

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

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

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

FINAL SCOPING REPORT

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

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



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(DENC REFERENCE NUMBER DENC Ref NR: NC/BA/01/NAM/HAN/NIE1/2017)
Reg.: Cederberg Conservation Services CC – Reg. No 2009/056651/23

REPORT STATUS:	Draft Scoping Report
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PURPOSE OF THE SCOPING REPORT

A pre-application meeting was undertaken with the responsible Department of Agriculture, Land Reform and Rural Development (NC:DALR) officials to discuss and confirm the requisite application and assessment process to be undertaken in this instance. Formal communication from DENC was received and FOOTPRINT was instructed to follow a Scoping / EIA assessment for the proposed establishment of 21 hectares of Rooibos tea on Zonderwaterkraal. The purpose of this report is to adhere to the requirements of a Scoping EIA assessment in accordance with the applicable regulations.

To furthermore adhere to DENC requirements in terms of this application it will be registered with the Department of Environment and Nature Conservation under Application Reference (DENC REF. NR. The Department of Agriculture, Land Reform and Rural Development, has appointed FOOTPRINT Environmental Services (Registered as Cederberg Conservation Services CC – No 2009/056651/23), as the independent environmental consulting company, to undertake the Scoping and EIA, in accordance with the requirements of the National Environmental Management Act (Act No.107 of 1998) and NEMA EIA Regulations of December 2014.

The Scoping Phase describes the environmental values and factors that may be impacted by the proposed agricultural development and is an intrinsic part of the EIA process.

The primary objectives of the Scoping Phase are:

- *To ensure early stakeholders engagement for the express purpose of collecting and collating their views, comments and inputs regarding the proposed development;*
- *The early detection and identification of potential environmental risks and impacts associated with the proposed development;*
- *To define the scope of work and the methodology to be followed in the EIA and*
- *To propose a plan of study for the EIA.*

In terms of NEMA, the Scoping Report must be submitted to the competent authority, in this instance, the Northern Cape - Department of Environment and Nature Conservation, as part of the decision making process for the proposed Rooibos Tea development. The Scoping Report requires that the EAPs provide a background information document with sufficient information for government departments, the general public, organizations and communities to provide meaningful inputs and comments on the proposed development. The Scoping Report also identifies and describes issues associated with the proposed development and identifies and describes the extent to which specialist studies will be required during the EIA Phase.

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The content of this Scoping Report is comprised of 8 sections,

- *Section 1, provides a brief background to the proposed Rooibos Tea development and the EIA process;*
- *Section 2, provides an overview and scope of the proposed Rooibos Tea development;*
- *Section 3; outlines the legal framework and context within which the EIA process operates;*
- *Section 4; describes the biophysical, ecological, heritage, agricultural, visual and the socio environment profile of the site, surrounding landscape and communities;*
- *Section 5; evaluates the potential impacts associated with the proposed development;*
- *Section 6; contains the discussion and concluding remarks derived from the scoping process;*
- *Section 7; provides the Plan of study for the EIA and*
- *Section 8; contains literary references used to compile the Scoping Report.*

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EXECUTIVE SUMMARY

The Executive Summary will be included in the Final Scoping Report.

The Scoping phase will concern itself with a desktop study, a field survey and consultation with affected parties, specialists and key stakeholders. After an initial public review process, the Final Scoping Report with a Plan of Study for the EIA will be submitted to the DENC for their consideration and decision. This will be followed by a detailed assessment of environmental (positive, negative, direct, indirect and cumulative impacts) impacts as identified in the Scoping Phase. These assessments will be undertaken through specialist studies, sensitivity analyses and public participation. On conclusion of the required public participation process the Final EIA Report and the Environmental Programme (EMPr) will be submitted to DENC for consideration and authorisation. The process considered alternatives in terms of appropriate landuse, alternate technologies, design and layout and the no-go option. The initial round of public participation will commence on the 14th February 2017 and will be concluded on the 16th March 2017.

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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, flavored 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.

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

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conditions - there is no need for additional agricultural infrastructure by way of dams, soil drainage, irrigation and electricity systems etc.

1.2 Requirement of an Environmental Impact Assessment process

The proposed agricultural development will trigger listed activities in terms of the NEMA EIA Regulations, 2014. In particular Listing Notice 2 (GN No. R. 984 of 4th December 2014 – Activity 15). See Table 1: Listed Activities Triggered.

Table 1: Listed Activities Triggered.

Activity No	Description of Listed Activity	FOOTPRINT description of the listed facility
Listing Notice 2 (GN No. R. 984)		
Activity 15	The clearance of an area of 20 hectares or more of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	<i>The size of the footprint for the development is 21 hectares.</i>

The required Scoping and EIA Phase will be undertaken in the following way:

- **Scoping Phase** – Potential issues associated with the proposed Rooibos Tea development will be identified through; a desktop study, a field survey and consultation with affected parties, specialists and key stakeholders. After an initial public review process, the Scoping Report with a Plan of Study for the EIA will be submitted to the DENC for their consideration and decision;
- **EIA Phase** – during this phase the detail assessment of environmental (positive, negative, direct, indirect and cumulative impacts) as identified in the Scoping Phase will be undertaken. As applicable these assessments will be undertaken through specialist studies, sensitivity analyses and public participation. On conclusion of the required public participation process the Final EIA Report and the Environmental Programme (EMP'r) will be submitted to DENC for consideration and decision making.

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1.3 Details of the Environmental Impact Assessment Practitioners

The NC:DALR has 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 NC:DALR 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. 982 of 4 December 2014.

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

Sean Ranger - Holds an MSc in Sustainable Environmental 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. 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.

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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 Bergvliet 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 construction 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.

Please see **Appendix 4- Details of EAP's** or refer to www.footprintservices.co.za to view the business profile and projects completed by FOOTPRINT Environmental Services.

2. OVERVIEW OF THE PROPOSED ROOIBOS PRODUCTION AREA

2.1 Description of the proposed Rooibos production area

2.2.1 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.**

2.2.2 Project components 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.

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2.3 The need and desirability for the proposed Rooibos Cultivation lands

2.3.1 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.

2.3.2 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.

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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.

2.3.3 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.

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:

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- 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).**

2.3.4. 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 and 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 from 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 full alignment with the current IDP can therefore be demonstrated.

2.3.5 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.

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2.3.6 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.

2.3.5 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.

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 landuse 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 landuse 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.*

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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.

2.4 Project alternatives

2.4.1 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.

Alternative 1 (preferred alternative)		
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 1 – 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.

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2.4.2 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 had the agricultural potential confirmed by a soil analysis, refer to **Appendix 5 – 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 2 – Site Plans:**

Alternative 1 (preferred alternative)		
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

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Please refer to **Appendix 2 – Site Map Alternative 1 (preferred alternative)**

Alternative 2 (preferred alternative)		
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 2 – 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.

2.4.3 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.

2.4.4. 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

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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.

2.4.5. 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 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

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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 Heivel 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.

2.4.6 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 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

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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.

2.5 Overview of the development phase

2.5.1 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 5 – Specialist Reports.**

2.5.2 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 1 – Locality Map.**

2.5.3 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.

2.6 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.

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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 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.

2.7 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.

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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

- 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

- The Northern Cape Department of Environment and Nature Conservation (DENC) is the main regulatory Department and will be the decision making authority for this proposed development.
- South African Heritage Resource Agency is the mandated regulatory department to ensure the avoidance of impact on significant Heritage and Cultural Resources.

3.1.3 Regulatory Agencies - Local level

At a local regulatory level, planning, land-use and environmental concerns are the responsibilities of the Local (Hantam Municipality) and the District (Namakwa District Municipality).

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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 on the 4th December 2014, Government Notices R 982, R983, R984 and R985 in Government Gazette 38282;
- Relevant guidelines, published in terms of NEMA, e.g. the Use of Specialists in a EIA process;
- 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 to be 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 2, See **Table 2 - Review of applicable legislation, policies and guidelines applicable to the proposed bulk water supply facility.**

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Table 2: Review of applicable legislation, policies and guidelines applicable to the proposed bulk water supply reservoir at Zevenwacht.

Legislation	Applicable Sections	Responsible authority
The Constitution of the Republic of South Africa (Act 108 of 1996)	(S2) Bill of Rights (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 Environmental Impact Assessment Regulations, 2014 needs an environmental authorization. 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. 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 bulk water supply facility.	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; Additionally 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 published. Under this Act, a permit is required for any activity which may negatively impact on the survival of a listed protected species.	Department of Environmental Affairs
Environmental Conservation Act (Act 73 of 1989)	National Noise Control Regulations (GN R154 – 10 th January 1992)	Department of Environmental Affairs, NC Department of Environment and Nature Conservation as

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		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)	<p>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 development or other activity which will change the character of a site-(i) exceeding 5 000 m² in extent; or (ii) involving three or more existing erven or subdivisions thereof; (d) the re-zoning of a site exceeding 10 000 m² in extent; - must at the very earliest stages of initiating such a development inform the local resource authority of such development.</p>	South African Heritage Resource Agency
Conservation of Agricultural Resources Act (Act 43 of 1983)	<p>Regulation 15 has been promulgated and makes it unlawful to allow various species of weeds and invader plants to grow.</p>	Department of Agriculture

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3.3 Aims and Objectives of the Scoping Phase

The Scoping Phase for this proposed Rooibos Tea aims to:

- Describe the existing environmental characteristics of the proposed development;
- Identify potential positive and negative environmental and social impacts (construction and operational phase);
- Make recommendations for detail studies required during the EIA phase;
- Engage with interested and affected parties in order for them to provide inputs and comments to the proposed develop - This is achieved by circulating and facilitating the review of the Draft Scoping Report;
- Provide sufficient information to authorities to make decision on the scope and extent of issues and specialist studies that are required for the EIA process;

In achieving these aims the following objectives have been set for the Scoping phase:

- To gather information (achieved by interaction and consultation via desktop reviews of existing baseline data and specialist studies, correspondence with scientists and local residents, Geographic Information Systems (GIS) and with authorities, key stakeholders and communities)
- To identify and evaluate potential environmental issues and impacts that require further investigation;
- To determine the sustainability of the project in terms of the biophysical, ecological and socio-economic environment;
- To consider alternatives in terms of site selection, layout, design, technology, processes and sustainability;
- To conduct an open, participatory and transparent public participation process and
- To outline the methodology and activities to be undertaken during the EIA phase of the assessment.

3.4 Methodology to be used during the Scoping Phase

The Scoping Phase will be undertaken in accordance with the EIA Regulations 2014, as published in Government Notice 38282 (4 December 2014) of NEMA. The following key activities will be undertaken during this Scoping Phase:

3.4.1 Consultation with authorities and application for authorization

As the proposed Rooibos Tea development triggers Activity 15 of Listing Notice 2 (GN No. R. 984) a Scoping and Environmental Impact Report Process needs to be followed. The Northern Cape Department of Environment and Nature Conservation (DENC) are thus the competent authority for this application.

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The consultation process begins with the submission of an application for authorisation to the DENC. Simultaneously a Notice of Intent to Develop is lodged with SAHRA in terms of section 38(8) of the National Heritage Resource Act (Act 25 of 1999) and the Western Cape Provincial Gazette 6061, Notice 298 of 2003.

The DENC has 10 days to accept the application or request additional information, assign a case officer and allocate the case number before the process can proceed with the Scoping Phase.

3.4.2 Public Participation Process

The requirements for undertaking a Public Participation Process (PPP) is specified in Regulation 41(2) of GN No. R. 982 of 4 December 2014. The chapter requires that the PPP should be advertised on site and in the media, the requirement of maintaining a register of Interested and Affected Parties (I&AP) and the entitlement of the I&AP's to comment via written submissions to the decision making authority.

The key stakeholder groups that were identified are comprised of the Government Departments (Department of Agriculture, Land Reform and Rural Development, Nature Conservation, Water Affairs, SAHRA (SARIS), DENC, Hantam and Namakwa District Municipalities all adjacent neighbouring landowners, key private stakeholders involved in Rooibos Tea production in the area e.g. Heiveld Co-op and the Environmental Monitoring. Information on these key-stakeholder groups as well as all additional registered I&AP's are collected, collated and maintained on a database that will be updated throughout the process.

Two site notification boards, providing information of the proposed development, will be attached on the boundary fence of the site and at the entrance to the Zonderwaterkraal.

The proposed development will be advertised in "Ons Kontrei", by the 14th February 2017, to inform the public of the proposed Rooibos Tea development in order for them to register as an I&AP's within a set timeframe. **Please see Appendix 6: Public Participation.**

All key stakeholders (including government departments) will receive a registered letters containing information on the proposed project while the Draft Scoping Report will be available at the Hantam Municipality's offices at Nieuwoudtville for review. The views, issues and concerns of stakeholders will be captured during consultation meetings, telephonic discussions and through written, faxed and e-mail correspondence. **Please see Appendix 6: Public Participation**

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3.4.3 Issues and Response Report

An issues and response report will form part of the Final Scoping Report that will be submitted to the DENC. This report will contain issues and concerns raised by I&AP's as well as the response to those issues by the EAP and / or the project proponent explaining how these issues will be addressed and /or to provide clarity on any point that may be unclear in the report.

3.4.4 Evaluation of issues identified by I&AP

Issues and concerns raised by I&AP's will be evaluated on the nature (the cause of the effect, what and how will it be affected) and the extent (site scale, local or regional) of the impact. This will result in a statement which will attend to the significance of the identified issues and provide recommendations for the studies required during the EIA.

3.4.5 Review of the Draft Scoping Report

The Draft Scoping Report (DSR) was available from the **14th February 2017** for public review and comments. The report will be available at the Hantam Municipality's offices at Nieuwoudtville.

3.4.6 Scoping Report

This report will contains responses and comments from I&AP's in order to refine the SR. The Scoping Report will be submitted to the DENC as the competent authority to obtain authorisation.

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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 cadaster is C0150000000095100000 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 1 – 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 Topography

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 7 – 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

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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 and groundwater

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 quartzitic 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 Site geology and soils profile

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

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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 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

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Hantam Municipality (which includes the study area) in 2012 (Pence 2012), and drew on CapeNature data for this region.

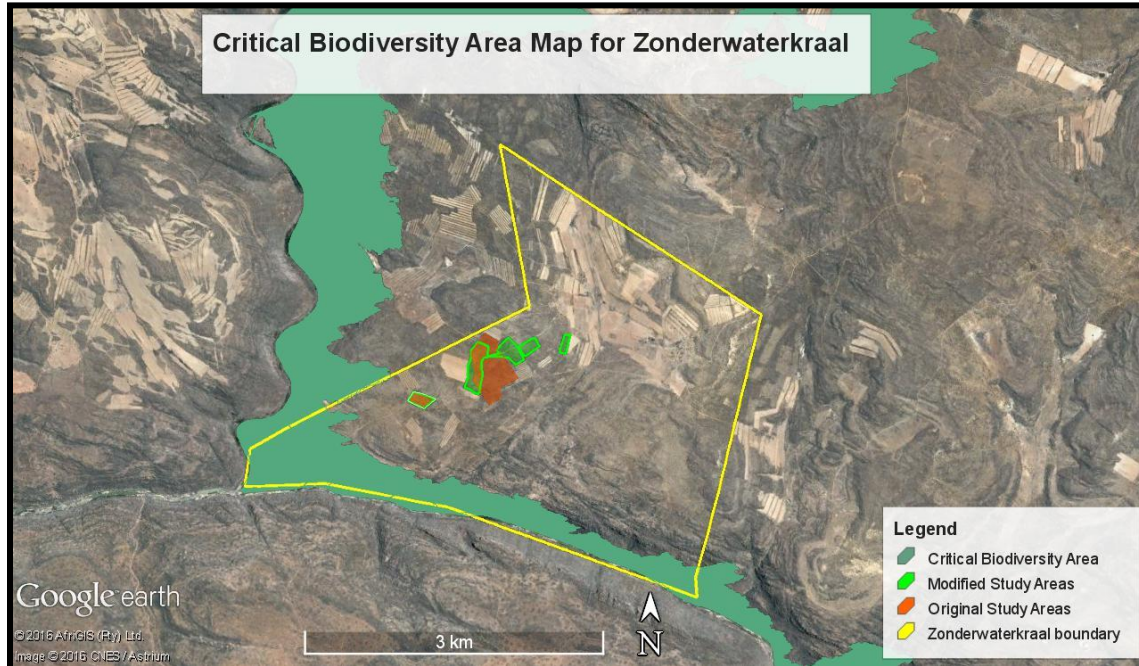


Figure 1 : Extract of the Critical Biodiversity Area (CBA) map for the Hantam Municipality (Pence 2012). The mapped terrestrial CBAs are shown in green shading (See Helme in Appendix 5 – Specialist Reports).

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.

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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 7 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 5 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 5 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 5 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

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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).

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 5 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 5 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).

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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 reservoir into the agricultural viewscape and its potential to erode the value of the viewscape for 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

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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: SCOPING OF ISSUES ASSOCIATED WITH THE PROPOSED BULK WATER SUPPLY FACILITY

5.1 Methodology to be used for assessing impacts

It is expected that the largest environmental impacts will occur during the development phase of this Rooibos tea production area. Much of the identified impact for the development phase however can be adequately mitigated through effective management intervention. Little mitigation was possible for the design phase as the identification of the sites followed from a detailed soil analysis undertaken by the Department of Agriculture and Rural Development. It is noted though that environmental impacts may additionally occur during the operational and the decommissioning phases to a lesser extent.

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 area 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. Thereafter terms of reference were drawn up for the appointment of specialists to further assess the site for sensitivity at sub-property scale in terms of direct, indirect and cumulative impacts that would be likely to occur on site.
- 2.) 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.
- 3.) Through this sensitivity analysis we then 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.

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- 4.) Thereafter we have provided a concise summary of the potential impacts associated with the different phases of the proposed development.
- 5.) We will thereafter identify issues that extend beyond the borders of the proposed site and that may impact key stakeholders or I&AP's beyond the property scale.

From the methodological approach described above it is evident that the site was approached in a focused manner in terms of understanding its unique nature and the resultant uniqueness of the spatial pattern of impacts and the hierarchy of the impacts associated with it. This was done to ensure that the difference between sites in terms of their sensitivity and the significance of impacts between sites was considered in a robust manner.

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

- *Development phase*, the clearing of vegetation will constitute the largest developmental impact on the extant ecosystems on site. These impacts would relate primarily to the loss of biodiversity pattern as the clearing of the different sites would in no way interrupt ecological connectivity resulting from fragmentation nor are the chosen sites likely to impact hydrology and the ecological functioning associated with drainage lines and more well developed river or wetland systems in the broader context. The works undertaken will result in a re-landscaped area at a site scale and thus may result in altered hydrology and potentially erosion within the site however the sites are characterised by highly porous sands and impacts from this perspective are likely to be low. The cleared areas are more likely to suffer from wind erosion resulting from the loss of vegetative cover. Further impacts would be associated with edge effects and direct physical damage such as trampling or vehicular impacts along and around the boundaries of the site and finally the potential for accidental or intended fires.
- *During the operational phase*, impacts on the ecosystem may occur in terms of visual impacts of the facility, positive or negative socio-economic impacts, increase of agricultural potential resulting from the altered landuse, increased potential for soil erosion from the denuded surface and altered hydrology both on the surface and sub-surface.
- *During the decommissioning phase*, impacts would likely be very low as this would be associated with the closure of the site and its rehabilitation to a near natural to natural state over many years. Thus returning it to its present visual character and over time restoration of the biodiversity pattern.

Our findings in terms of the sensitive environmental features or receptors which may be affected by a proposed facility are the following:

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- 1.) Ecological pattern and process – 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.
- 2.) Geology, Soils and Hydrology – 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 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.
- 3.) Impacts on land use would 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.
- 4.) Spot pollution from clearing crews and machinery is possible.
- 5.) Impacts on heritage could potentially result from the destruction of these resources through physical disturbance or destruction. However no impacts are expected as noted in the Heritage impact report.
- 6.) Impacts on the social environment could result in positive spin-offs such as job creation and skills transfer and increased income to rural households and a more sustainable business for the landowner.
- 7.) Impacts on visual and aesthetic features have the potential to change the physical appearance of the landscape and the quality of life of those living in the landscape.

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- 8.) Waste generation from the use of agricultural products (primarily herbicides and biocides) is possible for the operational phase.

Cumulative impacts are related to the extent of the proposed development and the number and extent of other similar projects in the surrounding landscape. Another similar development is being undertaken on another farm Tweeriviere in the vicinity of this site. The potential for increased cumulative impacts will be considered in terms of the relative extent of these cleared sites as a percentage of the remaining extant vegetation for the given vegetation unit to assess the potential cumulative impact related to clearing an agricultural production area such as this. The resulting agricultural production area is not expected to result in significant site scale impacts nor do we expect more far flung impacts as the sites is not visible from any surrounding residential areas or from neighbouring farms. In any event these cleared areas would be additive but no different than those of the existing landscape. Cumulative impacts will however be investigated in greater detail in the EIA phase as required by the regulations.

5.2 Assumptions

The only 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, District SDF, Biodiversity and Biodiversity Sector Planning, CBA's and ESA's identified and 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.

5.3 Evaluating potential impacts associated during the development phase

5.3.1 Potential impacts on ecosystem pattern and process

Impacts on fauna: 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

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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.

Impacts on vegetation: 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.

Impact on processes: 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.

Impact	Nature of Impact	Extent of Impact	No Go Areas
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 alien invasive plants that may colonise the site. Edge effects are considered possible as the site is located in extant vegetation on all sides in an operational agricultural farm.	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.
The habitat of threatened plants and faunal species lost or disturbed due development	The impact is relevant in this instance in relation to the presence of Leopards and	The extent of this impact would be associated with site scale impacts and altered habitat	No go areas would relate to the avoidance of

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	<p>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>within the home range of these widely ranging animals.</p>	<p>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 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>Local impacts at a site scale.</p>	<p>No go areas are not considered relevant in this instance.</p>
<p>The habitat of threatened animals lost or disturbed due construction</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</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</p>

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	species of conservation concern are recorded from the site.		predator.
Impacts on drainage lines	The site is not located close to a drainage line as such no impacts are expected.	None expected	Not relevant.
Establishment of alien invasive species	Invasive alien species are particularly well adapted to areas that have 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.	The impacts associated with invasive alien species would be associated with site scale disturbance of the soil profile and denuding of vegetation cover associated with this development.	The entire site would be a no-go area as 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"> 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. 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, 			

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both of which can be adequately mitigated through practical management intervention in an EMPr.

- 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.

See Appendix 7 : Ecological Sensitivity Map

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5.3.2 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 construction related land surface 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.	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.	Any areas outside the demarcated development 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	Soil profile disturbance	Extent will be limited to the	All areas prone

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topsoil management and surface water flows during storms.	(preparation of the Rooibos production areas).	development site.	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.
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.

Gaps in knowledge and key recommendations for further studies needed:

- 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.
- 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.
- 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.

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5.3.3 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
Increase of agricultural land use due to clearing of natural vegetation for lands.	Affected portions of land are no longer natural but within intensive agricultural production.	Limited to the site itself through the physical occupation of the land by the new production areas.	Sites that have no agricultural potential. Highly productive agricultural land.
<p>Gaps in knowledge and key recommendations for further studies needed:</p> <ol style="list-style-type: none"> 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. 2) Additional information is required on the status of the vegetation and potential presence of rare and endangered plant species. 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. 			

5.3.4 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 construction 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

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			resources.
<p>Gaps in knowledge and key recommendations for further studies needed:</p> <ol style="list-style-type: none"> 1) Specific layout of the proposed development is not yet finalised. 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. 3) In our assessment and with due consideration to the decision from HWC concludes that no further impact assessment will be required in the EIA phase. 			

5.3.5 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>			

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- 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 an agricultural landuse 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 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. **Further comment from SAHRA will**

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be included in the EIA Phase Report.

5.3.6 Potential impacts on the social environment

<p>General description</p> <p>Possible impacts during the construction, operational and decommissioning phases considered for each phase are:</p> <ul style="list-style-type: none"> • Quality of living environment – changes in sense of place as a result of the proposed development (increase in noise and dust levels). • Economic and Material Well being – improved skills levels and increased employment opportunity, income and benefits to the local economy. • Family and community life – Increased family stability, increased opportunity for education and access to education opportunities. 			
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 permanent income	Local to National	Preferential employment to outsiders. No 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.

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Gaps in knowledge and key recommendations for further studies needed:

- 1) Capitalise on the positive impacts by ensuring that local people and businesses are appointed and contracted for the construction phase through preferential employment.
- 2) At a local and community scale ensure that young women are employed.
- 3) Ensure that skills development and occupational training benefits the local communities.
- 4) Ensure that noise and dust levels are minimised during the construction phase.

5.4 Evaluating potential impacts associated during the operational phase

5.4.1 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 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.

Impact on processes: As above the proposed development has a relatively small spatial scale and can have no conceivable significant impact on ecological process.

Impact	Nature of Impact	Extent of Impact	No Go Areas
Loss of vegetation due to development activities	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	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. Adherence to an EMPr in terms of the removal	Anywhere outside the demarcated site development area.

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	invasion into the natural vegetation is the surrounds.	of invasive species would limit impact to the developed sites only and then only temporarily.	
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. The impacts could be avoided through effective in site management of staff and the implementation of rules through an EMPr.	Localised to the site itself and no-go areas directly adjacent to the site.	Anywhere outside the demarcated site development area.
The habitat of threatened animals lost or disturbed due construction	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	Local and if allowed to establish to areas adjacent to the site.	Positive impact.

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	operational phase may be sensitive to invasion by alien invasive plant species. Invasive species control 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
<p>Gaps in knowledge and key recommendations for further studies needed:</p> <ol style="list-style-type: none"> 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. 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. 			

5.4.2 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 such as road contouring and maintenance are proven means to prevent erosion from road surfaces.

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.

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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 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 result 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 production as a result of poor agricultural practice and loss of rural livelihoods.	Site to Regional Scale.	Low productivity 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"> 1) Ongoing visual assessment of erosion, erosion potential and vegetation degradation on site should be continued for the duration of the operational phase. 2) Implement mitigation measures, monitoring requirements and provide a rehabilitation guideline for all identified impacts in the EMPr. 			

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5.4.3 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 area.</p> <ol style="list-style-type: none"> 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 EMP. 			

5.4.4 Potential impacts on Heritage Resources

<p>General description</p>			
Impact	Nature of Impact	Extent of Impact	No Go Areas
NONE	NONE	NONE	NONE
<p>This assessment assumes that no impacts can occur post construction.</p>			

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5.4.5 Potential impacts on the social environment

<p>General description</p> <p>The following socio-economic aspects may change during operations: 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.</p>			
Impact	Nature of Impact	Extent of Impact	No Go Areas
Increased skills levels.	Opportunity to improve skills levels of labour.	Local	Preferential employment of people from outside of the community.
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.
<p>Gaps in knowledge and key recommendations for further studies needed:</p> <ol style="list-style-type: none"> 1) Capitalise on the positive impacts by ensuring that local people and businesses are appointed and contracted during the operational phase through preferential employment / sales. 2) At a local and community scale ensure that young women are employed. 			

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5.4.6 Potential visual impacts

General description: Impacts to be determined during the EIA phase.			
Impact	Nature of Impact	Extent of Impact	No Go Areas
As for visual impact under the development phase above.	As for visual impact under the construction phase above.	As for visual impact under the construction phase above.	As for visual impact under the construction phase above.
Gaps in knowledge and key recommendations for further studies needed: 1.) As for visual impact under the development phase above.			

5.4.7 Potential cumulative impacts

<p>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:</p> <ol style="list-style-type: none"> 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. <p>Canter and Sadler (1997) use the following methodology to address cumulative impacts during an EIA:</p> <ol style="list-style-type: none"> 1.) Delineate sources of potential change; 2.) Identify pathways of possible change; 3.) Identify non-linear or synergistic changes. <p>The final process would be to classify the resultant cumulative changes.</p> <p>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 site 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. Similarly the transformation and permanent loss of</p>

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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 there are steep slopes and / or unstable soils or soils prone to erosion.

Gaps in knowledge and key recommendations for further studies needed:

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- 1.) As cumulative impacts are not expected with the implementation of the guidelines in an EMPr no further studies are recommended.

6. CONCLUSION

6.1 Project overview

The project proponent, Department of Agriculture, Land Reform and Rural Development, proposes to develop Zonderwaterkraal owned by Mr Gerrie Koopman. He wishes to expand his organic rooibos tea (*Aspalathus linearis*) production capacities with another 21 hectares. 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 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 with soil samples undertaken by BVI Consulting Engineers. 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.

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, flavored fermented tea and unfermented ("Green") Rooibos. The products is also sold in herbal blends, iced tea, skincare products and toiletries.

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. 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.

The Scoping phase will concern itself with a desktop study, a field survey and consultation with affected parties, specialists and key stakeholders. After an initial public review process, the Final Scoping Report with a Plan of Study

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for the EIA will be submitted to the DENC for their consideration and decision. This will be followed by a detailed assessment of environmental (positive, negative, direct, indirect and cumulative impacts) impacts as identified in the Scoping Phase. These assessments will be undertaken through specialist studies, sensitivity analyses and public participation. On conclusion of the required public participation process the Final EIA Report and the Environmental Programme (EMPr) will be submitted to DENC for consideration and authorisation. The process considered alternatives in terms of appropriate landuse, alternate technologies, design and layout and the no-go option.

The Scoping Phase for this proposed agricultural production area aims to:

- *Describe the existing environmental characteristics of the proposed development;*
- *Identify potential positive and negative environmental and social impacts (construction and operational phase);*
- *Make recommendations for detail studies required during the EIA phase;*
- *Engage with interested and affected parties in order for them to provide inputs and comments to the proposed develop - This is achieved by circulating and facilitating the review of the Draft Scoping Report;*
- *Provide sufficient information to authorities to make decision on the scope and extent of issues and specialist studies that are required for the EIA process;*

In achieving these aims the following objectives have been set for the Scoping phase:

- *To gather information (achieved by interaction and consultation via desktop reviews of existing baseline data and specialist studies, correspondence with scientists and local residents, Geographic Information Systems (GIS) and with authorities, key stakeholders and communities)*
- *To identify and evaluate potential environmental issues and impacts that require further investigation;*
- *To determine the sustainability of the project in terms of the biophysical, ecological and socio-economic environment;*
- *To consider alternatives in terms of site selection, layout, design. technology, processes and sustainability;*
- *To conduct an open, participatory and transparent public participation process and*
- *To outline the methodology and activities to be undertaken during the EIA phase of the assessment.*

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

- *Environmental sensitivity; The site is located on an existing agricultural farm, there are significant impacts that can be associated with this aspect of the assessment to date in particular the transformation of natural vegetation for intensive agricultural production. However at this early phase we expect that these impacts which will occur can be dealt with through a dedicated management response and an EMPr, the layout and*

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design of the proposed development has been guided by the agricultural suitability of the site 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, Databases, reports and publications are never 100% accurate; there are gaps in scientific knowledge, however we have undertaken site visits and the data has been obtained from reputable sources and in our opinion is robust enough for impact consideration at this site, to date specialist input has indicated that the site has the potential for significant impact on important floral biodiversity and that these impacts should be avoided. This is possible via the selection of alternative sites and with these significant impact would not be expected.

- Impacts on geology, soils and hydrology will occur on site. The impacts on soil would include physical disturbance of the soil profile to clear and establish the crop and the disturbance related to the road access to the sites of development. 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 layout and design 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 suitability and agricultural potential of the site and the relatively small spatial extent of the proposed development. As a result, agricultural impacts are considered to be positive.
- Impacts on land-use could result from the physical displacement of the current extensive agricultural system by a intensive agricultural system as above we consider these potential impacts to be positive.
- Impacts on Heritage – No possible impacts where identified by the specialist and the decision received from SAHRA is pending and will be included in the final EIA Report. Mitigation measures will be included in the EMPr should important heritage resources be uncovered during the development.
- Visual impacts - 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 farms or roads in the area.
- 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. The greatest sensitivity would relate to the preferential employment of local people, businesses and in particular favouring the employment and education of young women over the employment of people from further afield or of other nationalities.

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- Agricultural productivity and use were considered and found to have high significance. No sensitive areas in terms of agriculture were evident for the site at this point. The significance of agricultural impacts is influenced by the limited availability of soils with the required agricultural potential and the relatively small spatial scale of the proposed development. As a result negative, agricultural impacts are likely to be of low to very low significance. Mitigation measures can also be put in place to reduce the significance of certain of these impacts, such as erosion. The site will be investigated further and in more detail during the EIA phase of the assessment.

Negative operational impacts of the proposed development will range from none, low to negligible and will only be to a local scale. Positive impacts however could prove to be significant through increased production and flow of economic benefit to rural poor households and their families.

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.

6.2 Conclusions drawn from the evaluation process

6.2.1 Establishment and Decommissioning Phase

Potential impacts on ecosystem pattern & process		
Impact	Positive or Negative Impact.	Extent of Impact
Loss of vegetation due to development activities	Negative.	Site
The habitat of threatened plants lost or disturbed due construction	Negative.	Site
Destruction of indigenous trees	No indigenous trees remain on site.	NA
The habitat of threatened animals lost or disturbed due construction	Site is completely transformed and low sensitivity.	Site - N?A
Impacts on drainage lines	Site is not located close to drainage lines.	NA
Establishment of alien invasive species	Negative.	Local

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Impacts on Wetlands	N/A.	N/A
Potential impacts on geology, soils and hydrology		
Impact	Positive or Negative Impact	Extent of Impact
Soil erosion due to alteration of the surface run-off characteristics.	Negative.	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.
Degradation of veld	Negative	Site specific e.g. vehicle trampling during development and operations.
Loss of topsoil due to poor wind erosion precautions.	Negative	Site
Potential impact on landuse		
Impact	Positive or Negative Impact	Extent of Impact
Loss of agricultural land use	Negative	Local
Potential impacts on Heritage Resources		
Impact	Nature of Impact	Extent of Impact
Irreplaceable loss of archaeological resources.	Negative	Local – however the site has low heritage importance.
Potential visual impacts		

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Impact	Positive or Negative Impact	Extent of Impact
Potential visual impact of the proposed facility on sensitive observers up to 1km from the site.	None	Local
Change in the character of the prevailing use of the area.	None	Local
New artificial light sources within the landscape.	Negative	Local
Potential impacts on the social environment		
Impact	Positive or negative Impact	Extent of Impact
Skills level increase.	Positive	Local to National
Employment.	Positive	Local to National
Job reservation for women.	Positive	Local
Job reservation.	Negative	Local
Traffic levels increase – however this will be localised during the development phase when clearing the natural vegetation.	Negative	Local
Increased income.	Positive	Local to National
Increased noise & dust levels.	Negative	Local
Sense of place change.	Negative	Local

6.2.2 Impacts during the operational phase

Potential impacts on ecosystem pattern & process		
Impact	Positive or Negative Impact.	Extent of Impact
Loss of vegetation due to construction activities	Negative impacts	Adjacent to the site

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The habitat of threatened plants lost or disturbed due construction.	Negative	Site
Destruction of indigenous trees.	No indigenous trees remains on site.	NA
The habitat of threatened animals lost or disturbed due construction.	Negative.	Site to local and possible regional scales
Impacts on drainage lines.	Site is not located close to drainage lines.	NA
Establishment of alien invasive species.	Negative.	Local
Impacts on Wetlands.	N/A	N/A
Potential impacts on geology, soils and hydrology		
Impact	Positive or Negative Impact	Extent of Impact
Soil erosion due to alteration of the surface run-off characteristics.	Negative.	The impact of erosion activities 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.
Degradation of veld.	Negative.	Site specific e.g. vehicle trampling during operational phase
Loss of topsoil due to poor topsoil management.	Negative.	Site specific

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Potential impact on land use		
Impact	Positive or Negative Impact	Extent of Impact
Loss of agricultural land use .	Negative.	Site to Local Scales
Potential impacts on Heritage Resources		
Impact	Nature of Impact	Extent of Impact
Irreplaceable loss of archaeological resources.	Negative.	Local – however the site has low heritage importance.

7. PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT

The Plan of Study describes how the EIA will proceed and as applicable includes detail of the specialist studies that are required. The Plan of Study is informed by key findings of the Scoping Phase as it includes inputs from the key-stakeholders, the public, EIA specialist team and the proponent. The Plan of Study is also informed by requirements of NEMA EIA Regulations of 2014 and other guidelines.

7.1 Objectives of the EIA Phase

The objectives of the EIA Phase is to;

- Assess the overall impact on the social and biophysical environment that will be affected by the proposed bulk water supply facility;
- Assess significant impacts that are associated with the bulk water supply facility;
- Identify and make recommendations for the avoidance and mitigation of potentially significant environmental and socio-economic (increase in traffic, noise & dust levels and the change in sense of place) impacts and or risks;
- Undertake comprehensive public participation process that will ensure that I&AP's are participating and that their comments, issues and concerns are recorded;

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- Address environmental impacts and benefits (to include direct, indirect and cumulative impacts) associated with the design, construction, operational and decommissioning phases of the development, and;
- Provide enough information to the DENC to make an informed and robust decision in terms of approving or not approving the proposed activity.

7.2 Consultation with the Authorities

The regulating authority (DENC) was involved from the initial application for authorisation and will remain so for the entire EIA Process. They will be involved in the remaining part of this application by receiving the Final Scoping Report (after review of draft scoping report for 30 days by I&AP's). DENC will thereafter provide a decision within 43 days on the outcome of the SR. They will receive the Final EIA Report (after review of draft EIA Report for 30 days by I&AP's).

Other Government Departments and Key Stakeholders will continue to be informed of progress and consulted for the entire EIA Process.

7.3 Consideration of Alternatives

Assessment of site alternatives in this instance is not possible as this is the only site available that meets with the criteria for selection and is the only site in the possession of the applicant. During the scoping phase the areas which have been selected for the assessment of potential impacts were identified based on the following criteria:

- (1) Road access to the site from the national, provincial and local authority road network and within the site,
- (2) Adjacency to existing production areas
- (3) Topography of the site, soil suitability and underlying geology,
- (4) Adjacency and potential impact on sensitive ecosystems,
- (5) Adjacency and potential impact on sensitive habitats and species,
- (6) Economic viability of the site based on the baseline sensitivities identified and the spatial area available which is suitable,
- (7) Potential Impact on cultural/ historical heritage and visual receptors in the surrounding landscape.

The final layout of the Rooibos production area will respond to the environmental sensitivity of the site primarily through alternative site layouts.

To summarise, the spatial layout of the proposed facility will be selected through a hierarchical framework that responds to the biotic and abiotic sensitivity of the site, topography and visual receptors.

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Current technological alternatives are not possible as this is the only viable technology for the production of dry land Rooibos.

7.4. No Go Alternative

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 the scoping stage which may indicate that the no go option could in fact prove to be unfeasible in this instance.

Scenario planning at a national scale indicates the South Africa requires additional projects for water provision to the alleviation of poverty for the citizens of the country. The area in question has been targeted for +projects aimed at the provision of increased agricultural production at a provincial scale to alleviate poverty and improve income to rural poor households. The proposed development is a suitable technology as it is able to provide significant volumes of rooibos, can be easily deployed in a decentralised manner close to processing infrastructure and from there to international Free Trade markets. The project is therefore able to improve the quality of life for the rural poor.

From a socio-political and economic perspective this landuse option is aligned with national, provincial, local and fine scale forward planning - the intensive use of land for agricultural purposes in historically disadvantaged communities is considered a priority. The proposed development will be located on an existing and operational agricultural farm but the choice of the site in no way will impact on the existing agricultural productivity of the property as it is located in an area that is highly suitable and has good agricultural potential (this conclusion is supported by an understanding of the relatively small spatial extent of the agricultural lands themselves). Job creation is another tangible return from this agricultural production system, this will be restricted to jobs during the clearing operations and labour during harvest. Additionally the benefits for skills development and increased income to the rural poor families are possible.

At a more local scale our sense is that the opportunity cost weighs in favour of the proposed development due to the suitability of the site for the proposed development from a heritage and visual impact perspective, conservation status of the ecosystem type and low potential impact of the development the land surface and landuse of the property.

Fundamentally it appears that it would be at odds with national commitments in terms of the improvement of rural poor household livelihoods and for the servicing of these communities, thus the forward planning of National Government, the PSDF, the SDF, the District SDF and IDP. **For these reasons the no-go alternative is considered unfeasible.**

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7.5 Assessment of potential impacts and mitigation recommendations

Table 3 - Assessment of potential impacts and mitigation recommendations

Issue	Activities to be undertaken to determine the impacts	Specialist to conduct the assessment
Impacts on terrestrial faunal species	There is a very small probability of impacts on terrestrial faunal species considering that the site small and surrounded by very large tracts of extant natural habitat. Furthermore the site will impact an area of 21 ha's and as such is relatively small in terms of spatial extent in relation to remaining extant natural vegetation and poses very low potential for significant impact on terrestrial faunal species in our assessment to date. Full mitigation of potential impact will be achieved with the implementation of general guidelines detailed in an EMPr that will accompany the EIR.	None – General guidelines for an EMPr would suffice to address the negligible impacts associated with this proposed development.
Impact on vegetation	The detailed vegetation survey found that the site has a high sensitivity in terms of the presence of floral species of conservation concern in certain areas of the property. In our scoping assessment therefore we find that there are areas within the original identified sites that have high sensitivity. No additional fieldwork will be required for the IA phase, as an adequate understanding of the ecological sensitivity of the site was obtained at the Scoping Phase. Recommendations for avoidance or mitigation of all identified impacts will be provided in the final site layouts and in the EMPr and would focus on general guidelines to confine the development to a demarcated development site located specifically to avoid sensitive areas on the property.	None - General guidelines for an EMPr would suffice to address the negligible impacts associated with this proposed development.
Impacts on geology,	The appointed consulting engineers in collaboration with the department concluded that the original proposed	ICE – appointed

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soils and landuse	sites were the most suitable and had the best potential for success in terms of the proposed project. The sites have highly porous sandy soils and our findings in this regard would indicate that impacts resulting from the erosion and loss of topsoil can be adequately managed through accepted measures contained in an EMPr. Alternative sites have been investigated by both the specialist botanist and the landowner and suitable production sites are available within the suitable low sensitivity sites present on the property.	consulting engineers
Impacts on heritage	An NID has been submitted to SAHRA the findings of which indicate that the site is not expected to have any heritage resources present, the proviso being that any resources unearthed during the construction phase must be dealt with through the appointment of a specialist. As such no further investigations are required in the IA phase of the assessment as the findings of the scoping phase have determined that no significant impact will result if the recommended mitigation measures in the scoping report are adhered to therefore no impact phase report will be prepared. Recommendations from the decision of HWC will be included in the EMPr.	Heritage Specialist concluded that no further action in terms of impact assessment is required.
Impacts on social environment	The finding of the Scoping Study indicates that a site to local scale positive impact will result primarily from increased income to a rural agricultural business with associated socio-economic benefit to the family concerned and employment opportunities which will be available during the development and thereafter during harvest.	The limited extent and small impact of the activity in terms of employment would indicate that further specialist studies in this regard are not required.
Visual Impacts	The findings of the Scoping Study would indicate that intrinsic, instrumental and systemic impacts stemming from visual intrusion of the proposed reservoir into the landscape will be negligible. The site is not visible from any of the surrounding residential areas, roads and farm houses in the surrounds and additionally fully aligned with the current landuse for the locality.	Further studies are not required further action in this regard will be contained in

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		the EMPr.
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***The following methodology will apply to determine the significance of impacts mentioned above:**

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7.6 Impact Assessment Methodology

For this proposed bulk water supply facility, 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.

7.6.1 Duration of impacts

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). See Table 4 – Duration of impact rating

Table 4: 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

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7.6.2 Extent of impacts

Extent defines the physical or spatial scale of the impact on the receiving environment. Score will be low where impacts are limited to the site and its immediate surroundings and will increase as the extent increase to a regional and to a national level. See Table 5 : Extent of Impact

Table 5 : 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 National level.	3

7.6.3 Intensity of impacts

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. See Table 6: Intensity of Impacts

Table 6: 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

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7.6.4 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 (its definite that the impact will occur - regardless of any preventative or mitigatory measures). See Table 7: Probability of Impacts

Table 7: 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
High	The impact will definite occur - regardless of any preventative measures	3

7.6.5 Status of the Impact

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

7.6.6 Degree of confidence

The degree of confidence measures the level of reliability of the impact predictions subject to the availability of relevant information. See Table 8: Degree of confidence

Table 8: 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

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7.6.7 Significance

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. See Table 9:Probability of Impacts

Table 9:Probability 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 the area.	3

7.7 The contents of the Environmental Impact Assessment Report

The EIA Report will include and describe the following aspects;

Property description on which the activity is to be undertaken and the location of the activity on the property;

Description of the activity;

Description of the physical, biological, social, economic and heritage aspects of the environment that may be influenced by the proposed activity;

Description of all environmental impacts / issues identified, the assessment of the significance of these impacts issues and to the extent mitigation measures would have to be implement;

Description of all uncertainties and gaps in knowledge

Assessment of all identified significance impacts

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Describe the Public Participation Process –this to include steps undertaken according to plan of study, list of registered key stakeholders and I&AP, a comments and response report that should include detail on the receiving date of the comments, a copy of the comment.

Describe the needs and desirability,

Describe the methodology used in determining the significance of the potential impact;

Description and comparative assessments of all alternatives of all alternatives identified in the process;

Describe the impact statement that contains a summary of the key findings of the EIA and a comparative assessment of negative and positive impacts of the proposed development and alternatives.

Describe the key findings of specialist studies and these studies will be included in the EIA Report and

Include the Environmental Management Programme (EMPr).

The Draft EIA Report will be available for review for 30 days. All comments and inputs will then be captured in the comments and response report that will be included in the EIA Report.

7.8 Public Participation Process

Key stakeholders and I&AP's will be engaged throughout the entire EIA process. FOOTPRINT Environmental Services (FES) will use meetings, telephonic discussion and written, faxed and e-mail correspondence to encourage stakeholders and I&AP to actively participate during the processes.

The Draft EIA Report will be made available for the 30 day public review process within this time FES will arrange a public meeting in order for the general public and key-stakeholders to attend.

7.9 Activities and Timeframes for the EIA Phase

Table 10, indicate the timeframes set for the implementation and completion of the EIA Phase. See Table 10.

Activities	Milestones
Public review of the Draft Scoping Report	To be inserted
Finalise the Scoping Report	

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DENC accepted the Scoping Report and Plan of Study	
Undertake specialist studies - Distribute Draft EIA Report and Draft EMP for public, stakeholder and government department for review and comments.	
Complete PP taking December festival season into consideration	
Finalisation of Environmental Impact Assessment Report	
Submit Environmental Impact Assessment Report to DENC for authorization.	
Environmental Authorisation	
Appeal process	

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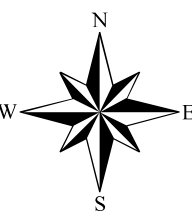
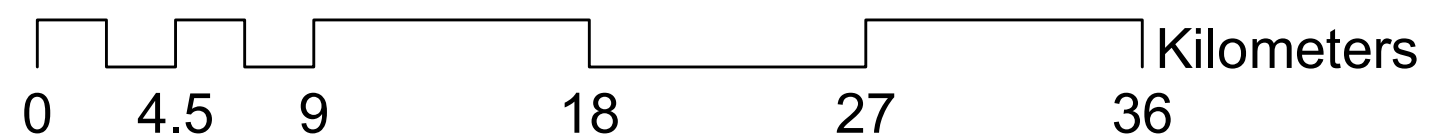
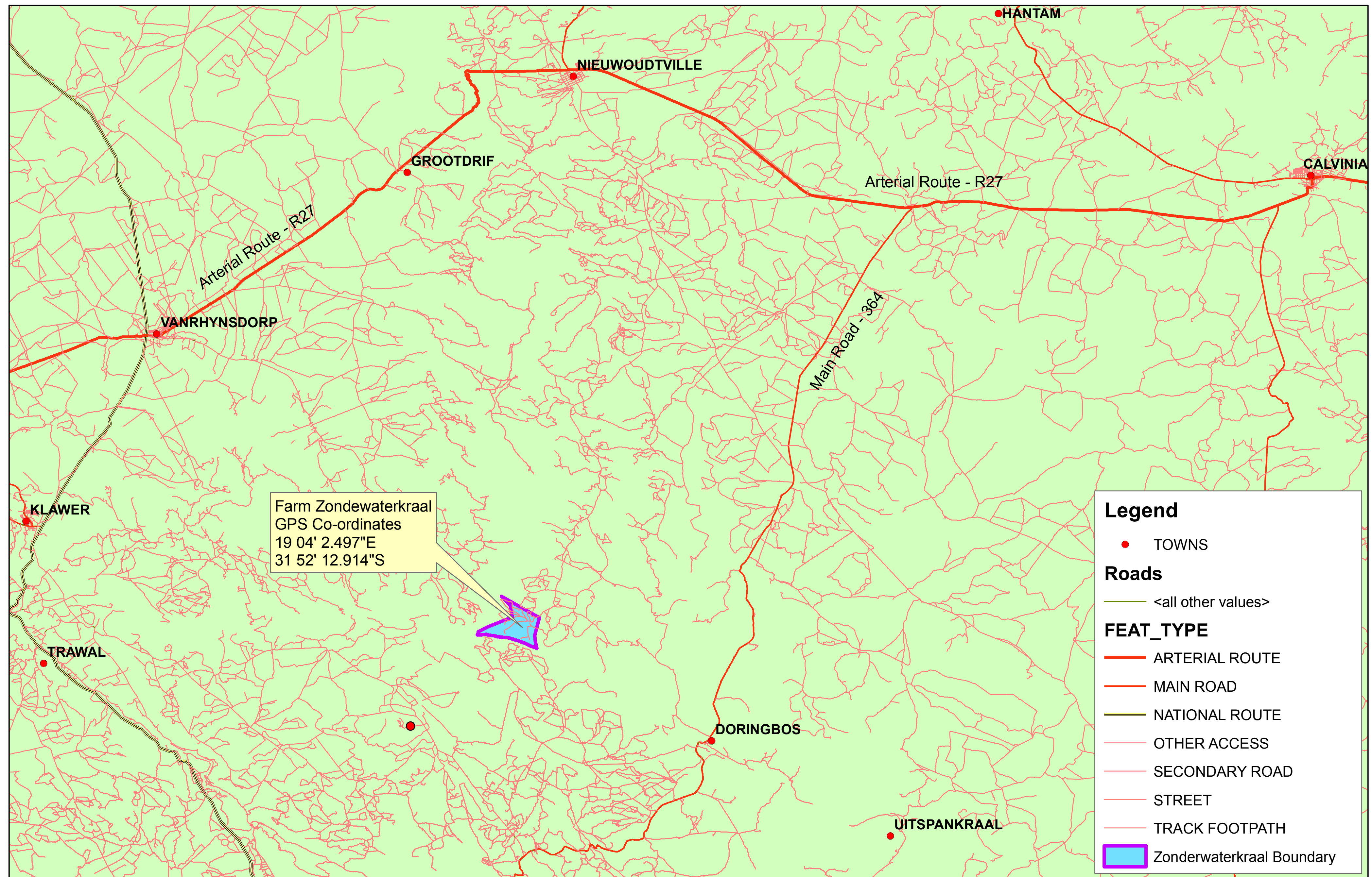
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APPENDIX 1

LOCALITY MAP

Locality Map - Zonderwaterkraal, Farm 951 Restant



APPENDIX 2

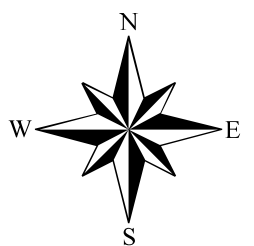
SITE PLANS

Zonderwaterkraal - Alternative 1 Site Map & Neighbouring Properties

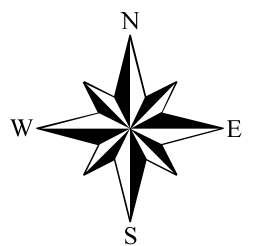
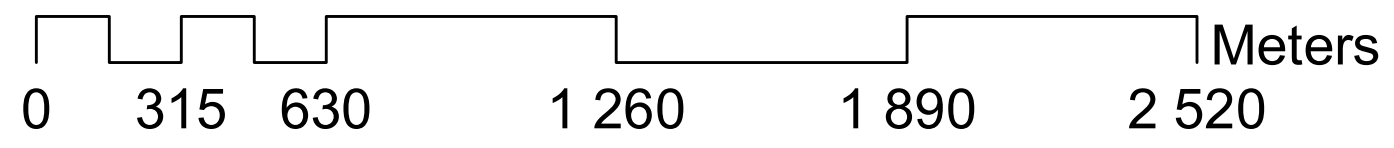
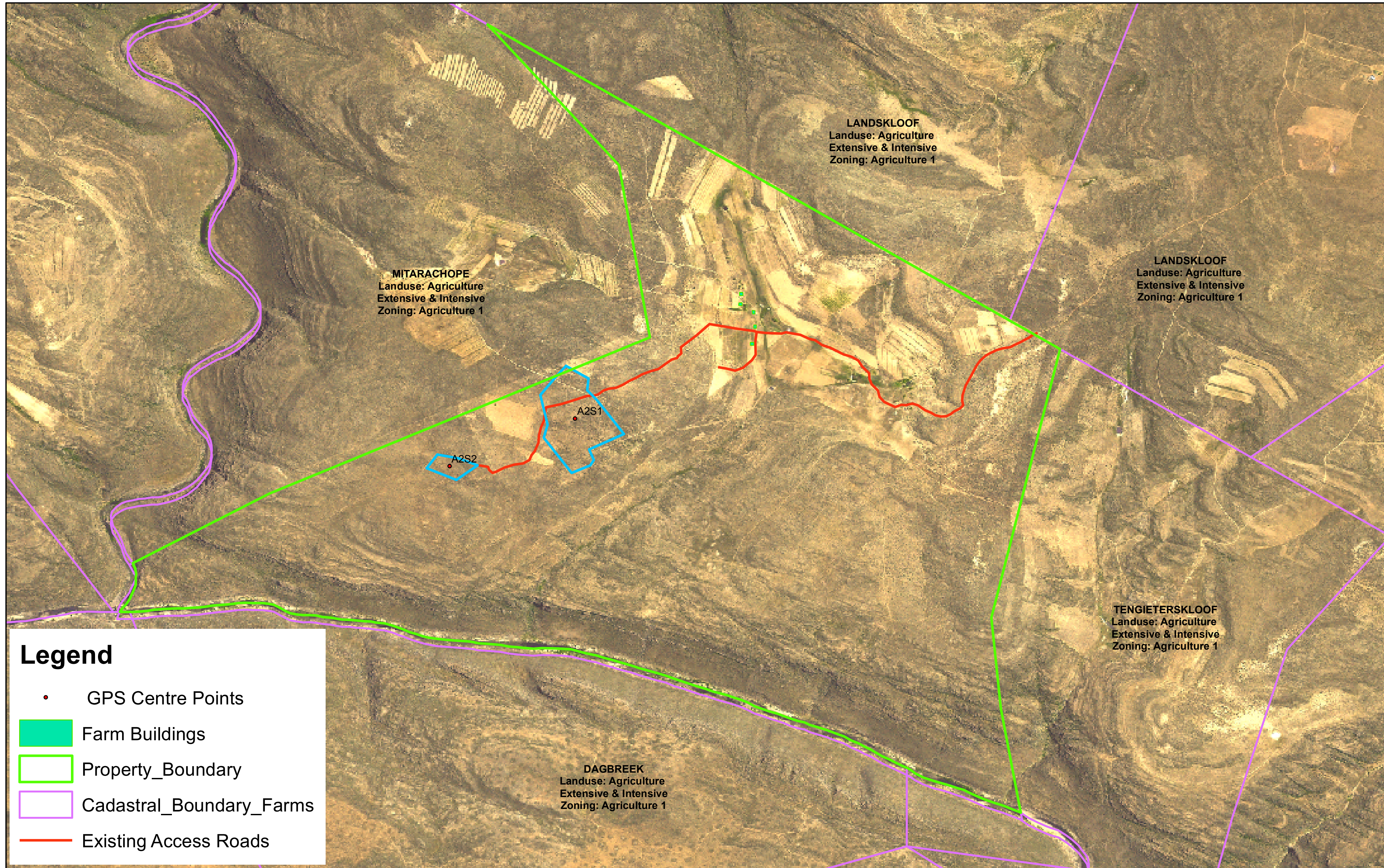
MITARACHOPE
Landuse: Agriculture
Extensive & Intensive
Zoning: Agriculture 1

Legend

- GPS Centre Points Alt 2
- Existing Access Roads
- Helme_Proposed
- Suitable area demarcation
- High Sensitivity
- Farm Buildings
- Property_Boundary
- Cadastral_Boundary_Farms



Zonderwaterkraal - Alternative 2 Site Map & Neighbouring Properties



APPENDIX 3

SITE PHOTOGRAPHS

Zonderwaterkraal - Photo Sites

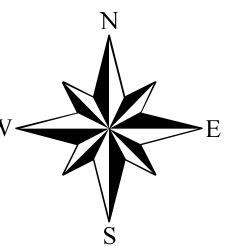
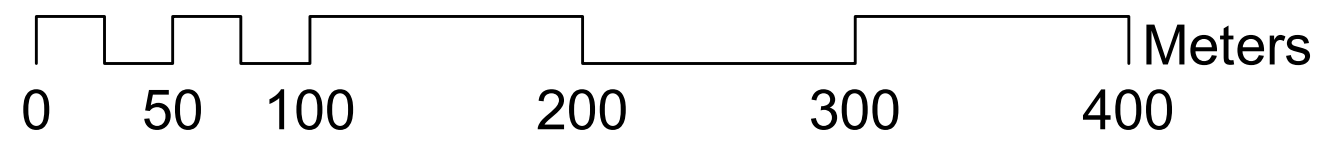




Photo Site 1

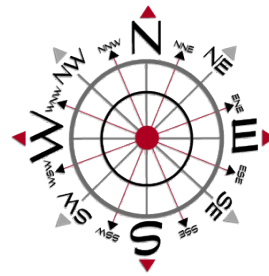




Photo Site 2

A compass rose diagram with a red center. The cardinal directions are labeled with large letters: N (North), S (South), E (East), and W (West). The intercardinal directions are labeled with smaller letters: NE (Northeast), SE (Southeast), SW (Southwest), and NW (Northwest). There are also smaller letters for the 16 directions: NNE, NNE, ENE, ESE, SSE, SSW, SWW, WNW, WNW, WNW, WNW, NNW, NNW, NNW, NNW.



Photo Site 3





Photo Site 4



APPENDIX 4

DETAILS OF EAP'S AND EXPERTISE

Sean Ranger is a registered Pri. Sci. Nat – Ecological Scientist, Certified Environmental Assessment Practitioner with (EAPSA) and holds an Masters Degree in Sustainable Environmental Management.

On leaving University he gained eight years experience in Research & Development for Bayer (Pty) Ltd and five years of contractual experience in Stewardship and the varied fields of conservation development & strategic planning, implementation and management and has successfully co-founded and co-managed FOOTPRINT Environmental Services that is now nearing its seventh year of operation as an environmental consultancy.

He was very active in the Stewardship Arena for a number of years and was a team member on the first Stewardship Pilot Project that was initiated in 2001/2002 in the Western Cape. He managed the Agter Groenberg Pilot Site one of two pilot sites identified through use of the CAPE Lowlands Fine-scale Conservation Plan. The pilot phase of stewardship was regarded as a highly successful project and produced some of the first Contract Nature Reserves in South Africa. One of them, the Elandsberg Nature Reserve an in perpetuity contract which saw the conservation of significant sections of Critically Endangered Swartland Shale Renosterveld. The experience gained during this period included the use fine scale conservation plans (at that time the CAPE Lowlands Project) to identify priority sites for stewardship interventions, designing pamphlets and presentations on stewardship for the intervention, succeeding in on the ground negotiation with landowners in an agricultural setting for the establishment of stewardship sites, including testing and refining contractual agreements with landowners, assisting with the development of the stewardship database, developing Environmental Management Plans and contributing to the Stewardship Operational Manual for the CapeNature Stewardship program. Much of this planning required the use of spatial datasets and experience was gained in the practical application of a GIS, ArcView

From here he joined the Greater Cederberg Biodiversity Corridor (CAPE Landscape Scale Conservation Intervention) as a project manager, an in this capacity used the initial experience gained from the Stewardship Pilot Project to develop a stewardship implementation methodology in a landscape scale conservation intervention context and undertook the development of framework for the engagement of the agricultural sector to mainstream biodiversity conservation. Here the stewardship focus was on the establishment of biodiversity corridors in two key areas, the Sandveld Core Corridor and the Cederberg Core Corridor. The character of these two sites differed dramatically in that the Sandveld Core Corridor is an area that was rapidly transformed for Potato & Rooibos production, while the Cederberg Core Corridor was based within the boundaries of a well established

conservancy, the Cederberg Conservancy. Additional experience gained here included developing a strategic approach to stewardship within a broadly focussed landscape initiative, this included the integration of an Area-wide planning process with stewardship, developing and initiating the core corridor concept, developing a corridor database, the development of a 12-step negotiation process for stewardship, refinement of Environmental Management Plans, co-authoring the first drafts of an operational approach to corridor formation, chairing multi-stakeholder task teams (Sandveld Task Team) and later as a Senior Project Manager and as the Acting Co-ordinator of the GCBC exposure to writing of project proposals, sourcing international funding, strategic planning and management and personnel management, budgeting, preparing workplans and action plans etc. All forward planning for this project required the development of a spatial plan (GIS) and as the project manager he developed these plans using various spatial datasets available to CapeNature, the Dept of Agriculture etc. using the in house CapeNature GIS software Arcview 3.2.

As the owner of Ranger Consulting he has contributed to the development of a biodiversity best practices guideline for both the potato and Rooibos tea industries this built on initial experience obtained on the Steering Committee of the Biodiversity and Wine initiative. It included the development of the terms of reference for the consultants and later the development of an implementation strategy for the potato best practices project and the development of an Environmental Management Plan, Project plans and an auditing system. He has been responsible for the piloting and implementation of these guidelines since March 2008 on 35 producer farms. GIS was used extensively to produce detailed farm landuse and infrastructure maps, monitor the rate of transformation of natural and threatened ecosystems year to year. Additionally the development of GIS databases for Fire Protection Agencies. In early 2012 he developed the GIS database and mapping products for the Greater Cederberg FPA and in collaboration with the management of the GCFPA has maintained this database and associated mapping products for the last three years. The GIS software program used here was ArcGIS 10. Recently this GCFPA GIS database has been seamlessly uploaded to the AFIS system.

As a co-owner and Director with Charl du Plessis of FOOTPRINT Environmental Services he has successfully concluded numerous Environmental Applications and obtained Record of Decisions (RoD) for clients. These include a number of environmental assessments for bulk infrastructure for the Department of Public Works, bulk services supply for the City of Cape Town, Eco-tourism developments, agricultural expansion developments both irrigated and dryland, weir developments on rivers in the Cederberg Wilderness, Basic Assessment for the Kromrivier Weir (PGR Developments Pty Ltd.) and a Basic Assessment for the Rondegat Weir (CapeNature) for private individuals and CapeNature. We recently successfully concluded a

residential application in Ceres that required the diversion of the river channel to its historical course after it was canalised. Additionally the consultancy has significant experience in the compilation of Environmental Management Programmes both for the management of development sites and for conservation and agricultural management sectors. We have experience in Rectification applications under Section 24 (g) and compliance monitoring experience as Environmental Control Officers. A short synopsis of environmental assessments successfully concluded has been forwarded to you.

The consultancy has in-depth knowledge and experience in the Public Participation Process (PPP) as described by DEA&DP Public Participation Guidelines during the application process. However we were additionally responsible for, and facilitated, the approval of five (5) CapeNature Protected Area Management Plans through a PPP - **Please visit www.footprintservices.co.za** for more information or contact either of the directors – see contact information above.



The Interim Certification Board
for
Environmental Assessment Practitioners
of
South Africa

Sean Keith Ranger

was certified as an

**ENVIRONMENTAL ASSESSMENT
PRACTITIONER**

on this 4th day of February 2016

A handwritten signature in blue ink, appearing to read 'A. H. ...', written over a dotted horizontal line.

Chairperson

A handwritten signature in blue ink, appearing to read 'J. Walker', written over a dotted horizontal line.

Secretary