   | Short term (1)  | Short term (1)  |
| Extent   | Local (1)   | Local (1)   |
| Probability  | Probable (2)  | Probable (2)  |
| Intensity  | Low (1)   | Low (1)   |
| Significance   | <b>Low (8)</b>  | <b>Low (10)</b>   |
| Status of the impact   | Positive – The impact of the proposed development would be a low positive impact as local people would find gainful employment. | Positive – The impact of the proposed development would be a low positive impact as local people would find gainful employment. |
| Degree of confidence   | Medium (between 30% - 70% sure of the impact prediction).   | Medium (> 70% sure of the impact prediction).   |
| Degree to which the impact can   | Low – If the development is   | Low – If the development is   |



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|   |   |   |
|---|---|---|
| be reversed:  | authorised and development begins the impact of employment will be real in terms of additional income into local people's households. | authorised and development begins the impact of employment will be real in terms of additional income into local people's households. |
| Degree to which the impact may cause irreplaceable loss of resources:   | Low – This is not a consumptive impact but one contributing to economic resources locally.  | Low – This is not a consumptive impact but one contributing to economic resources locally.  |
| Cumulative Impact Prior to Mitigation: Cumulative impacts would relate to the employment of people from outside over those who have the skills but are locally based. The positive impact of money flowing into local households would be lost. |   |   |
| Mitigation Measures: The developer should employ locals during all phases of the project.   |   |   |
| Cumulative Impact Post Mitigation: If the mitigation measures were implemented then local skilled and unskilled people would be employed by the developer..   |   |   |

|   |  |  |
|---|--|--|
| <b>IMPACT: Increased noise and dust levels.</b> Noise and dust will be generated during the establishment of the agricultural lands and clearing of natural vegetation. |  |  |
|   | Rating without Mitigation  | Rating with Mitigation   |
| Duration  | Short term (1)   | Short Term (1)   |
| Extent  | Local (1)  | Local (1)  |
| Probability   | Highly Probable (3)  | Probable (2)   |
| Intensity   | Medium (2)   | Medium (2)   |
| Significance  | <b>Low (12)</b>  | <b>Low (8)</b>   |
| Status of the impact  | Negative – The impact of the proposed development would be a low negative impact related to impacts on the health and well being of the inhabitants of the surrounding area from | Negative – The impact of the proposed development would be a low negative impact related to impacts on the health and well being of the inhabitants of the surrounding area from |

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|   |   |  |
|---|---|--|
|   | respiratory and / or psychological illness.   | respiratory and / or psychological illness.  |
| Degree of confidence  | High (>70% sure of the impact prediction).  | High (>70% sure of the impact prediction).   |
| Degree to which the impact can be reversed:   | Medium – Without mitigation dust and noise could result in impacts on health that would require interventions from health care services to reverse the symptoms. The development period impact will be transitory and the effects reversible. | Low – Dust and noise suppression would further reduce potential risk of illness from this impact. The development period impact will be transitory and the effects reversible.         |
| Degree to which the impact may cause irreplaceable loss of resources:   | Low – The short term impact of noise and dust would preclude the possibility of a permanent loss of well being. Once complete dust and noise pollution would return to current levels.  | Low – The short term impact of noise and dust would preclude the possibility of a permanent loss of well being. Once complete dust and noise pollution would return to current levels. |
| Cumulative Impact Prior to Mitigation: Cumulative impacts would relate to the dust and noise impacting on the inhabitants of the surrounding landscape due to a lack of dust suppression and noise impacts outside of normal working hours. No other development projects are underway currently therefore cumulative impacts from this relationship are not considered.                |   |  |
| Mitigation Measures: Control dust and noise as prescribed in the EMPr. Appoint an independent ECO to monitor and implement the conditions of the EMPr. Enforce strict operating hours.. Implement dust and noise suppression measures if needed. Clearly demarcate access routes to the development site. No littering should be allowed and all waste should be removed from the site. |   |  |
| Cumulative Impact Post Mitigation: If the mitigation measures were implemented then dust and noise pollution should be kept at low enough levels to be of low significance.   |   |  |

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| <b>IMPACT: Altered sense of place</b>   |  |   |
|---|--|---|
|   | Rating without Mitigation                                      | Rating with Mitigation                                      |
| Duration  | Short term (1)   | Short Term (1)  |
| Extent  | Local (1)  | Local (1)   |
| Probability   | Improbable (1)   | Improbable (1)  |
| Intensity   | Low (1)  | Low (1)   |
| Significance  | <b>Low (3)</b>   | <b>Low (3)</b>  |
| Status of the impact  | Negative – May result in the permanent loss of sense of place. | Positive – Would not result in an altered sense of place.   |
| Degree of confidence  | High (>70% sure of the impact prediction).                     | High (>70% sure of the impact prediction).                  |
| Degree to which the impact can be reversed:   | Low – If damaged the sense of place may be lost permanently    | Low – If damaged the sense of place may be lost permanently |
| Degree to which the impact may cause irreplaceable loss of resources:   | High – If damaged these resources are lost permanently         | High – If damaged these resources are lost permanently      |
| Cumulative Impact Prior to Mitigation: Cumulative impacts would relate to the loss of sense of place from numerous sites of development. Unlikely in this instance as the proposed development is additive and aligned with the current landuse on site and within the surrounds. |  |   |
| Mitigation Measures: NONE   |  |   |
| Cumulative Impact Post Mitigation: LOW  |  |   |

5.2.1.4 Cultural & Historical

**IMPACT: Irreplaceable loss of heritage resources.**

The property was found to have an extremely low heritage signature with no impacts expected. However the potential remains that heritage resources may be unearthed during the development phase of the development.

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|   | Rating without Mitigation  | Rating with Mitigation   |
|---|--|--|
| Duration  | Short term (1)   | Short Term (1)   |
| Extent  | Local (1)  | Local (1)  |
| Probability   | Probable (2)   | Low (1)  |
| Intensity   | Low (1)  | Low (1)  |
| Significance  | <b>Low (6)</b>   | <b>Low (3)</b>   |
| Status of the impact  | Negative – May result in the permanent loss of unearthed heritage resources. | Positive – Would result in the conservation of unearthed heritage resources. |
| Degree of confidence  | High (>70% sure of the impact prediction).                                   | High (>70% sure of the impact prediction).                                   |
| Degree to which the impact can be reversed:   | Low – If damaged these resources are lost permanently                        | Low – If damaged these resources are lost permanently                        |
| Degree to which the impact may cause irreplaceable loss of resources:   |  |  |
| Cumulative Impact Prior to Mitigation: Cumulative impacts would relate to the loss of resources from numerous sites of development resulting in the loss of knowledge of culture and history for the site.  |  |  |
| Mitigation Measures: Any unearthed heritage resources must be reported to the competent authority, in this instance SAHRA, immediately. A specialist must be appointed to undertake the required mitigation measures associated with the heritage resource unearthed. |  |  |

5.2.1.5 Noise Impacts

| <b>Description of Impact: This impact was assessed under the Social Impact Assessment portion of the assessment plan.</b> |  |  |
|---|--|--|
|   | Rating without Mitigation                                | Rating with Mitigation                                   |
| Duration  | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Extent  | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |

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|   |  |  |
|---|--|--|
| Probability   | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Intensity   | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Significance  | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Status of the impact  | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Degree to which the impact can be reversed:   | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Degree to which the impact may cause irreplaceable loss of resources:                           | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Cumulative Impact Prior to Mitigation: Please see Social Impact Assessment portion of the plan. |  |  |
| Mitigation Measures: Please see Social Impact Assessment portion of the plan.                   |  |  |
| Cumulative Impact Post Mitigation: Please see Social Impact Assessment portion of the plan.     |  |  |

5.2.1.6 Visual Impacts

|  |                           |                        |
|--|---------------------------|------------------------|
| <b>IMPACT: Potential visual impact</b>   |                           |                        |
| Impacts related to areas within the surrounding landscape indicate that the proposed site would not be visible from any of the surrounding farms or roads in the area. |                           |                        |
|  | Rating without Mitigation | Rating with Mitigation |
| Duration   | Long Term (3)             | Long Term (3)          |
| Extent   | Local (1)                 | Local (1)              |
| Probability  | Probable (2)              | Probable (2)           |
| Intensity  | Medium (2)                | Low (1)                |
| Significance   | <b>Low (12)</b>           | <b>Low (10)</b>        |
| Status of the impact   | Negative                  | Negative               |

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|   |   |   |
|---|---|---|
| Degree to which the impact can be reversed:   | High – The impact can be fully reversed as the agricultural development can be fully rehabilitated. | High – The impact can be fully reversed as the agricultural development can be fully rehabilitated. |
| Degree to which the impact may cause irreplaceable loss of resources:   | Low – The impact can be fully reversed as the agricultural development can be fully rehabilitated.  | Low – The impact can be fully reversed as the agricultural development can be fully rehabilitated.  |
| Cumulative Impact Prior to Mitigation: Once the agricultural development has been completed it will remain stable in terms of the impact. The impact would therefore only have an additive visual impact directly after development of changing an agricultural view shed.  |   |   |
| Mitigation Measures: Disturbed areas should be kept to a minimum. The development footprint should be clearly demarcated and no development outside of the footprint should be allowed.   |   |   |
| Cumulative Impact Post Mitigation: With the development footprint located within a clearly demarcated zone cumulative impacts are not expected. The proposed development adds to the existing complexity of the landscape and would be indirect and neutralising and additive in areas where no development is currently present. |   |   |

| <b>IMPACT: Change in the character of the prevailing use of the area.</b> |  |  |
|---|--|--|
|   | Rating without Mitigation  | Rating with Mitigation   |
| Duration  | Long Term (3)  | Medium Term (2)  |
| Extent  | Local (1)  | Local (1)  |
| Probability   | Probable (2)   | Probable (2)   |
| Intensity   | Medium (2)   | Low (1)  |
| Significance  | <b>Low (12)</b>  | <b>Low (8)</b>   |
| Status of the impact  | Negative   | Negative   |
| Degree to which the impact can be reversed:                               | High – The impact can be fully reversed as the agricultural development can be fully | High – The impact can be fully reversed as the agricultural development can be fully |

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|   |  |  |
|---|--|--|
|   | rehabilitated.   | rehabilitated.   |
| Degree to which the impact may cause irreplaceable loss of resources:   | Low – The impact can be fully reversed as the agricultural development can be fully rehabilitated. | Low - The impact can be fully reversed as the agricultural development can be fully rehabilitated. |
| Cumulative Impact Prior to Mitigation: Once the agricultural development has been developed it will remain stable in terms of the impact. The impact would therefore only have an additive visual impact directly after development changing an agricultural view shed.   |  |  |
| Mitigation Measures: Disturbed areas should be kept to a minimum. The development footprint should be clearly demarcated and no development outside of the footprint should be allowed. The site should keep within the planning policy in particular the principles of critical regionalism, namely sense of place, sense of history, sense of nature, sense of craft and sense of limits. Finally existing tracks and roads should be used in preference wherever possible. |  |  |
| Cumulative Impact Post Mitigation: With the development footprint located within a clearly demarcated zone cumulative impacts are not expected. It is therefore expected that the cumulative impact of the proposed activity would be <b>indirect, additive and neutralizing</b> , where the proposed activity will take place.   |  |  |

## 5.2.2 Impacts resulting from the operational phase

### 5.2.2.1 Geographical and Physical

|  |                           |                        |
|--|---------------------------|------------------------|
| <b>IMPACT: Soil erosion due to alteration of the surface run-off characteristics.</b>  |                           |                        |
| Alteration of run-off characteristics may cause erosion during the the operational phase. Erosion will cause loss and deterioration of soil resources. |                           |                        |
|  | Rating without Mitigation | Rating with Mitigation |
| Duration   | Long term (3)             | Long term (3)          |
| Extent   | Local (1)                 | Local (1)              |
| Probability  | Probable (2)              | Improbable (1)         |

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|  |   |  |
|--|---|--|
| Intensity  | Low (1)   | Low (1)  |
| Significance   | <b>Low (10)</b>   | <b>Low (5)</b>   |
| Status of the impact   | Negative - The impact is negative but will have no real effect on the receiving environment.    | Negative - The impact is negative but will have no real effect on the receiving environment. |
| Degree of confidence   | High (>70% sure of the impact prediction).  | High (>70% sure of the impact prediction).   |
| Degree to which the impact can be reversed:  | Low – Topsoil lost in an arid environment such as this would essentially be irreplaceable.      | Low – Topsoil lost in an arid environment such as this would essentially be irreplaceable.   |
| Degree to which the impact may cause irreplaceable loss of resources:  | High – These are essentially irreversible impacts – soils lost from the site are irreplaceable. | High – Irreversible impact.  |
| Cumulative Impact Prior to Mitigation:<br>Loss of topsoil through sheet and gully erosion from denuded areas around the facility and along access roads resulting from a change in the local hydrology of the area.  |   |  |
| Mitigation Measures:<br>Ensure clear demarcation of the proposed areas for development. Ensure that recommendations for storm water control provided by in the EMP are adhered to. Ensure regular road maintenance which would include immediately stabilizing unstable portions of access roads. This can be achieved through an effective system of run-off control from hardened or denuded surfaces or where water flows down slope. Regular monitoring of the site for signs of sheet and gully erosion would be the most effective mitigatory measure. In instance where accelerated levels of erosion are occurring, stabilizing these areas either with natural vegetation, geo-textiles or with basket gabion structures could mitigate further soil loss and gully erosion. Minimizing disturbance of denuded areas. |   |  |
| Cumulative Impact Post Mitigation:<br>NONE i.e. impact levels should stabilise at natural background levels of intensity.  |   |  |

**IMPACT: Degradation of vegetative cover adjacent to the site development.**



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|   | Rating without Mitigation   | Rating with Mitigation   |
|---|---|--|
| Duration  | Long Term (3)   | Long term (3)  |
| Extent  | Local (1)   | Local (1)  |
| Probability   | Probable (2)  | Improbable (1)   |
| Intensity   | Low (1)   | Low (1)  |
| Significance  | <b>Low (8)</b>  | <b>Low (5)</b>   |
| Status of the impact  | Negative – loss of vegetative cover due to direct physical impacts or indirectly through poor management practice.    | Negative – loss of vegetative cover due to direct physical impacts or indirectly through poor management practice.                                       |
| Degree of confidence  | High (>70% sure of the impact prediction).  | High (>70% sure of the impact prediction).   |
| Degree to which the impact can be reversed:   | High – The vegetative cover / current resource would be one of pioneer species.                                       | High – With adequate planting of exposed areas as above for visual impact one may expect the site to improve over time in terms of the vegetative cover. |
| Degree to which the impact may cause irreplaceable loss of resources:   | High – The vegetation occurring on site would be of a pioneer nature, thus characterised by common and hardy species. | High – The vegetation occurring on site would be of a pioneer nature, thus characterised by common and hardy species.                                    |
| Cumulative Impact Prior to Mitigation: Cumulative impact would relate to similar impacts in the surrounding landscape. The cumulative addition from the development is considered to be low.                  |   |  |
| Mitigation Measures: Minimise physical impacts to rehabilitated areas planted with indigenous vegetation. Monitor the site for loss of vegetative cover and rehabilitate immediately if areas become denuded. |   |  |
| Cumulative Impact Post Mitigation: In this situation the site would be covered with indigenous vegetation, cumulative impacts would therefore be negligible.  |   |  |

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5.2.2.2 Biological and Ecological

**Description of Impact:** The nature of impact on biological aspects would be tied to disturbance of natural vegetation along site boundaries and along access roads. The probability that these impact will occur would be 100% for edge effect impacts, which cannot be avoided. Following the precautionary principle, evidence from old agricultural lands in the area seems to indicate that some diversity can return to highly disturbed areas, the irreplaceable loss of biodiversity should therefore be avoided. Finally the operational phase may be characterised by the invasion of disturbed areas by alien invasive plants.

| <b>IMPACT: Loss of vegetation due to operational activities</b> |   |  |
|---|---|--|
|   | Rating without Mitigation   | Rating with Mitigation   |
| Duration  | Permanent (4)   | Permanent (4)  |
| Extent  | Local (1)   | Local (1)  |
| Probability   | High (3)  | High (3)   |
| Intensity   | Medium (2)  | Low (1)  |
| Significance  | <b>Low-Medium (21)</b>  | <b>Low-Medium (18)</b>   |
| Status of the impact  | Negative to neutral (scale dependent) - The loss of connectivity would remain for the duration of the developments lifespan at a Local Scale. | Negative to neutral (scale dependent) - The loss of connectivity would remain for the duration of the developments lifespan at a Local Scale.  |
| Degree to which the impact can be reversed:                     | Low – If no mitigatory measures were instituted these could well be regarded as near permanent in the lifespan of a human being.              | Medium – With active rehabilitation, preparation of the soil surface and reseeded with indigenous species, the rehabilitation process and increase in nutrient cycling would be speeded up which |

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|  |  |  |
|--|--|--|
|  |  | would significantly shorten the time span for recovery of the site.                |
| Degree to which the impact may cause irreplaceable loss of resources:  | Low – The site is fully transformed currently extant natural vegetation would be absent. | Low – The site is fully transformed and extant natural vegetation would be absent. |
| Cumulative Impact Prior to Mitigation<br>Medium - At a local scale if no mitigatory measures were instituted connectivity could be completely lost due to the transformation of the site as a whole.   |  |  |
| Mitigation Measures<br>No mitigatory measures at regional scales are possible other than the retention of the CBA and ecological support areas through the avoidance of unsuitable landuse in those areas. Active rehabilitation of the denuded areas with indigenous vegetation will improve habitat quality. |  |  |
| Cumulative Impact Post Mitigation:<br>Low positive impact with the establishment of indigenous vegetation cover as part of the landscaping and rehabilitation effort.  |  |  |

**IMPACT: The habitat of threatened plants and faunal species lost or disturbed due to operational activities.**

While the site is located on an existing agricultural farm, as such there should be remnant populations or species present which are indigenous to the site. These would primarily be smaller vertebrates both faunal and avian. However larger species such as Leopard are present on site and have caused stock losses on the property. The site does therefore fall within the home range of a rare and threatened species, however the disturbance is expected to be similar to the current disturbance regime, transitory and relevant primarily during the operational phase. Additionally there are plant species of conservation concern on the remainder of the property and these should be conserved.

|          | Rating without Mitigation | Rating with Mitigation |
|----------|---------------------------|------------------------|
| Duration | Medium(3)                 | Medium(3)              |

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|   |  |  |
|---|--|--|
| Extent  | Local (1)  | Local (1)  |
| Probability   | Improbable (1)   | Improbable (1)   |
| Intensity   | Low (1)  | Low (1)  |
| Significance  | <b>Low (5)</b>   | <b>Low (5)</b>   |
| Status of the impact  | Negative – Loss of species diversity.  | Negative – Loss of species diversity.  |
| Degree of confidence  | High (>70% sure of the impact prediction).   | High (>70% sure of the impact prediction).   |
| Degree to which the impact can be reversed:   | Low - at a site scale species once lost are usually lost permanently within a highly fragmented and impacted site. | Low - at a site scale species once lost are usually lost permanently within a highly fragmented and impacted site. |
| Degree to which the impact may cause irreplaceable loss of resources:   | High at a site scale but low over the total distribution area of the species.                                      | High at a site scale but low over the total distribution area of the species.                                      |
| <p><b>Cumulative Impact Prior to Mitigation:</b><br/>The vegetation types, habitats and species may be impacted during operational activities – however by the implementation of the EMPr impacts on species of conservation concern are not expected.</p>  |  |  |
| <p><b>Mitigation Measures:</b><br/>Prevent overgrazing in the remaining areas on the property, Prevent illegal hunting, prevent the sprawling of edge effects, prevent the spraying of pesticides on remaining natural vegetation and monitor the colonisation of denuded areas by alien invasive plants and eradicate these as soon as they are noticed.</p> |  |  |
| <p><b>Cumulative Impact Post Mitigation:</b> Once problem areas have stabilised cumulative impacts should in turn stabilise at normal background levels.</p>  |  |  |

| <b>IMPACT: Impacts on drainage lines</b> |                           |                        |
|--|---------------------------|------------------------|
|  | Rating without Mitigation | Rating with Mitigation |
| Duration                                 | Long Term (3)             | Short (1)              |

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|   |   |   |
|---|---|---|
| Extent  | Local (1)   | Local (1)   |
| Probability   | Definitely (3)  | Improbable (1)  |
| Intensity   | Medium (2)  | Low (1)   |
| Significance  | <b>Low (18)</b>   | <b>Low (3)</b>  |
| Status of the impact  | Negative – Loss of attenuation and ecological functioning along the drainage line.  | Negative – Loss of attenuation and ecological functioning along the drainage line.  |
| Degree of confidence  | High (>70% sure of the impact prediction).  | High (>70% sure of the impact prediction).  |
| Degree to which the impact can be reversed:   | Low – storm water attenuation would continue to fail further eroding soils due to altered surface flows and ecological functioning. | High - storm water attenuation would continue to function and soil would not be lost due to altered surface flows and ecological functioning would persist. |
| Degree to which the impact may cause irreplaceable loss of resources:   | Low – without mitigation the ecological functioning of the drainage line would be lost permanently.                                 | High – with mitigation (storm water control) the ecological functioning would recover.  |
| Cumulative Impact Prior to Mitigation:<br>Over the short distance that storm water would impact on the drainage line impacts would be gully erosion and increased sediment load and reduced water quality to the drainage lines.  |   |   |
| Mitigation Measures:<br>Ensure that drainage lines are identified as no-go areas. Monitor storm water diversion measures to assess the impact of increased water volumes being diverted to the drainage line. Institute management interventions if gully erosion or damage to the riparian area results. Areas should be stabilised as for mitigation measures for erosion and topsoil management above. |   |   |
| Cumulative Impact Post Mitigation:<br>Low – Ecological riparian function would be maintained.   |   |   |

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| <b>IMPACT: Colonisation by Alien Invasive Plant Species</b>   |   |   |
|---|---|---|
|   | Rating without Mitigation   | Rating with Mitigation  |
| Duration  | Permanent (4)   | Short Term (1)  |
| Extent  | Regional (2)  | Local (1)   |
| Probability   | Probable (2)  | Improbable (1)  |
| Intensity   | Low (1)   | Low(1)  |
| Significance  | <b>Low (14)</b>   | <b>Low (3)</b>  |
| Status of the impact  | Negative - The status could degrade further if the site was to become infested with alien invasive plant species.   | Negative to Neutral - The status with mitigation, i.e. the removal of the invasive species as soon as they are noticed on the site would keep the status of this impact as low for the duration of the developments life. |
| Degree to which the impact can be reversed:   | High – the control of alien invasive species is possible, however full control is difficult at a local scale as the species have broad distributions and can invade from regional scales. | High – the control of alien invasive species is possible, however full control is difficult at a local scale as the species have broad distributions and can invade from regional scales.                                 |
| Degree to which the impact may cause irreplaceable loss of resources:                                     | Low – The invasive plant species currently on the site are not aggressively invasive.   | Low – With control measures those invasive species present on the site would allow for the recolonisation of the area by indigenous species reversing the impact from the invasive species on the site.                   |
| Cumulative Impact Prior to Mitigation: Potentially High - If left uncontrolled cumulatively these species |   |   |

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|   |
|---|
| <p>may be able to invade ever larger areas on the site, the potential for more invasive plant species colonising the site would result in significant impacts on indigenous species complexes and populations through physical replacement.</p> |
| <p>Mitigation Measures: Eradicate all alien invasive species as soon as they are detected on site. Monitor re-growth.</p>   |
| <p>Cumulative Impact Post Mitigation: Low –control would avoid the cumulative impacts stemming from alien invasive species.</p>   |

|   |  |  |
|---|--|--|
| <p><b>IMPACT: Too frequent fires</b></p> <p>Reduced diversity resulting from too frequent fires and an inability from plant communities to regenerate after fire.</p> |  |  |
|   | Rating without Mitigation  | Rating with Mitigation   |
| Duration  | Permanent (4)  | Short Term (1)   |
| Extent  | Regional (2)   | Local (1)  |
| Probability   | Probable (2)   | Improbable (1)   |
| Intensity   | High (3)   | Low(1)   |
| Significance  | <b>Low (18)</b>  | <b>Low (3)</b>   |
| Status of the impact  | Negative – Fynbos systems that burn too frequently have a tendency to lose biodiversity as there is insufficient time for certain species to regenerate. This can lead to the local extinction of species which could be permanent should the species concerned be highly localised. | Negative to Neutral – Fire prevention and control has the potential to curb the impacts of too frequent fires. |
| Degree to which the impact can be reversed:   | High – The system is fire driven and fire adapted if fires can be controlled these systems are   | High – The system is fire driven and fire adapted if fires can be controlled these systems are                 |

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|  |  |  |
|--|--|--|
|  | able to restore themselves over time.  | able to restore themselves over time..   |
| Degree to which the impact may cause irreplaceable loss of resources:  | Low – For the ecological system as a whole but high in instances where local extinction of highly localised and endemic species are concerned. | Low – For the ecological system as a whole but high in instances where local extinction of highly localised and endemic species are concerned. |
| Cumulative Impact Prior to Mitigation: Potentially High - If left uncontrolled cumulatively these frequent fires will cause reduced plant species diversity and potentially structural changes in the plant community. |  |  |
| Mitigation Measures: Prevent and control wildfire and ensure that the fire frequency remains within the required ecological thresholds.  |  |  |
| Cumulative Impact Post Mitigation: Low –control of wildfire would avoid the cumulative impacts stemming from a reduced fire cycle.   |  |  |

5.2.2.3 Socio-economic

|  |  |  |
|--|--|--|
| <b>IMPACT: Change in community resources with the gain of agricultural land.</b> Cumulative impact due to the local gain of agricultural production. |  |  |
|  | Rating without Mitigation  | Rating with Mitigation   |
| Duration   | Long term (3)  | Long Term (3)  |
| Extent   | Local (2)  | Local (2)  |
| Probability  | Highly Probable (3)  | Highly Probable (3)  |
| Intensity  | Medium (2)   | Medium (2)   |
| Significance   | <b>Medium (21)</b>   | <b>Medium (21)</b>   |
| Status of the impact   | Positive – Improved livelihoods through increased agricultural production. | Positive – Improved livelihoods through increased agricultural production. |
| Degree of confidence   | High (> 75% sure of the impact)  | High (> 75% sure of the impact)  |



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|   |   |   |
|---|---|---|
|   | prediction).  | prediction).  |
| Degree to which the impact can be reversed:   | Low – the agricultural business will require these services.  | Low – the agricultural business will require these services.  |
| Degree to which the impact may cause irreplaceable loss of resources:   | N/A – The resource in question would be skilled people. As long as they hold those skills the resource remains. | N/A – The resource in question would be skilled people. As long as they hold those skills the resource remains. |
| Cumulative Impact Prior to Mitigation: Cumulative Impacts in this regard would relate to additional Rooibos tea lands under production in the surrounds and further afield and the migration of temporary staff between these different production areas. |   |   |
| Mitigation Measures: The landowner should formalise agreements with temporary staff when needed during the harvesting season.   |   |   |
| Cumulative Impact Post Mitigation: Low – if mitigation measures were implemented.   |   |   |

| <b>IMPACT: Influx of Skilled People -</b> |  |  |
|---|--|--|
|   | Rating without Mitigation  | Rating with Mitigation   |
| Duration                                  | Short term (1)   | Short Term (1)   |
| Extent                                    | Local (1)  | Local (1)  |
| Probability                               | Highly Probable (3)  | Highly Probable (3)  |
| Intensity                                 | Low (1)  | Low (1)  |
| Significance                              | <b>Low (9)</b>   | <b>Low (9)</b>   |
| Status of the impact                      | Positive – The impact of the operational phase would be a low negative impact related to job creation and improved livelihoods to rural communities. | Positive – The impact of the operational phase would be low positive impact related to job creation and improved livelihoods to rural communities. |
| Degree of confidence                      | Medium (35 – 70% sure of impact prediction).   | High (>70% sure of impact prediction).   |

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|  |   |   |
|--|---|---|
| Degree to which the impact can be reversed:  | Low – the agricultural business will require these services.  | Low – the agricultural business will require these services.  |
| Degree to which the impact may cause irreplaceable loss of resources:  | N/A – The resource in question would be skilled people. As long as they hold those skills the resource remains. | N/A – The resource in question would be skilled people. As long as they hold those skills the resource remains. |
| Cumulative Impact Prior to Mitigation: Cumulative Impacts in this regard would relate to additional Rooibos tea lands being operational in the surrounds and further afield and the migration of temporary staff between the sites, where skilled labour could find employment and gain more experience. |   |   |
| Mitigation Measures: Preference to local people who are suitably skilled to assist with the operational phase activities.  |   |   |
| Cumulative Impact Post Mitigation: If the mitigation measures were implemented and local people received preferential employment cumulative impact from the influx of labour would remain positive through the increased experience and gainful employment of local people.                              |   |   |

|   |   |   |
|---|---|---|
| <b>IMPACT: Young women’s social well-being improves through employment.</b> It is highly possible that during the operational phase will employ men in preference to women which translates into an impact where women have little to aspire to and reinforces their feeling of worthlessness. This cycle may be broken by preferentially appointing women which may lead to the women themselves and the community viewing them in a better light. |   |   |
|   | Rating without Mitigation                                       | Rating with Mitigation  |
| Duration  | Short term (1)  | Short Term (1)  |
| Extent  | Local (1)   | Local (1)   |
| Probability   | Probable (2)  | Highly Probable (3)   |
| Intensity   | Low (1)   | Low (1)   |
| Significance  | <b>Low (6)</b>  | <b>Low (9)</b>  |
| Status of the impact  | Negative – The impact would be a low negative impact related to | Positive – The impact would be a low positive impact related to |

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|   |  |   |
|---|--|---|
|   | women not breaking the cycle of hopelessness, improved self image and improved social status within the community. Empowering women will change the social well being of the family. | women breaking the cycle of hopelessness, improved self image and improved social status within the community. Empowering women will change the social well being of the family.  |
| Degree of confidence  | Medium (35-70% sure of impact prediction).   | Medium (35-70% sure of impact prediction).  |
| Degree to which the impact can be reversed:   | Low – If the agricultural development was to be approved then these opportunities would be available.  | Low – If the agricultural development was to be approved then these opportunities would be available. If women were preferentially employed then it is possible that the changed perception may last for the long term. |
| Degree to which the impact may cause irreplaceable loss of resources:   | N/A  | N/A   |
| Cumulative Impact Prior to Mitigation: Cumulative Impacts in this regard would relate to additional numbers of young women employed and an increase in the self esteem of these young women and elevated social status within the community.  |  |   |
| Mitigation Measures: Where practically possible reserve a set number of jobs for young women. Facilitate mechanisms to enable women to access these employment opportunities. Ensure that equity in remuneration for men and women doing the same job. Ensure that young women gain equal access to training and education opportunities to improve skills. |  |   |
| Cumulative Impact Post Mitigation: If the mitigation measures were implemented and young women received preferential employment, cumulatively this could lead to the reversal of the trend of   |  |   |

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hopelessness and could possibly result in reduced early pregnancies and substance abuse. Social wellbeing of the mother in the family will change the wellbeing of the family the benefit could therefore be inter-generational.

**IMPACT: Improved economic and material well being as the skills base of the local population expands and deepens.**

|   | Rating without Mitigation   | Rating with Mitigation   |
|---|---|--|
| Duration                                    | Short term (1)  | Short Term (1)   |
| Extent                                      | Local (1)   | Local (1)  |
| Probability                                 | Probable (2)  | Probable (2)   |
| Intensity                                   | Low (1)   | Low (1)  |
| Significance                                | <b>Low (6)</b>  | <b>Low (6)</b>   |
| Status of the impact                        | Positive / Negative – The impact would be a low positive impact related to an increase in skills capacity and the application of these skills on other projects in surrounding areas. Outsiders may join the community and could conceivably impact of safety and security. | Positive – The impact would be a low positive impact related to an increase in skills capacity and the application of these skills on other projects in surrounding areas. |
| Degree of confidence                        | Medium (35-70% sure of impact prediction).  | Medium (35-70% sure of impact prediction).   |
| Degree to which the impact can be reversed: | Low –These skills would be required and the opportunities would be available. Skills once obtained are embedded and the skilled individual will be able to  | Low –These skills would be required and the opportunities would be available. Skills once obtained are embedded and the skilled individual will be able to                 |

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|  |  |  |
|--|--|--|
|  | use them further afield as opportunity dictates. | use them further afield as opportunity dictates. |
| Degree to which the impact may cause irreplaceable loss of resources:  | N/A – Positive impact                            | N/A – Positive impact                            |
| Cumulative Impact Prior to Mitigation: Cumulative Impacts in this regard would relate to the ability of the operational activities to facilitate the education of additional numbers of people and transferring to them an employable skills set.  |  |  |
| Mitigation Measures: Reserve a set number of jobs for local labour. Facilitate mechanisms to enable these local people to access these employment opportunities. Enhance formal and informal skills transfer by implementing a training and skills development programme to enhance opportunities for local HDI's. This to be achieved through structured job shadowing. |  |  |
| Cumulative Impact Post Mitigation: If the mitigation measures were implemented then people may leave the farm and find gainful employment elsewhere. The cumulative impact though is long term and inter generationally thus a significant cumulative impact is possible over time.  |  |  |

|   |   |   |
|---|---|---|
| <b>IMPACT: Increased income into certain households.</b> The development phase will bring jobs to locals. |   |   |
|   | Rating without Mitigation   | Rating with Mitigation  |
| Duration  | Short term (1)  | Short term (1)  |
| Extent  | Local (1)   | Local (1)   |
| Probability   | Probable (2)  | Probable (2)  |
| Intensity   | Low (1)   | Low (1)   |
| Significance  | <b>Low (8)</b>  | <b>Low (10)</b>   |
| Status of the impact  | Positive – The impact would be a low positive impact as local people would find gainful employment. | Positive – The impact would be a low positive impact as local people would find gainful employment. |
| Degree of confidence  | Medium (between 30% - 70% sure of the impact prediction).   | Medium (> 70% sure of the impact prediction).   |

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|   |  |  |
|---|--|--|
| Degree to which the impact can be reversed:   | Low – During the operational phase the impact of employment will be real in terms of additional income into local people's households. | Low – During the operational phase the impact of employment will be real in terms of additional income into local people's households. |
| Degree to which the impact may cause irreplaceable loss of resources:   | Low – This is not a consumptive impact but one contributing to economic resources locally.   | Low – This is not a consumptive impact but one contributing to economic resources locally.   |
| Cumulative Impact Prior to Mitigation: Cumulative impacts would relate to the employment of people from outside over those who have the skills but are locally based. The positive impact of money flowing into local households would be lost. |  |  |
| Mitigation Measures: The landowner should act as a reference for locals employed. The landowner should liaise with existing structures to access employment for locals.   |  |  |
| Cumulative Impact Post Mitigation: If the mitigation measures were implemented then local skilled and unskilled people would be employed by the landowner.  |  |  |

|   |  |  |
|---|--|--|
| <b>IMPACT: Increased noise and dust levels.</b> Noise and dust will be generated during the production cycles of the agricultural lands.. |  |  |
|   | Rating without Mitigation  | Rating with Mitigation   |
| Duration  | Short term (1)   | Short Term (1)   |
| Extent  | Local (1)  | Local (1)  |
| Probability   | Highly Probable (3)  | Probable (2)   |
| Intensity   | Medium (2)   | Medium (2)   |
| Significance  | <b>Low (12)</b>  | <b>Low (8)</b>   |
| Status of the impact  | Negative – The impact would be a low negative impact related to impacts on the health and well being of the inhabitants of the surrounding area from | Negative – The impact would be a low negative impact related to impacts on the health and well being of the inhabitants of the surrounding area from |

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|   |  |   |
|---|--|---|
|   | respiratory and / or psychological illness.  | respiratory and / or psychological illness.   |
| Degree of confidence  | High (>70% sure of the impact prediction).   | High (>70% sure of the impact prediction).  |
| Degree to which the impact can be reversed:   | Medium – Without mitigation dust and noise could result in impacts on health that would require interventions from health care services to reverse the symptoms. The operational phase impact will be transitory and the effects reversible. | Low – Dust and noise suppression would further reduce potential risk of illness from this impact. The operational phase impact will be transitory and the effects reversible. |
| Degree to which the impact may cause irreplaceable loss of resources:   | Low – The short term impact of noise and dust would preclude the possibility of a permanent loss of well being.  | Low – The short term impact of noise and dust would preclude the possibility of a permanent loss of well being.   |
| Cumulative Impact Prior to Mitigation: Cumulative impacts would relate to the dust and noise impacting on the inhabitants of the surrounding landscape due to a lack of dust suppression and noise impacts outside of normal working hours. |  |   |
| Mitigation Measures: Control dust and noise as prescribed in the EMPr. Enforce strict operating hours for operational activities.   |  |   |
| Cumulative Impact Post Mitigation: If the mitigation measures were implemented then dust and noise pollution should be kept at low enough levels to be of low significance.   |  |   |

| <b>IMPACT: Altered sense of place</b> |                           |                        |
|---------------------------------------|---------------------------|------------------------|
|                                       | Rating without Mitigation | Rating with Mitigation |
| Duration                              | Short term (1)            | Short Term (1)         |
| Extent                                | Local (1)                 | Local (1)              |
| Probability                           | Improbable (1)            | Improbable (1)         |

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|   |  |  |
|---|--|--|
| Intensity   | Low (1)  | Low (1)  |
| Significance  | <b>Low (3)</b>   | <b>Low (3)</b>   |
| Status of the impact  | Negative – May result in the permanent loss of sense of place. | Positive – Would not result in an altered sense of place.    |
| Degree of confidence  | High (>70% sure of the impact prediction).                     | High (>70% sure of the impact prediction).                   |
| Degree to which the impact can be reversed:   | Low – If damaged the sense of place may be lost permanently.   | Low – If damaged the sense of place may be lost permanently. |
| Degree to which the impact may cause irreplaceable loss of resources:   | High – If damaged these resources are lost permanently.        | High – If damaged these resources are lost permanently.      |
| Cumulative Impact Prior to Mitigation: Cumulative impacts would relate to the loss of sense of place from numerous sites under production. Unlikely in this instance as the new production lands is additive and aligned with the current landuse on site and within the surrounds. |  |  |
| Mitigation Measures: NONE   |  |  |
| Cumulative Impact Post Mitigation: LOW  |  |  |

5.2.2.4 Noise Impacts

|   |  |  |
|---|--|--|
| <b>Description of Impact:</b> This impact was assessed under the Social Impact Assessment portion of the assessment plan. |  |  |
|   | Rating without Mitigation                                | Rating with Mitigation                                   |
| Duration  | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Extent  | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Probability   | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Intensity   | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |



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|   |  |  |
|---|--|--|
|   | Assessment portion of the plan.                          | Assessment portion of the plan.                          |
| Significance  | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Status of the impact  | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Degree to which the impact can be reversed:   | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Degree to which the impact may cause irreplaceable loss of resources:                           | Please see Social Impact Assessment portion of the plan. | Please see Social Impact Assessment portion of the plan. |
| Cumulative Impact Prior to Mitigation: Please see Social Impact Assessment portion of the plan. |  |  |
| Mitigation Measures: Please see Social Impact Assessment portion of the plan.                   |  |  |
| Cumulative Impact Post Mitigation: Please see Social Impact Assessment portion of the plan.     |  |  |

5.2.2.5 Visual Impacts

**Description of Impact:** In this instance visual impacts would already have occurred. If vegetative cover were lost over time during the operational phase the site would conceivably alter in terms of the significance of its intrusion into the landscape due to the loss of screening provided by the vegetation on site. We consider the impacts to have already occurred under the development phase. Furthermore the new production land is additive and aligned with the current landuse on site and within the surrounds.

**5.2.3 Impacts resulting from the decommissioning phase**

As stated above impacts related to the development phase would be relevant in the remote instance where a Rooibos tea land were to be decommissioned. Impacts related to decommissioning are regarded as equivalent to those of the development phase. In instances where lands are decommissioned they essentially are left to lie fallow and slowly return to the natural or near natural state that they were at the time of development. As this is an indigenous crop we consider the decommissioning of the site and its rehabilitation to be highly probable.

The most significant impact would be from the loss of income from a failed agricultural business – mitigation of this impact would not be possible as the venture would have failed already.

| <b>Potential impacts on the socio-economic aspects:</b>               |  |
|---|--|
| Nature of impact:   | Loss of employment opportunities to unskilled rural poor   |
| Extent and duration of impact:  | Permanent (3) in an instance where the activity is decommissioned.   |
| Probability of occurrence:  | Low (1) – Market indicators are strong and the area is well suited to this agricultural activity.  |
| Degree to which the impact can be reversed:                           | 0% in the case of full scale decommissioning.  |
| Degree to which the impact may cause irreplaceable loss of resources: | If a generic trend this could result in a migration of labour to other areas and an increasing scarcity of labour available to remaining producers, but these thoughts are speculative |

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|   |   |
|---|---|
|   | and in the area of conjecture.  |
| Cumulative impact prior to mitigation:  | Decommissioning of entire productive landscapes with the associated economy.  |
| Significance rating of impact prior to mitigation<br>(Low, Medium, Medium-High, High, or Very-High) | High  |
| Degree to which the impact can be mitigated:  | High  |
| Proposed mitigation:  | Through the consolidation of the market, environmental best practice for the production system, effective and well capacitated extension to farmers, best practice in terms of employment and social standards for labour on farms. |
| Cumulative impact post mitigation:  | Low   |
| Significance rating of impact after mitigation<br>(Low, Medium, Medium-High, High, or Very-High)    | Low   |

## 6. IMPACT SUMMARY ASSOCIATED WITH THE PROPOSED ROOIBOS CULTIVATION LANDS

### 6.1 IMPACT SUMMARY FOR THE DESIGN, PLANNING AND DEVELOPMENT PHASE.

| DESIGN, PLANNING AND CONTRUCTION PHASE : IMPACT SUMMARY |  |   |                 |                |                     |   |
|---|--|---|-----------------|----------------|---------------------|---|
| Variable  | Variable elements  | Result of change in variable  | With Mitigation | out Mitigation | Positive / Negative | Mitigation Measures   |
| Geographical and Physical                               |  |   |                 |                |                     |   |
|   | Soil erosion due to alteration of the surface run-off characteristics. | The denuded surface created on site could result in erosion of top soil and ultimately in the alteration of the site scale hydrology. | 14              | 3              | Negative            | Ensure clear demarcation of the proposed areas for clearing of the agricultural lands. Ensure regular road maintenance which would include immediately stabilizing unstable portions of access roads. This can be achieved through an effective system of run-off control from hardened or denuded surfaces or where water flows down slope. Regular monitoring of the site for signs of sheet and gully erosion would be the most effective mitigatory measure. In instance where accelerated levels of erosion are occurring, stabilizing these areas either with natural |

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|   |   |   |   |          |  |
|---|---|---|---|----------|--|
|   |   |   |   |          | <p>vegetation, geo-textiles or with basket gabion structures could mitigate further soil loss and gulley erosion.</p> <p>Minimizing disturbance of denuded areas. Ensure adequate storm water management around the agricultural lands and the efficient routing of storm water to natural drainage lines or dissipating flow through diversion channels.</p>  |
| <p>Loss of topsoil due to poor topsoil management and surface water flows during storms</p> | <p>Loss of soil would translate into a loss of fertility and loss of agricultural potential</p> | 8 | 3 | Negative | <p>Clearly demarcate the development footprint and access roads. Ensure regular road maintenance which would include immediately stabilizing unstable portions of access roads. Regular monitoring of the site for signs of sheet and gulley erosion would be the most effective mitigatory measure. In instance where accelerated levels of erosion are occurring, stabilizing these areas either with suitable indigenous vegetation, geo-textiles or in serious cases with basket gabion structures should mitigate further soil loss.</p> <p>Minimizing disturbance of denuded areas. Ensure that there is an effective run-off control system (storm water) that disseminates water from hardened or denuded areas throughout the site.</p> |

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|  |  |   |   |   |          |   |
|--|--|---|---|---|----------|---|
|  | Loss of topsoil due to poor topsoil management and surface water flows during storms | Loss of soil would translate into a loss of nutrient cycling and fertility and loss of agricultural potential               | 8 | 3 | Negative | Clearly demarcate the development footprint and access roads. Ensure regular road maintenance which would include immediately stabilizing unstable portions of access roads. Regular monitoring of the site for signs of sheet and gully erosion would be the most effective mitigatory measure. In instance where accelerated levels of erosion are occurring, stabilizing these areas either with suitable indigenous vegetation, geo-textiles or in serious cases with basket gabion structures should mitigate further soil loss. Minimizing disturbance of denuded areas. Ensure that there is an effective run-off control system (storm water) that disseminates water from hardened, denuded and sloping areas throughout the site. |
|  | Contamination of groundwater   | Contamination of groundwater with toxic or polluting substances may result in water being too polluted for use by humans or | 6 | 3 | Negative | Clearing equipment - The owner must ensure that fuels and chemicals (e.g. drums of fuel, grease, oil, brake fluid, hydraulic fluid) are stored and handled in a bunded area to prevent spillage; In the event of a spill, appropriate steps must be undertaken to prevent widespread pollution; These areas shall comply with standard fire safety regulations; Drip trays must be put in relevant locations (inlets, outlets, points of leakage, etc) so as to prevent such  |

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|--|--|--|---|---|----------|--|
|  |  | toxic to other living organisms should it surface as a spring or a seep.       |   |   |          | spillage or leakage during transfer; Drip trays shall be cleaned regularly and shall not be allowed to overflow; Regular maintenance of vehicles and equipment is needed to prevent leaks - No equipment or vehicles with leaks should be allowed to work on the site; Substances, which cannot be reused, must be disposed at the nearest authorized landfill site. |
|  | Degradation of the agricultural lands and surrounding natural vegetation through trampling | Loss of soil and vegetation cover in areas outside of the production footprint | 8 | 3 | Negative | Clearly demarcate the access roads ensure that only these roads are used to gain access to the agricultural land. Ensure that the edges of the agricultural land are not impacted and prevent the situation where the edges slowly creep out over time.  |

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|                           |  |  |    |   |          |  |
|---------------------------|--|--|----|---|----------|--|
| Biological and Ecological | Loss of vegetation due to development activities   | Loss of biodiversity and alteration in surface hydrology and accelerated erosion of soil and topsoil.        | 21 | 6 | Negative | Clearly demarcate the development footprint and access roads. Ensure that ongoing monitoring detects accelerated levels of sheet and gulley erosion and that these sites are stabilised either by packing a covering of cut vegetation or using geo-textiles and / or basket gabions. Ensure that a monitoring plan is available and is implemented. Monitor the colonisation of denuded areas by alien invasive plants and eradicate these as soon as they are noticed. |
|                           | The habitat of threatened plants and faunal species lost or disturbed due to development | Loss of species already under threat will further enhance the probability of eventual extinction of species. | 5  | 5 | Negative | No real mitigation possible. General mitigation would be relevant. Clearly demarcate the development footprint and access roads. Ensure that ongoing monitoring detects accelerated levels of sheet and gulley erosion and that these sites are stabilised using geo-textiles and / or basket gabions. Monitor the colonisation of denuded areas by alien invasive plants and eradicate these as soon as they are noticed.   |
|                           | Impacts on drainage lines  | Loss of flood attenuation, altered surface flows, erosion of riparian areas.                                 | 18 | 3 | Negative | Ensure that drainage lines are identified as no-go areas. Monitor storm water diversion measures to assess the impact of increased water volumes being diverted to the drainage line. Institute management interventions if gulley erosion or damage to the riparian area results. Areas   |



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|                 |   |  |    |   |          |   |
|-----------------|---|--|----|---|----------|---|
|                 |   |  |    |   |          | should be stabilised as for mitigation measures for erosion and topsoil management above.   |
|                 | Establishment of alien invasive plant species | Alien invasive species physically supplanting indigenous species and driving them into local extinction. Cumulatively alien invasives can cause the extinction of species across the full distribution of those species. | 18 | 9 | Negative | Eradicate all alien invasive plant species as soon as they are detected on site. Monitor re-growth of invasive species.                         |
| Social-economic | Influx of skilled people                      | The influx results in local people being unable to compete for job   | 9  | 9 | Negative | Preference to local service providers who are suitably qualified to undertake the clearing operations associated with the proposed development. |

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|   |   |    |    |          |  |
|---|---|----|----|----------|--|
|   | opportunities.  |    |    |          |  |
| Young women's social well-being improves through employment | Young woman are discriminated against in the work place this results in lack of employment, women feeling disempowered. | 6  | 9  | Positive | Where practically possible reserve a set number of jobs for young women. Facilitate mechanisms to enable women to access these employment opportunities. Ensure that equity in remuneration for men and women doing the same job. Ensure that young women gain equal access to training and education opportunities to improve skills. |
| Increased income into certain households                    | Improved standards of living for the employed.  | 8  | 10 | Positive | The landowner should act as a reference for locals employed. The landowner to liaise with existing and future projects to access employment for locals.  |
| Increased noise and dust levels                             | Reduced quality of residential environment for humans, potential illness.   | 12 | 8  | Negative | Control dust and noise as prescribed in the EMPr. Appoint an independent ECO to monitor and implement the conditions of the EMPr. Undertake education and awareness training with the project team. Enforce strict operating hoursImplement dust and noise suppression   |

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|                         |  |   |    |    |          |  |
|-------------------------|--|---|----|----|----------|--|
|                         |  | Suffocating of vegetation and die-off.  |    |    |          | measures. Clearly demarcate access routes to the development site. No littering should be allowed and all waste should be removed from the site.   |
|                         | Altered sense of place                   | Residents are subjected to change in their environment to such a degree that it no longer appears the same to them. | 3  | 3  | Negative | NONE   |
| Cultural and Historical | Irreplaceable loss of heritage resources | Loss of heritage resources due to unearthing  | 6  | 3  | Negative | Any unearthed heritage resources must be reported to the competent authority, in this instance SAHRA, immediately. A specialist must be appointed to undertake the required mitigation measures associated with the heritage resource unearthed. |
| Visual                  | Potential visual impact                  | A development that is intrusive and objectionable to residents  | 12 | 10 | Negative | Disturbed areas should be kept to a minimum. The development footprint should be clearly demarcated and no development outside of the footprint should be allowed.   |

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|  |   |   |    |   |          |  |
|--|---|---|----|---|----------|--|
|  | Change in the character of the prevailing use of the area | As for sense of place – no longer a place recognisable to residents due to changes brought by an insensitive development. | 12 | 8 | Negative | Disturbed areas should be kept to a minimum. The development footprint should be clearly demarcated and no development outside of the footprint should be allowed. The site should keep within the planning policy in particular the principles of critical regionalism, namely sense of place, sense of history, sense of nature, sense of craft and sense of limits. Finally existing tracks and roads should be used in preference wherever possible. |
|--|---|---|----|---|----------|--|

| Colour      | Score | Rating |
|-------------|-------|--------|
| Light Green | 0-20  | Low    |
| Light Red   | 20-30 | Medium |
| Red         | > 30  | High   |

**6.2 IMPACT SUMMARY FOR THE OPERATIONAL PHASE.**

| <b>OPERATIONAL PHASE : IMPACT SUMMARY</b> |  |  |                           |                  |                            |  |
|---|--|--|---------------------------|------------------|----------------------------|--|
| <b>Variable</b>                           | <b>Variable elements</b>   | <b>Result of change in variable</b>                | <b>Without Mitigation</b> | <b>Mitigated</b> | <b>Positive / Negative</b> | <b>Mitigation Measures</b>   |
| Geographical and Physical                 | Soil erosion due to alteration of the surface run-off characteristics. | Loss of soil fertility and agricultural potential. | 10                        | 5                | Negative                   | All operational activities should remain within the development footprint and minimize the creep of the development edge impacts. Ensure that recommendations for storm water control provided by in the EMP are adhered to. Ensure regular road maintenance which would include immediately stabilizing unstable portions of access roads. This can be achieved through an effective system of run-off control from hardened or denuded surfaces or where water flows down slope. Regular monitoring of the site for signs of sheet and gully erosion would be the most effective |

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|   |   |   |   |          |  |
|---|---|---|---|----------|--|
|   |   |   |   |          | mitigatory measure. In instance where accelerated levels of erosion are occurring, stabilizing these areas either with natural vegetation, geo-textiles or with basket gabion structures could mitigate further soil loss and gulley erosion. Minimizing disturbance of denuded areas. |
| Degradation of vegetative cover adjacent to the site development. | Loss of ground cover, altered runoff / surface hydrology. Accelerated erosion and loss of fertility and nutrient cycling. | 8 | 5 | Negative | Minimise physical impacts to on the remaining natural vegetation on the rest of the property Monitor the site for loss of vegetative cover, remove the cause of impact and implement mitigation impacts.   |

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|                           |  |                      |    |    |          |  |
|---------------------------|--|----------------------|----|----|----------|--|
| Biological and Ecological | Loss of vegetation due to operational activities   | Loss of biodiversity | 21 | 18 | Negative | No mitigatory measures at regional scales are possible other than the retention of the CBA and ecological support areas through the avoidance of unsuitable landuse in those areas. Active rehabilitation of the denuded areas with indigenous vegetation will improve habitat quality.  |
|                           | The habitat of threatened plants and faunal species lost or disturbed due to operational activities. | Loss of biodiversity | 5  | 5  | Negative | Prevent overgrazing in the remaining areas on the property, Prevent illegal hunting, prevent the sprawling of edge effects, prevent the spraying of pesticides on remaining natural vegetation and prevent the establishment of alien invasive species. Ensure that ongoing monitoring detects accelerated levels of sheet and gully erosion and that these sites are stabilised using geo-textiles and / or basket gabions. Monitor the colonisation of denuded |

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|                           |   |    |   |          |   |
|---------------------------|---|----|---|----------|---|
|                           |   |    |   |          | areas by alien invasive plants and eradicate these as soon as they are noticed.   |
| Impacts on drainage lines | Loss of ecological functioning along river courses. | 18 | 3 | Negative | Ensure that drainage lines are identified as no-go areas during the operational phase. Monitor storm water diversion measures to assess the impact of increased water volumes being diverted to the drainage line. Institute management interventions if gulley erosion or damage to the riparian area results. |



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|                |  |  |    |    |          |  |
|----------------|--|--|----|----|----------|--|
|                | Too frequent fires   | Reduced diversity resulting from too frequent fires and an inability from plant communities to regenerate after fire | 18 | 3  | Negative | Prevent and control wildfire and ensure that the fire frequency remains within the required ecological thresholds. |
|                | Colonisation by Alien Invasive Plant Species                     | Loss of biodiversity through physical supplanting of indigenous species by invasive alien plants.                    | 14 | 3  | Negative | Eradicate all alien invasive plant species as soon as they are detected on site. Monitor re-growth.                |
| Socio-economic | Change in community resources with the gain of agricultural land | Improved income to rural households through greater production.  | 21 | 21 | Positive | Implement all recommendations in the EMPr.   |

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|  |   |   |   |   |          |  |
|--|---|---|---|---|----------|--|
|  | Influx of Skilled People  | Improved productivity and capability of labour                                      | 9 | 9 | Positive | Preference to local skilled labour who can assist with the operational activities.   |
|  | Young women's social well-being improves through employment.  | Improved circumstances at home, better care of children, less unwanted pregnancies. | 6 | 9 | Positive | Where practically possible reserve a set number of jobs for young women. Facilitate mechanisms to enable women to access these employment opportunities. Ensure that equity in remuneration for men and women doing the same job. Ensure that young women gain equal access to training and education opportunities to improve skills. |
|  | Improved economic and material well being as the skills base of the local population expands and deepens. | Improved livelihoods for rural communities.   | 6 | 6 | Positive | Reserve jobs for local labour. Facilitate mechanisms to enable these local people to access these employment opportunities. Enhance formal and informal skills transfer by implementing a training and skills development programme to enhance opportunities for local HDI's. This to  |

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|        |  |   |  |  |  |   |
|--------|--|---|--|--|--|---|
|        |  |   |  |  |  | be achieved through structured job shadowing.   |
|        | Increased income into certain households.  | Improved livelihoods for rural communities. | 8  | 10   | Positive                                   | The landowner should act as a reference for locals employed. The landowner to liaise with existing and future projects to access employment for locals. |
|        | Increased noise and dust levels.           | Health Risks and altered sense of place     | 12   | 8  | Negative                                   | Control dust and noise as prescribed in the EMPr.   |
| Visual | NONE – Occurs during the development phase | NONE – Occurs during the development phase  | NONE – Occurs during the development phase | NONE – Occurs during the development phase | NONE – Occurs during the development phase | NONE – Occurs during the development phase  |

**6.3 IMPACT SUMMARY FOR THE DECOMMISSIONING PHASE.**

| DECOMMISSIONING PHASE : IMPACT SUMMARY |                                    |                                |                    |           |                     |   |
|--|------------------------------------|--------------------------------|--------------------|-----------|---------------------|---|
| Variable                               | Variable elements                  | Result of change in variable   | Without Mitigation | Mitigated | Positive / Negative | Mitigation Measures   |
| Socio-economic                         |                                    |                                |                    |           |                     |   |
|  | Loss of income to rural households | Degenerating rural livelihoods | 21                 | 21        | Negative            | Through the consolidation of the market, environmental best practice for the production system, effective and well capacitated extension to farmers, best practice in terms of employment and social standards for labour on farms. |

| Colour | Score | Rating |
|--------|-------|--------|
|        | 0-20  | Low    |
|        | 20-30 | Medium |
|        | > 30  | High   |

#### **6.4 ASSESSMENT OF THE “NO GO” ALTERNATIVE**

It must be noted here that the planning documentation identifies this portion of the landscape as suitable for intensive agricultural pursuits. Additionally that the locality is characterised in the conservation planning by a low regional impact on the ecosystem. This would perpetuate the current situation and would translate into the utilisation of the sites for extensive agricultural pursuits such as grazing by small stock. Fynbos ecosystems are characterised by the fact that they have very low nutrient status and are not able to support enough stock units per hectare to provide a sustainable livelihood.

Moreover by lucky coincidence the more rocky areas do support relatively more palatable plants by comparison to deeper sandy soils, thus the mix of deeper more arable soils and rocky areas used for grazing are the most efficient means of utilising any given area for an economic pursuit. It must also be noted that disturbance within these vegetation types is essential for its health, in Fynbos by far the greatest source of necessary disturbance comes from fire which is essential for the rejuvenation of the ecosystem and to a lesser extent from the physical action of grazers hooves breaking up the soils surface and from the grazing on palatable shrubs and forbes.

**To pursue the no go option is not considered feasible. From an economic perspective this landuse option is aligned with provincial and local forward planning - the mix of intensive and extensive use of the land does translate into the most economically sustainable landuse for this locality. The opportunity cost weighs in favour of the proposed development due to the conservation status of the ecosystem type and the extent of the development itself in relation to its impacts on biodiversity. The area is economically active due to its suitability for the cultivation of an indigenous plant that does not grow in any other part of the world.**

**Sustainable landuse options for people in this location are limited to intensive and extensive agricultural pursuits and in our consultation appear to be closely linked to the ability of a producer to respond to the vagaries of the market place by ensuring that (1.) diversification of small stock and Rooibos production provides the most sustainable option in terms of an economic model for a farm in this region, and (2.) that enough area needs to be made available to intensive production to ensure**

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**enough product volume is available to ride out market fluctuations and increase the amount of land available to use as productive grazing to bolster the small stock side of the business.**

## 6.5 CUMULATIVE IMPACTS

In terms of agricultural land use negative cumulative impacts will manifest at the site scale only through the physical supplanting of the current land use by another. The findings of the assessment however indicate that the overall impact will be low due to the suitability of the site for the production of Rooibos and the ability of the layout to take cognisance of the sensitive areas within the site harbouring species of conservation concern. Furthermore as an indigenous crop this development can be fully reversed and the site rehabilitated, the presence of very large areas of natural vegetation in the surrounds would act as the source areas for the new colonisers of the site. The rehabilitation will however take many years to complete.

In this instance only a portion of the property is suitable for a development such as this, and it is our opinion that the same would be true for many of the surrounding properties to a greater or lesser extent in terms of this type of development.

The proposed development does provide an opportunity to provide an assured income to a rural family directly dependent on agricultural production to sustain their livelihood.

A second cumulative impact at a site scale would be the loss of topsoil and soils fertility through poor management practice, cumulatively this could result in the options for future agricultural land use / rehabilitation diminishing even further should the proposed facility be decommissioned. This in a worst case scenario could cumulatively result in the site becoming highly infertile. Mitigatory measures are however well developed and in combination with regular monitoring and the implementation of the EMPr should prevent this impact from reaching significant levels.

From an ecological perspective cumulative impacts of numerous developments of this nature will see larger areas of natural vegetation cleared. At this point however these impacts would not be significant as the size of these facilities are small and the number of suitable areas limited. Faunal diversity loss cumulatively is significantly mitigated by the fact that there are significant areas of equivalent natural vegetation that could function as refugia for displaced vertebrates and invertebrates. Seen from this

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light cumulative impact is negligible. There exists a synergy between the loss of vegetative cover and the loss of topsoil and soil fertility in that the removal of a vegetative cover increases the risk of erosion. Mitigatory measures are however well developed and in combination with regular monitoring and the implementation of the EMPr should prevent this impact from reaching significant levels. A further consequence of the disturbance regime would be the colonisation of the site by alien invasive plants which are particularly well adapted to disturbed and denuded areas. Regular monitoring and control of the invasive plant species should keep the invasion below significant impact levels. Numerous developments of this nature have very little probability of cumulative impact on ecological connectivity across landscape, mitigation here would require the avoidance of sensitive and no go areas and the maintenance of river and terrestrial corridors and CBA's if similar sites were to be proposed on neighbouring properties to ensure that at a landscape scale connectivity is retained at local to regional scales.

The development of the Rooibos production area will result in a number of employment opportunities during the clearing and operational phases. Cumulatively this could see an influx of people into the area. The net result would be competition for employment opportunities accruing to skilled migrants due to a lack of local education and skills. Cumulatively this could have the result of destabilising social and community structures as outsiders enter these communities on a semi to permanent basis in search of opportunity. Mitigation would require preferential employment of locals to keep the cumulative impacts within acceptable thresholds. There is a real opportunity through education, skills development and employment to empower and uplift young women and women in general. Cumulatively this could change the perceptions of women of themselves (improved self esteem) and those of the community and break the cycle of hopelessness, early pregnancy for receipt of social grants and substance abuse and through this inevitably change the family dynamics and futures. In other words the cumulative impact will become a long term positive impact that would be transferable inter generationally.

Decommissioning of these production areas would carry with it the loss of employment (retrenchment) and loss of income and a sustainable business for the landowner.

## 7. CONCLUSIONS AND RECOMMENDATIONS

### 7.1 DESIGN, PLANNING AND DEVELOPMENT PHASE

#### 7.1.1 Impacts on Geo-physical environment

Impacts to the geo-physical environment are primarily associated with the potential loss of agricultural resources through soil erosion and the disturbance and physical loss of soil and with the consequent loss of topsoil loss of soil fertility. The loss of fertile soil carries with it the loss of the agricultural land use and cannot be mitigated at the site scale. With mitigation the impact is considered low and impacts significance is acceptable. Soil erosion is probable without mitigation but with ongoing monitoring and management this impact could be regarded as improbable as it can be controlled at stabilised at background levels through well established management interventions. Erosion is therefore considered to have very low potential impact the additional motivation being that the chosen sites are on flat area that is sandy and which has a low erosive potential. The similar and synergistic impact that runs in concert with erosion would be the impact of the loss of soil fertility. This would be probable if no mitigation was implemented. The same mitigatory measures relevant to erosion if implemented would result in the significance being regarded as very low negative impact.

#### 7.1.2. Impacts on ecosystem pattern and process

Impacts on biological and ecological resources will be low at local scales when considering the loss of natural vegetation as the preferred alternative layout is able to avoid the sensitive areas on the property. Mitigation of this impact was addressed as far as practically possible through avoidance (planning the layout to occupy low sensitivity areas i.e. transformed to some degree or adjacent to existing production areas). The natural vegetation within the project site however will be lost and no mitigation of this loss is possible. Ensuring that the site for the clearing of the lands is clearly demarcated will ensure that this impact is controlled within assessed thresholds. It should however be noted that there are species of special concern both floral and faunal. Floral species have been addressed in this assessment and avoided in the preferred layout alternative. Faunal species such as Leopard are wide



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ranging and the development will not pose a significant threat to this species considering the fact that its prey species are often times associated with agricultural lands such as those proposed (E.g. Duiker that feed on the annual grasses and forbes within lands). For the loss of habitat and associated faunal mortality the impact is considered to be very low significance without an option for mitigation as these habitats will be lost. It should be noted however that the bulk of the property has equivalent habitat and refugees from the development site may find suitable habitat in the surrounding landscape. Both these impacts are considered to be negative.

### **7.1.3 Socio-economic Impacts**

Negative socio economic impacts would include the influx of unemployed people (skilled and unskilled) with resultant potential for destabilisation of the community and an increase in the crime rate. These impacts could be felt for a temporary period as contract construction workers move on to the next opportunity but in certain instances may become semi-permanent. The opportunity presented for job creation by this proposed development initially has two potential impacts, on the negative side unemployed people entering would and possibly be appointed ahead of local people which would remove the potential benefit to locals and possibly cause conflict. On the other hand employment and in particular the employment of locals (particularly women) would have the benefit of improving income into local households, breaking the cycle of hopelessness for young women who cannot find employment and choose to have babies to qualify for social grants as a means of generating an income. The proposed development could result in changes in the living environment through impacts on health and safety in two ways either through the influx of sexually transmitted diseases coupled with undesirable sexual behaviour and increased noise and dust from the development site at a local scale. For short periods of time impacts increased noise and dust levels on site are possible but aligned with the general noise and dust of a working agricultural farm. The negative impacts are however all considered to be low to very low with mitigation and as such are considered to be within acceptable norms.

Positive socio economic impacts would relate to an influx of skilled people. The preferential employment of young women, an improvement in their social wellbeing. Through on the job training and more formal training the skills base of the people in the area should broaden and deepen. This can

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be further facilitated through joint ventures of local skilled HDI's. Impacts range between low to high low through appropriate mitigation.

#### **7.1.4 Impacts on Heritage Resources**

Impacts on cultural and historical resources are considered to be low due to the very low significance signature of the site from a heritage perspective.

#### **7.1.5 Visual Impacts**

Visual Impacts relate to impacts on sensitive receptors in the foreground and middle ground. Findings in this regard confirm that the site is near invisible from the surrounding landscape due to the distances between farms and the uneven topography, vegetation and remoteness from visual receptors. Impacts on the intrinsic value and sense for place are considered to be low as the proposed development is fully aligned with the current landuse of the site and on surrounding properties.

### **7.2 OPERATIONAL PHASE**

#### **7.2.1 Impacts on Geo-physical environment**

Impacts to the geo-physical environment stemming from the operational phase would be equivalent to those of the development phase differing only in the length of time that they would be relevant. As such they are associated with the loss of agricultural resources through soil erosion and the disturbance and physical loss of soil and with the consequent loss of topsoil loss of soil fertility as discussed above. The loss of agricultural landuse cannot be mitigated as the area physically supplants the current landuse of extensive grazing and the significance of the impact at the site scale is considered low. Impacts significance is therefore acceptable. Soil erosion is probable without mitigation but with good mitigation and ongoing monitoring and management this impact could be regarded as improbable as it can be controlled at stabilised at background levels. Erosion is therefore considered to have very low potential impact the additional motivation being that the chosen sites are on flat to gently undulating sandy areas that have a low erosive potential. The similar and synergistic impact that runs in concert with erosion would be the impact of the loss of soil fertility. This would be probable if no mitigation was implemented. The same mitigatory measures relevant to erosion if implemented would result in the significance being regarded as very low negative impact.

### **7.2.2. Impacts on ecosystem pattern and process**

During the operational phase, farming activities may impact on ecosystem pattern and processes however this can be mitigated through the effective implementation of preventative management guidelines regarding:

- *overgrazing in the remaining areas on the property;*
- *the sprawling of edge effects;*
- *The spraying of pesticides on remaining natural vegetation;*
- *and prevent the establishment of alien invasive species.*

The design and placement of the facility will not impact on ecological connectivity as all important sensitive areas have been avoided. The site may be colonised by alien invasive plants species during the operational phase, the larger woody species would be removed the other are considered low and with mitigation measures of monitoring and control should represent a very low impact significance.

### **7.2.3 Socio-economic Impacts**

Positive socio economic impacts may be limited to opportunities for employment to harvest crops and carry out maintenance and repair work on farm machinery used for agricultural production. The primary impact would be positive for the operational phase with the provision of employment opportunities. As for the development phase improvement in the social wellbeing of young women in particular, the improved status of these young women within the community, increased economic and material wellbeing of those employed would be a positive outcome. Impact is low in this respect and is considered to be favourable. The positive benefits from this perspective in terms of the cost benefit of proceeding with the proposed development weighs favourably on the side of an operational agricultural business.

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#### **7.2.4 Impacts on Heritage Resources**

Cultural and historical impacts should not occur during the operational phase.

#### **7.2.5 Visual Impacts**

Visual Impacts relate to impacts on sensitive receptors in the foreground and middle ground. Findings in this regard confirm that the site is not visible from the surrounds as above.

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### **7.3 DECOMMISSIONING PHASE**

#### **7.3.1 Impacts on Geo-physical environment**

While the impacts on the physical environment during the decommissioning phase would be restorative in nature the overall impact would remain medium negative in the absence of mitigation but with mitigation this would revert to a low positive impact, this primarily because of the very slow regenerative processes of the natural environment.

#### **7.3.2. Impacts on ecosystem pattern and process**

The same would be true for the restoration efforts of the natural vegetation on the site. Impacts would remain at low negative levels without mitigation and revert to medium positive impacts with the restorative effort fully implemented – however this will be lengthy process.

#### **7.3.3 Socio-economic Impacts**

Once decommissioning is complete the beneficial socio economical impacts would be lost and negative through the individual loss of employment and for the loss of income and livelihoods. At a local to regional scale decommissioning would result in the loss of delivery of a unique agricultural product to the regional economy. Impacts however are low in this regard and would be net negative in terms of the cost benefit.

#### **7.3.4 Impacts on Heritage Resources**

No impacts on historical or cultural resources should occur.

#### **7.3.5 Visual Impacts**

Visual impact could be low positive impact resulting from the restorative effort and the area returning to its original state at a site scale. Again it should be noted that this would be a lengthy process due to the slow regeneration ability of natural vegetation.

#### **7.4 IMPACT STATEMENT**

In our assessment of impacts the cost benefit of the development favours proceeding as the majority of negative impacts are low with a small number of medium impacts. Importantly, many of the negative impacts can be mitigated successfully and therefore further diminish the significance of impact. The clear cost benefit for the proposed development is related to the socio-economic benefits that have the potential to empower the emerging landowner to establish an economically sustainable business and for the broader community to opportunity to improve income generation, employment opportunity, skills and educational development.

We (FES) are of the opinion that this assessment fulfils the requirements in terms of undertaking specialist studies and the preparation of EIA reports. As such the key aim of providing sufficient information for the competent authority to reach a decision has, in our opinion, been met. Based on the objective findings of the assessment and the cost benefit outcome we would recommend the approval of the proposed development with due regard to the recommendations hereafter and the detail of the mitigation measures stated in the impact assessment and summary tables of the impact assessment above and the recommendations in the EMPr.

## 7.5 EAP RECOMMENDATIONS

The proposed Rooibos tea agricultural land development on Zonderwaterkraal is not faced with any insurmountable impacts from the suite of impact variables identified and assessed by their geographical and physical, biological and ecological, socio-economic, cultural and historical and visual.

As a sensitive variable the protection and retention of the soils profile in particular the topsoil is important as are the buffer areas adjacent to important sensitive areas for plants species of conservation concern and Critical Biodiversity Areas. The site however is large enough to allow the proponent to avoid impacts on these and more site scale sensitivity areas by avoiding them.

We recommend the following provisions for consideration:

1. All reasonable recommendations by their mitigation interventions detailed in the impact assessment portions and appendices of this report or the management and mitigation recommendations contained in the Environmental Management Programme should be adhered to and fully implemented.
2. Adherence to conditions of any other South African Resource Use legislation applicable to this development should be mandatory.
3. At all times avoidance of impact on areas outside of the identified development site should be achieved through the adequate demarcations of no go areas and enforcement ensured through on site management action and training of staff. At all times the aim should be to keep the developed area to the absolute minimum required.
4. "Natural areas" which unavoidably have been impacted by the proposed development should be immediately attended to and rehabilitated and be regarded as no-go areas to remove all further disturbance from them.
5. Early detection of environmental impact and deterioration is only possible through an ongoing monitoring effort and this should be instituted for the full duration from development to decommissioning. This is particularly important for incremental impacts such as erosion, loss of top soil and invasion by invasive alien plant species.
6. The developer, contractors, sub-contractors and staff permanently employed on the site must be made aware of the provisions for the mitigation of impact and the conditions contained in

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the EMPr. The developer must collaborate with the appointed ECO to ensure that the required awareness raising and education is undertaken when and where appropriate and that communication.

7. Clearly articulated method statements for some of the provisions within the EMPr must be developed these to include e.g. erosion control.
8. In terms of the flow of socio economic benefit derived from the development – preferentially appoint or use local people or businesses and in particular young women. This includes access to training and educational opportunities as well as support to local small business.
9. An appropriately qualified Environmental Control Officer should be appointed by the proponent to ensure that the conditions of the EMPr are fulfilled and that regular monitoring of the development is undertaken.
10. That the appointed ECO provide a final report to DENC on completion of the activity to report on adherence to the conditions of the Environmental Authorisation.



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