

**ECOLOGICAL IMPACT ASSESSMENT:
PROPOSED CULTIVATION OF 100 HA FOR
THE ESTABLISHMENT OF A VINEYARD ON
PORTION 10 OF THE FARM SPITZKOP NO 26
NEAR PRIESKA, NORTHERN CAPE PROVINCE**

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EXECUTIVE SUMMARY

The company Mahoebe Eiendomme (Pty) Ltd has recently commenced with the process of procuring of Portion 10 of the Farm Spitzkop 26 near Prieska in the Northern Cape Province with the intention of establishing a 100 ha vineyard on this portion of natural previously uncultivated land.

The potential of ecologically significant species as well as nationally and provincially protected species being present on the site had a relatively high probability and therefore had to be investigated by an ecologist. Ecological sensitivity and importance of the area also had to be determined as this will affect the probability of obtaining authorisation. An Ecological Impact Assessment was conducted for the proposed vineyard area in order to determine and evaluate the nature, significance and extent of the potential impacts that the proposed project will have on the natural environment. Proposed mitigation and management measures are also recommended in order to attempt to reduce/alleviate these identified potential impacts.

The proposed project area is approximately 147.91 ha in surface size and is situated on Portion 10 of the Farm Spitzkop No 26. The farm portion is approximately 15 km north-east of the town of Prieska in the Northern Cape Province and is owned by SchalkTheron Family Trust. The property falls inside the Siyathemba Local Municipality which, in turn, forms part of the greater Pixley Ka Seme District Municipality. Access to the proposed project area is obtained by way of the R 368 provincial road which lies approximately 6 km to the west of the proposed project area.

According to Mucina & Rutherford (2006) the proposed project area forms part of the Upper Gariep Alluvial vegetation type (AZa 4) which mainly consists of flat alluvial terraces supporting complex of riparian thickets and is classified as vulnerable in terms of conservation status. The vegetation structure and species encountered during the site visit however indicated that the vegetation rather forms part of the neighbouring Northern Upper Karoo vegetation type (NKu 3) which is classified as least threatened (Mucina & Rutherford, 2006). This vegetation type is characterised by a shrubland dominated by dwarf karoo shrubs, grasses and low trees on a flat to gently sloping terrain.

The proposed project area was assessed on foot and visual observations/identifications of species on the footprint area were conducted. Species were listed and categorised as per the Red Data Species List, Protected Species List (National Forests Act (Act 84 of 1998);

Notice of the list of protected tree species), Provincially Protected species (Northern Cape Nature Conservation Act (Act 9 of 2009) and Invasive Species List (National Environmental Management: Biodiversity Act (Act 10 of 2004); Alien and Invasive Species Regulations, 2014. Potential impacts of the proposed project on the natural environment were identified, evaluated and rated.

The wetland delineation guideline document titled “A Practical Field Procedure for the Identification and Delineation of Wetlands and Riparian Areas” was used to identify and delineate any wetlands in the area.

The required four specific indicators were used to determine the outer edge of the wetland namely:

- the terrain unit indicator,
- the soil form indicator,
- the soil wetness indicator and
- the vegetative indicator.

The proposed project area can roughly be divided into the following three sections based on landscape structure and condition of vegetation/extent of degradation:

- Top flat plateau of the elevated rocky ridge
- Side-slope and lower foot-slope of the rocky ridge
- Lower lying flat areas surrounding the ridge.

Each of these identified areas is discussed in this document.

The Ecological Impact Assessment revealed that although the entire project area forms part of a Critical Biodiversity Area 1, this categorisation is only based on the endangered Upper Gariep Alluvial vegetation type. Ground truthing indicated that the area rather falls inside the adjacently located Northern Upper Karoo vegetation type instead of the Upper Gariep Alluvial vegetation type as per the vegetation map, and it is therefore rather only categorised as a Critical Biodiversity Area 2. The transformation of the Critical Biodiversity Area 2 through cultivation is not considered a fatal flaw for the proposed project and is not expected to significantly jeopardise the project application process.

Various nationally and provincially protected species are present on the proposed project site. Removal and relocation permits for such individuals will have to be applied for.

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ABBREVIATIONS

CARA	Conservation of Agricultural Resources Act (Act 43 of 1983)
CBA	Critical Biodiversity Area
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Ecological Support Area
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEMA	National Environmental Management Act (Act 107 of 1998)
NHRA	National Heritage Resources Act (Act 25 of 1999)
NWA	National Water Act (Act 36 of 1998)
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
WULA	Water Use License Application

1. INTRODUCTION

The company Mahoebe Eiendomme (Pty) Ltd has recently commenced with the process of procuring of Portion 10 of the Farm Spitzkop 26 near Prieska in the Northern Cape Province with the intention of establishing a 100 ha vineyard on this portion of natural previously uncultivated land. The grapes will be used for the production of wine. The completion of the procurement process is however dependent on a number of factors of which include the suitability of the area for vineyard establishment (soil, water, transformation of natural resources, heritage significance) as well as the successful acquisition of an Environmental Authorisation from the Northern Cape Department of Environment and Nature Conservation. The owner of Mahoebe Eiendomme (Pty) Ltd, Mr Henri Coetzee, has therefore decided to firstly complete an environmental risk assessment of the proposed vineyard area in order to determine any potential environmental risks or fatal flaws which might jeopardise the acquiring of the required Environmental Authorisation.

Enviroworks was appointed by Mahoebe Eiendomme (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to conduct the initial risk assessment process which includes the following two specialist studies:

- Ecological Impact Assessment
 - The potential of ecologically significant species as well as nationally and provincially protected species being present on the site had a relatively high probability and therefore had to be investigated by an ecologist. Ecological sensitivity and importance of the area also had to be determined as this will affect the probability of obtaining authorisation.
- Heritage Impact Assessment
 - The potential of archaeologically significant items and sites being present on the proposed project area was a realistic possibility and therefore had to be investigated by a heritage specialist.

Enviroworks was established in November 2002. Although the formal establishment of the company took place in 2002, it is backed by over 70 years of collective professional service and experience in the environmental field. The qualifications, expertise and experience of our professional team form the backbone of the company's continued success.

The vision of Enviroworks is to provide excellent, cutting edge Environmental Management Solutions and Services, underpinned by a team of professional consultants together with our associated network of specialist partners and project managers. The company continuously

engages existing and emerging legislation, guidelines and practices in order to ensure the execution of high quality and appropriate studies.

An Ecological Impact Assessment is required for the proposed vineyard area in order to determine and evaluate the nature, significance and extent of the potential impacts that the proposed project will have on the natural environment. Proposed mitigation and management measures must also be recommended in order to attempt to reduce/alleviate these identified potential impacts. A site visit/assessment was therefore conducted for the proposed vineyard area on 19 May 2016 in order to fulfil this requirement.

Preliminary preparations conducted prior to the site visit/assessment where as follows:

- Georeferenced spatial information was obtained of the outer perimeter of the proposed vineyard area in order to determine the direct impact footprint.
- A desktop study was conducted of the information available on the vegetation types as well as ecological sensitivity of the area in order to determine the ecological significance of the area as well as vegetation structure and potential species to be expected.

2. ASSESSMENT RATIONAL

The protection and maintenance of the integrity of our natural resources in South Africa is essential when it comes to the wellbeing of the environment. Continued development however also forms a pillar stone in the socio-economic improvement of society and the livelihoods of communities and individuals. Socio-economic progress can therefore not simply be completely discarded for the sake of environmental conservation but solutions rather need to be determined in order to achieve a sustainable balance between the needs for environmental conservation without unreasonably jeopardising the requirements of socio-economic development. Adequate, sustainable and responsible utilisation and management of our natural resources is crucial and finding these essential environmental/socio-economic balances to achieve sustainability should therefore always be a priority focus point during any proposed project development.

Various environmental legislation in South Africa makes provision for the protection of our natural resources and the functionality of ecological systems in order to ensure sustainability. Such acts include the National Environmental Management: Biodiversity Act (Act 10 of 2004), National Forests Act (Act 84 of 1998), Conservation of Agricultural

Resources Act (Act 43 of 1983) and framework legislation such as the National Environmental Management Act (Act 10 of 2004).

The various components of ecological systems are all interrelated and it is therefore important that specialist studies of all such components be conducted prior to the commencement of any proposed project development. Only once the potential impacts and outcomes of proposed developments on the ecological systems of an area are understood, can informed decisions be made regarding the viability of projects to address and achieve the environmental and socio-economic needs of an area.

An Ecological Impact Assessment of the proposed project area was therefore conducted in order to determine and quantify the potential impacts of the proposed development on the natural environment in the area.

3. OBJECTIVES OF THE ASSESSMENT

Vegetation and habitat survey:

- Identify and list species encountered on the proposed project area and list any protected and/or Red Data Listed species.
- Determine and discuss the condition and extent of degradation and/or transformation of the vegetation on the proposed project area.
- Determine and discuss the ecological sensitivity and significance of the proposed project area.
- Identify and delineate all wetland areas present on the proposed project area.
- Identify, evaluate and rate the potential impacts of the proposed project on the natural environment.
- Provide recommendations on mitigation and management measures in order to attempt to reduce/alleviate these identified potential impacts.

4. STUDY AREA

The proposed project area is approximately 147.91 ha in surface size and is situated on Portion 10 of the Farm Spitzkop No 26. The farm portion is approximately 15 km north-east of the town of Prieska in the Northern Cape Province and is owned by SchalkTheron Family Trust. The property falls inside the Siyathemba Local Municipality which, in turn, forms part of the greater Pixley Ka Seme District Municipality. Access to the proposed project area is obtained by way of the R 368 provincial road which lies approximately 6 km to the west of the proposed project area.

See locality map below.

Farm Name and Number	SG 21 Digit Code	Land owner
Portion 10, Farm Spitzkop No 26	C06000000000002600010	SchalkTheron Family Trust

The four corner coordinate points for the corners of the proposed project area are as follows:

- North-western corner 29°34'28.36"S 22°50'10.05"E
- North-eastern corner 29°34'15.94"S 22°50'40.92"E
- South-eastern corner 29°35'11.41"S 22°50'59.94"E
- South-western corner 29°35'20.41"S 22°50'36.14"E

Table 1: Details of relevant land owner

Company/entity name:	SchalkTheron Family Trust
Contact person:	Schalk Theron
Contact number:	082 802 2211

According to Mucina & Rutherford (2006) the proposed project area forms part of the Upper Gariep Alluvial vegetation type (AZa 4) which mainly consists of flat alluvial terraces supporting complex of riparian thickets and is classified as vulnerable in terms of conservation status. The vegetation structure and species encountered during the site visit however indicated that the vegetation rather forms part of the adjacently situated Northern Upper Karoo vegetation type (NKu 3) which is classified as least threatened (Mucina & Rutherford, 2006). This vegetation type is characterised by a shrubland dominated by dwarf karoo shrubs, grasses and low trees on a flat to gently sloping terrain. The proposed project area also falls inside an area categorised by the Provincial Spatial Biodiversity Plan as a Critical Biodiversity Area 1. Critical Biodiversity Areas are areas which play an important role in conservation and reaching certain required biodiversity targets for ecosystem types, species or ecological processes. The CBA 1 categorisation is however based on the endangered vegetation type present and the ground truthing indicated that the area rather falls inside the adjacently located vegetation type and it is rather only categorised as a CBA 2.

See vegetation and sensitivity maps below.

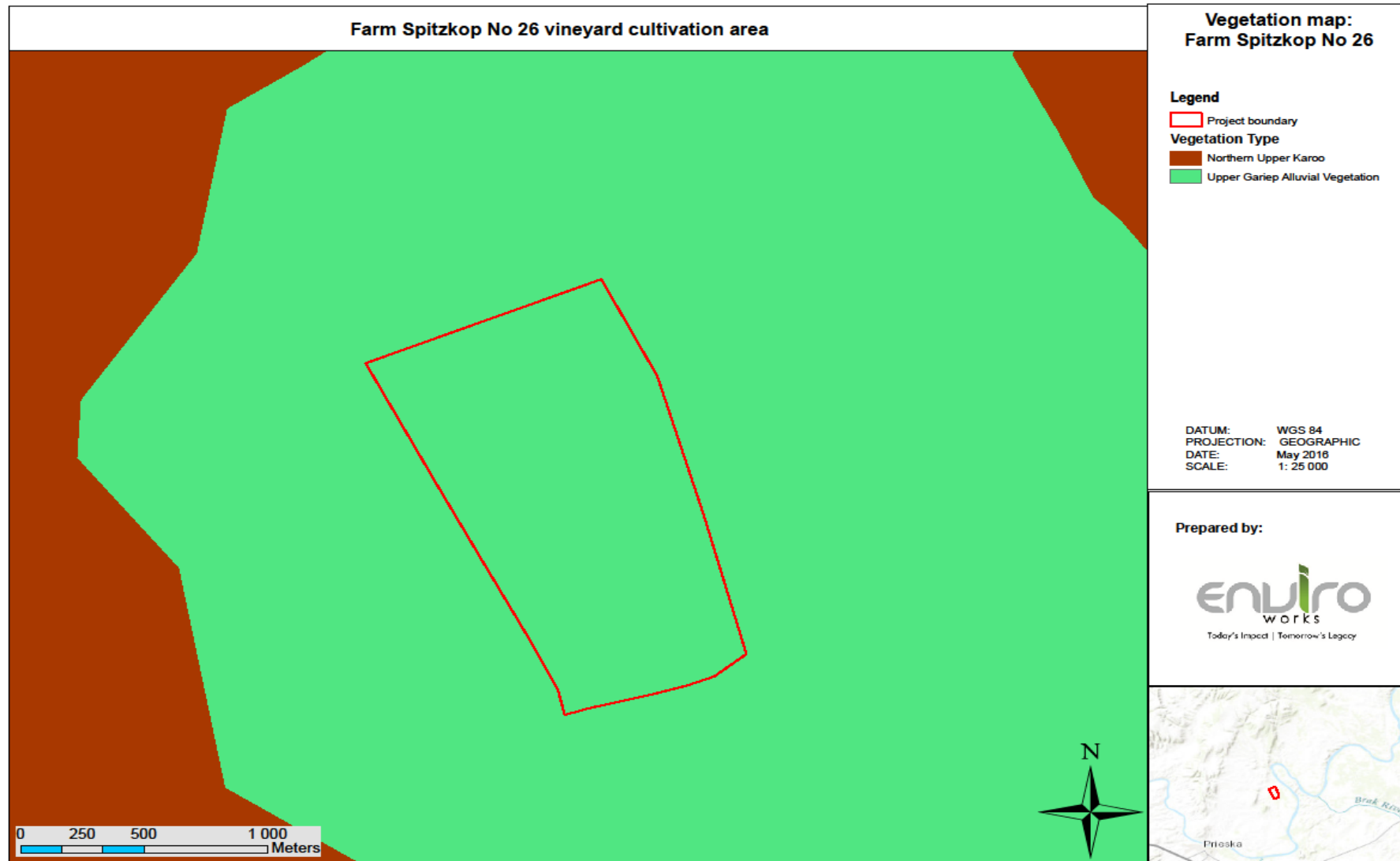


Figure 2: Vegetation map of the proposed project layout

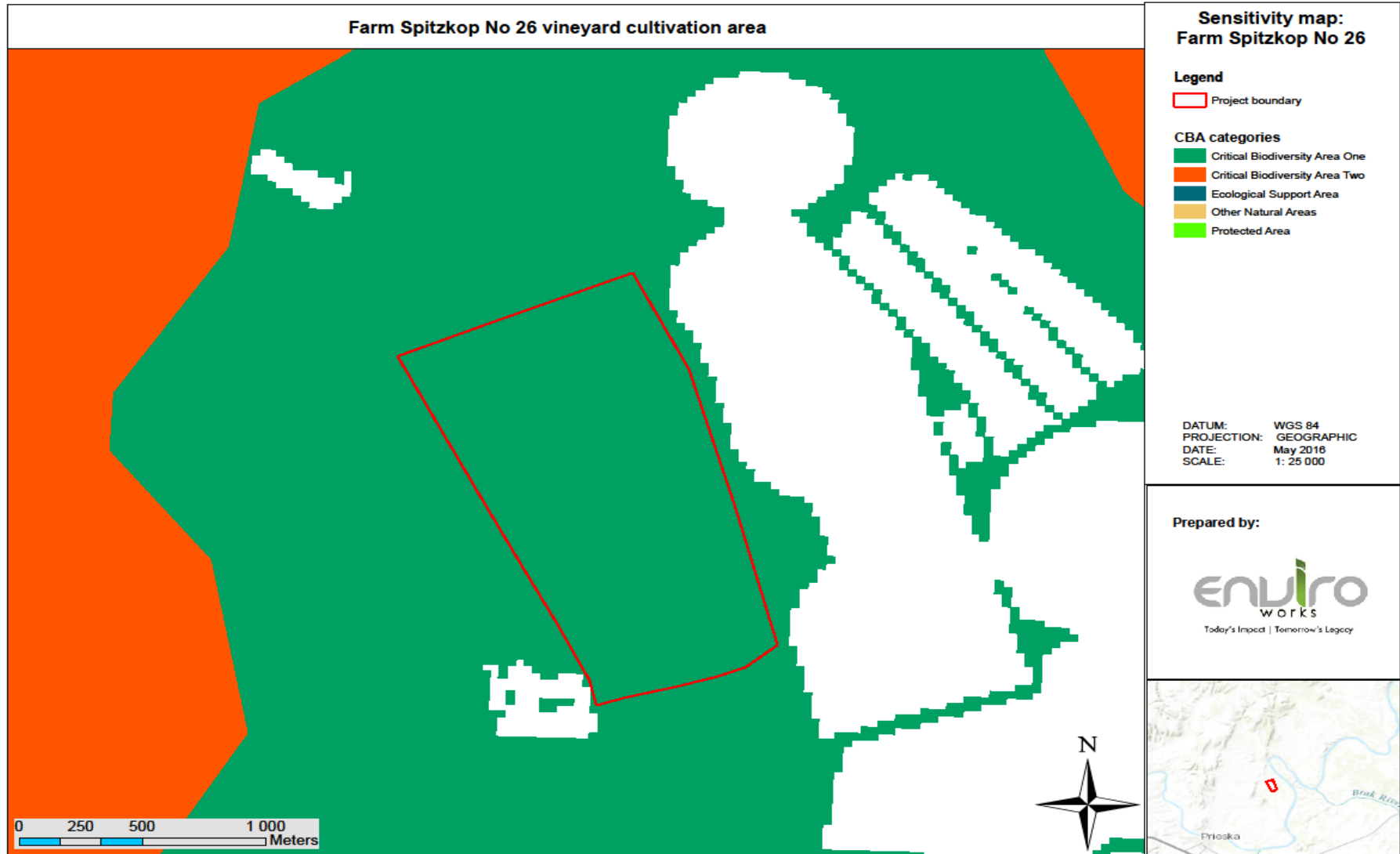


Figure 3: Sensitivity map of the proposed project layout

5. METHODOLOGY

- The proposed project area was assessed on foot and visual observations/identifications of species on the footprint area were conducted.
- Species were listed and categorised as per the Red Data Species List; Protected Species List of the National Forests Act (Act 84 of 1998), Notice of the list of protected tree species; Provincially Protected species of the Northern Cape Nature Conservation Act (Act 9 of 2009) and Invasive Species List of the National Environmental Management: Biodiversity Act (Act 10 of 2004), Alien and Invasive Species Regulations, 2014.
- Potential impacts of the proposed project on the natural environment were identified, evaluated and rated as per the methodology described below:

The tables below indicate and explain the methodology and criteria used for the evaluation of the Environmental Risk Ratings as well as the calculation of the final Environmental Significance Ratings of the identified potential environmental impacts.

Each potential environmental impact is scored for each of the Evaluation Components as per the table below.

Table 2: Scale utilised for the evaluation of the Environmental Risk Ratings

Evaluation Component	Rating Scale and Description/criteria
MAGNITUDE of NEGATIVE IMPACT (at the indicated spatial scale)	<p>10 - Very high: Bio-physical and/or social functions and/or processes might be <i>severely</i> altered.</p> <p>8 - High: Bio-physical and/or social functions and/or processes might be <i>considerably</i> altered.</p> <p>6 - Medium: Bio-physical and/or social functions and/or processes might be <i>notably</i> altered.</p> <p>4 - Low : Bio-physical and/or social functions and/or processes might be <i>slightly</i> altered.</p> <p>2 - Very Low: Bio-physical and/or social functions and/or processes might be <i>negligibly</i> altered.</p> <p>0 - Zero: Bio-physical and/or social functions and/or processes will remain <i>unaltered</i>.</p>
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	<p>10 - Very high (positive): Bio-physical and/or social functions and/or processes might be <i>substantially</i> enhanced.</p> <p>8 - High (positive): Bio-physical and/or social functions and/or processes might be <i>considerably</i> enhanced.</p> <p>6 - Medium (positive): Bio-physical and/or social functions and/or processes might be <i>notably</i> enhanced.</p> <p>4 - Low (positive): Bio-physical and/or social functions and/or processes might be <i>slightly</i> enhanced.</p> <p>2 - Very Low (positive): Bio-physical and/or social functions and/or processes might be <i>negligibly</i> enhanced.</p> <p>0 - Zero (positive): Bio-physical and/or social functions and/or processes will remain <i>unaltered</i>.</p>
DURATION	<p>5 - Permanent</p> <p>4 - Long term: Impact ceases after operational phase/life of the activity > 60 years.</p> <p>3 - Medium term: Impact might occur during the operational phase/life of the activity – 60 years.</p>

	<p>2 - Short term: Impact might occur during the construction phase - < 3 years.</p> <p>1 - Immediate</p>
EXTENT (or spatial scale/influence of impact)	<p>5 - International: Beyond National boundaries.</p> <p>4 - National: Beyond Provincial boundaries and within National boundaries.</p> <p>3 - Regional: Beyond 5 km of the proposed development and within Provincial boundaries.</p> <p>2 - Local: Within 5 km of the proposed development.</p> <p>1 - Site-specific: On site or within 100 m of the site boundary.</p> <p>0 - None</p>
IRREPLACEABLE loss of resources	<p>5 – Definite loss of irreplaceable resources.</p> <p>4 – High potential for loss of irreplaceable resources.</p> <p>3 – Moderate potential for loss of irreplaceable resources.</p> <p>2 – Low potential for loss of irreplaceable resources.</p> <p>1 – Very low potential for loss of irreplaceable resources.</p> <p>0 - None</p>
REVERSIBILITY of impact	<p>5 – Impact cannot be reversed.</p> <p>4 – Low potential that impact might be reversed.</p> <p>3 – Moderate potential that impact might be reversed.</p> <p>2 – High potential that impact might be reversed.</p> <p>1 – Impact will be reversible.</p> <p>0 – No impact.</p>
PROBABILITY (of occurrence)	<p>5 - Definite: >95% chance of the potential impact occurring.</p> <p>4 - High probability: 75% - 95% chance of the potential impact occurring.</p> <p>3 - Medium probability: 25% - 75% chance of the potential impact occurring</p> <p>2 - Low probability: 5% - 25% chance of the potential impact occurring.</p> <p>1 - Improbable: <5% chance of the potential impact occurring.</p>
Evaluation Component	Rating Scale and Description/criteria
CUMULATIVE impacts	<p>High: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</p> <p>Medium: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</p> <p>Low: The activity is localised and might have a negligible cumulative impact.</p> <p>None: No cumulative impact on the environment.</p>

Once the Environmental Risk Ratings have been evaluated for each potential environmental impact, the Significance Score of each potential environmental impact is calculated by using the following formula:

- **SS (Significance Score) = (magnitude + duration + extent + irreplaceable + reversibility) x probability.**

The maximum Significance Score value is 150.

The Significance Score is then used to rate the Environmental Significance of each potential environmental impact as per Table 5 below. The Environmental Significance rating process is completed for all identified potential environmental impacts both before and after implementation of the recommended mitigation measures.

Table 3: Scale used for the evaluation of the Environmental Significance Ratings

Significance Score	Environmental Significance	Description/criteria
125 – 150	Very high (VH)	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.
100 – 124	High (H)	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.
75 – 99	Medium-high (MH)	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked.
40 – 74	Medium (M)	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
<40	Low (L)	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.
+	Positive impact (+)	A positive impact is likely to result in a positive consequence/effect, and is likely to contribute to positive decisions about whether or not to proceed with the project.

- Wetlands were identified and delineated on the proposed project area as per the methodology described below:

For the purposes of this investigation a wetland was defined according to the definition in the National Water Act (Act 36 of 1998) as: “land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.”

In 2005 DWAF published a wetland delineation procedure in a guideline document titled “A Practical Field Procedure for the Identification and Delineation of Wetlands and Riparian Areas”. Guidelines for the undertaking of biodiversity assessments exist. These guidelines contain a number of stipulations relating to the protection of wetlands and the undertaking of wetland assessments. These guidelines state that a wetland delineation procedure must identify the outer edge of the temporary zone of the wetland, which marks the boundary between the wetland and adjacent terrestrial areas and is that part of the wetland that remains flooded or saturated close to the soil surface for only a few weeks in the year, but long enough to develop anaerobic conditions and determine the nature of the plants growing in the soil.

The guidelines also state that locating the outer edge of the temporary zone must make use of four specific indicators namely:

- the terrain unit indicator,
- the soil form indicator,
- the soil wetness indicator and
- the vegetative indicator.

In addition the wetland and a protective buffer zone, beginning from the outer edge of the wetland temporary zone, must be designated as sensitive in a sensitivity map. The guidelines stipulate buffers to be delineated around the boundary of a wetland. A protective 32 m buffer zone, beginning from the outer edge of the wetland temporary zone, must be implemented and designated as sensitive within which no development must be allowed to occur.

6. RESULTS AND DISCUSSION

The proposed project area can roughly be divided into the following three sections based on landscape structure and condition of vegetation/extent of degradation:

- Top flat plateau of the elevated rocky ridge
- Side-slope and lower foot-slope of the rocky ridge
- Lower lying flat areas surrounding the ridge.

Each of these identified areas will now be discussed in detail.

All figures referred to in the text are available in the appendix.

6.1. TOP FLAT PLATEAU OF THE ELEVATED ROCKY RIDGE

A slightly elevated ridge is present in the northern section of the proposed project area. The vegetation structure of the flat plateau of this ridge mainly constitutes low growing shrubs and forbs with isolated woody individuals. The grass layer is very sparse with the species *Enneapogon scoparius* mainly present. The plateau is mainly dominated by the shrubs *Rhigozum trichotomum*, *Boscia foetida* (provincially protected) and *Aptosimum spinescens*.

The following species are also present:

Species name	Provincial protection status	Red Data Listing
<i>Hoodia gordonii</i>	Specially protected	Data deficient
<i>Aloe claviflora</i>	Protected	Least concerned
<i>Oxalis semiloba</i>	Protected	Least concerned
<i>Ruschia sp</i>	Protected	To be confirmed
<i>Drimia sp</i>	Not listed	To be confirmed
<i>Ledebouria sp</i>	Not listed	To be confirmed
<i>Pentzia sphaerocephala</i>	Not listed	Least concerned
<i>Schismus barbatus</i>	Not listed	Least concerned
<i>Dipcadi crispum</i>	Not listed	Least concerned
<i>Geigeria filifolia</i>	Not listed	Least concerned
<i>Heliotropium lineare</i>	Not listed	Least concerned
<i>Talinum caffrum</i>	Not listed	Least concerned

Provincial permits will have to be applied for, for the relocation of provincially protected and specially protected individuals. Only one individual of the specially protected species *Hoodia gordonii* was observed on the proposed project site while approximately 30 + individuals of the other protected species were observed respectively.

The nationally protected tree species *Boscia albitrunca* (Shepherd's tree/witgat) is also sparsely present and the locations/coordinates of all the individuals encountered during the site visit have been noted and are discussed in detail under heading 10.4.

No Red Data Listed species were found to be present.

A small, isolated wet area is present on the plateau but it is evidently a manmade structure and does therefore not constitute a wetland or watercourse.

Due to the altitude and well drained rocky soils of this ridge area, it is well suited for vineyard establishment. The presence of the listed provincially protected species however means that permits need to be applied for in order to remove/relocate these species prior to any development taking place. Due to the size and maturity of the nationally protected tree individuals identified, relocation will not be possible. Removal permits will have to be applied for at the national and provincial departments. It is however recommended that the project rather attempts to keep and protect some of the individual trees on site. A minimum 10 m buffer zone can be implemented around each individual in order to attempt to prevent any interaction with or damage to the above and below ground components of the trees during the cultivation processes as this will constitute a transgression of the law which could be criminally prosecuted. Such a buffer could be in the form of a physical fence to be erected around each individual in order to discourage any potential contact/interaction which could lead to any of the unacceptable impacts on the individuals as per the Act. Establishment of a vineyard on this area is therefore subjective to the success of the permit application and securing of the safety of all protected tree individuals.

6.2. SIDE-SLOPE AND LOWER FOOT-SLOPE OF THE RIDGE

This small localised side-slope portion directly beneath the flat plateau of the ridge has a distinct, significantly denser woody component when compared to the plateau. It mainly consists of *Acacia mellifera* and to a lesser extent also the nationally protected tree species *Boscia albitrunca*. The forb species as identified on the top flat plateau are all present with the species *Salsola aphylla* becoming significantly more prominent.

No Red Data Listed species were found to be present.

Once again the altitude and well drained soils result in this area being well suited for vineyard establishment if removal/relocation permits are obtained for the provincially and nationally protected species. It is again recommend that the safety of all protected tree individuals be secured with a minimum 10 m buffer zone.

6.3. LOWER LYING FLAT AREAS SURROUNDING THE RIDGE

This is a significant portion of the proposed project footprint and is characterised by less rocky soils on the lower lying flat terrain. The area is virtually devoid of a woody component with the exception of isolated *Searsia lancea* and *Ziziphus mucronata* individuals and a clump of *Acacia* individuals in the western section. Mostly the same forb species as found on the flat plateau and side-slope are present with the exception of the provincially specially protected species *Hoodia gordonii* and provincially protected species *Aloe claviflora* which are confined to the ridge. Grasses mainly include *Enneapogon desvauxii* and *Schismus barbatus*. Additional species which are not present on the plateau or side-slope include *Peliostomum leucorrhizum*, *Asparagus glaucus*, *Aptosimum indivisum*, *Lycium cinereum*, *Tribulus cristatus* and *Zygophyllum incrustatum*.

The Category 3 invasive species *Prosopis glandulosa* is present in isolated areas but active management and eradication processes are evident.

No Red Data Listed species were found to be present.

The southern portion of the flat terrain is more disturbed and degraded than the rest of the area. An old road is evident and a soil berm has been constructed in order to divert storm-water past the proposed project area. This constructed water diversion is not considered a natural watercourse. The vegetation is evident of the disturbance. The species *Euphorbia mauritanica* and *Nidorella hottentotta* are only present in the disturbed areas. Although the soils are suited for vineyard establishment this southern portion is not practically ideal due to the potential water runoff occurring in that area.

6.4. PROPOSED PIPELINE ROUTE

The pipeline route outside of the proposed project footprint will run along a transformed agricultural area and access road where virtually no natural vegetation is still present.

6.5. *BOSCIA ALBITRUNCA* INDIVIDUALS IDENTIFIED

The tree species *Boscia albitrunca* is listed as a protected species under the National Forests Act (Act 84 of 1998). The Act states that no person may cut, disturb, damage or destroy any protected tree except if a permit is obtained for the desired process. The individuals present on the proposed project site are strictly confined to the well-draining rocky soils of the top flat plateau and side-slope areas of the elevated ridge. Due to the size and maturity of the individuals identified, relocation will not be possible. Removal permits will have to be applied for at the national and provincial departments. It is however recommended that the project rather attempts to keep and protect the individual trees on site. A minimum 10 m buffer zone can be implemented around each individual in order to attempt to prevent any interaction with or damage to the above and below ground components of the trees during the cultivation processes. Any such damage will constitute a transgression of the law which can be criminally prosecuted. A total of 20 individuals were encountered during the site visit and their locations/coordinates have been noted and are indicated in the figure below. A number of the individuals are located directly adjacent to each other and their locations are therefore not displayed as separate icons on the figure below.

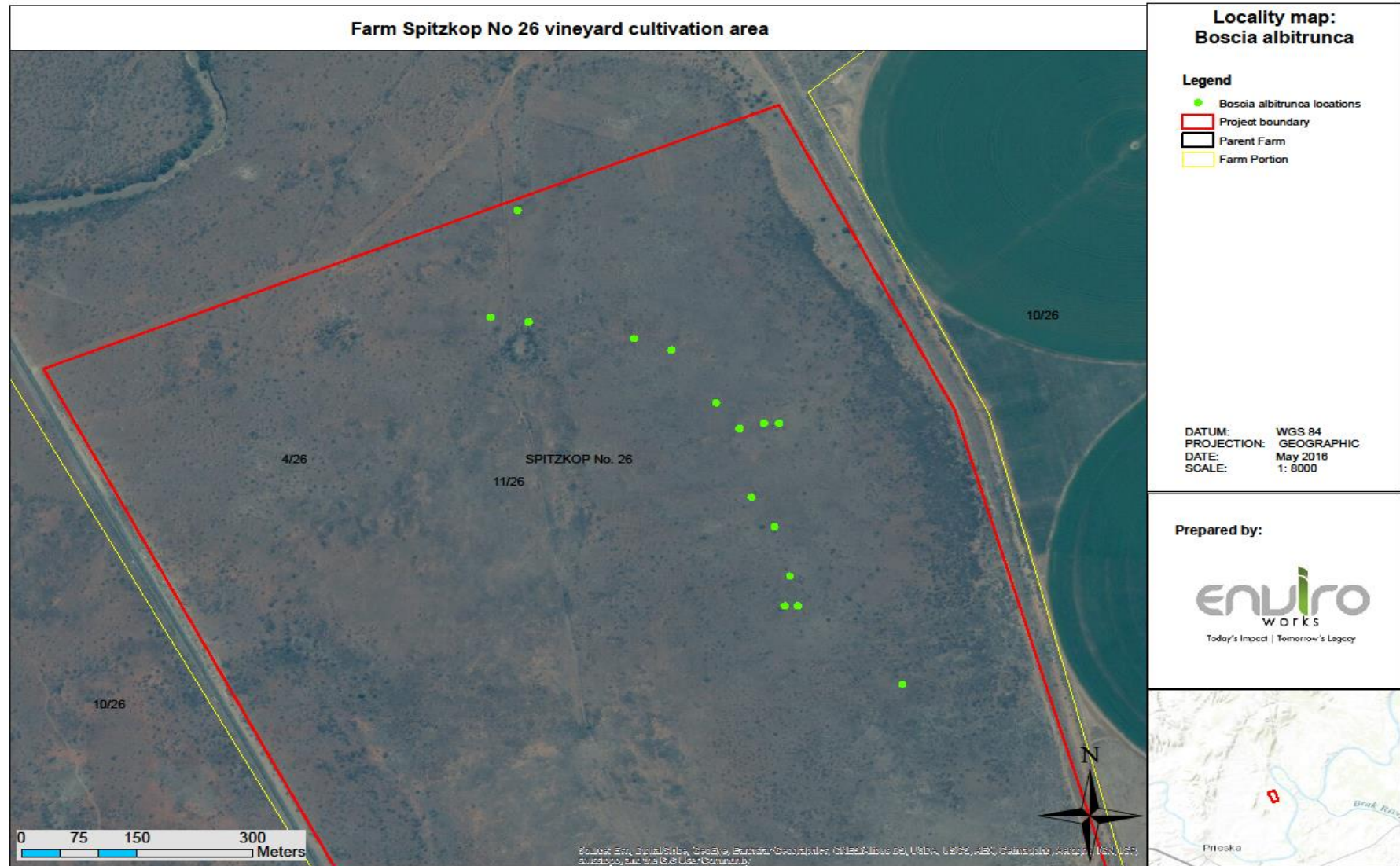


Figure 4: Locality map of the *Boscia albitrunca* individuals present on the proposed project area

7. ENVIRONMENTAL IMPACT ASSESSMENT

The following section identifies the potential environmental impacts (both positive and negative) which the proposed project will have on the surrounding environment.

Once the potential environmental impacts are identified, they are assessed by rating their Environmental Risk after which the final Environmental Significance is calculated and rated for each identified environmental impact.

The same Environmental Risk rating process is then followed for each environmental impact to determine the Environmental Significance if the recommended mitigation measures were to be implemented.

The objective of this section is therefore firstly to identify all the potential environmental impacts of the proposed project and secondly to determine the significance of the impacts and how effective the recommended mitigation measures will be able to reduce their significance. The potential environmental impacts which are still rated as highly significant, even after implementation of mitigations, can then be identified in order to specifically focus on implement of effective management strategies for them.

7.1. DESCRIPTION OF POTENTIAL IMPACTS AND THEIR RECOMMENDED MITIGATION MEASURES

The following section provides descriptions of the potential environmental impacts which the proposed project will have as well as the recommended mitigation measures to be implemented for each impact as identified.

Destruction/transformation of a Critical Biodiversity Area

Critical Biodiversity Areas are areas which play an important role in conservation and reaching certain required biodiversity targets for ecosystem types, species or ecological processes.

Cultivation processes will completely transform and destroy the natural vegetation and any faunal habitats present on the proposed project area. Although this entire area forms part of a Critical Biodiversity Area 1, this categorisation is only based on the endangered Upper Gariep Alluvial vegetation type. Ground truthing indicated that the area rather falls inside the adjacently located Northern Upper Karoo vegetation type instead of the Upper Gariep Alluvial vegetation type as per the vegetation map, and it is therefore rather only categorised

as a Critical Biodiversity Area 2. The reason for the Critical Biodiversity Area 2 classification is mainly based on the areas being classified as areas where biodiversity targets can be successfully achieved.

After a discussion regarding the matter with Mr E Klopper from the provincial department (creator of the Northern Cape provincial CBA map), it was agreed that importance of that area in reaching the required conservation targets is not so significant due to the area being adjacent to already cultivated areas which separate the project area from the Orange River and therefore also isolates the water catchment away from the Orange River. The transformation of the Critical Biodiversity Area 2 through cultivation is therefore not considered a fatal flaw for the proposed project.

Mitigation measures to reduce potential impacts:

- The area only forms part of the CBA 2 and not a CBA 1 as per the discussion above. Due to the nature of the cultivation processes, no mitigation measures can be implemented which could result in acceptably reduced impacts on the area. Restrict all cultivation work to the proposed project footprint and prevent any unnecessary increase of the footprint size due to indiscriminate disturbance.

Destruction/damage to nationally protected tree species individuals

In accordance with the National Forests Act (Act 84 of 1998), no person may cut, disturb, damage or destroy any protected tree except if a permit is obtained for the desired process. Partaking in any such processes will therefore constitute a transgression of the law which can be criminally prosecuted

The nationally protected tree species *Boscia albitrunca* is present on the proposed project area. A total of 20 individuals were encountered during the site visit and their locations/coordinates have been noted. Cultivation processes could result in the potential removal of/damage to these identified individuals.

Mitigation measures to reduce potential impacts:

- A permit application must be submitted to the national and provincial departments for removal/destruction of the individuals. After a discussion with Ms J Mans from the department who handles permit applications, it was confirmed that the removal permit granting of the protected tree individuals should not pose a problem to the project. Such a permit application should not take longer than 30 days to obtain.
- It is however recommended that the project rather attempts to keep and protect some of the individual trees on site. A minimum 10 m buffer zone can be implemented

around each individual in order to attempt to prevent any interaction with or damage to the above and below ground components of the trees during the cultivation processes. Such a buffer could be in the form of a physical fence to be erected around each individual in order to discourage any potential contact interaction which could lead to any of the unacceptable impacts on the individuals as per the Act.

Destruction/damage to provincially protected species individuals

In accordance with the Northern Cape Nature Conservation Act (Act 9 of 2009), no person may without a permit pick (which includes the definition damage or destroy), import, export, transport, possess, cultivate or trade in a specimen of a protected plant. Partaking in any such processes will therefore constitute a transgression of the law which can be criminally prosecuted. Cultivation processes could result in the potential removal of/damage to such identified species individuals.

Mitigation measures to reduce potential impacts:

- A permit application must be submitted to the provincial department for the relocation of identified individuals. A suitable relocation environment must be identified and individuals must be adequately relocated with the assistance of a specialist. Such a permit application should not take longer than 30 days to obtain.

Impeding a water catchment

The proposed project area is directly adjacent to currently cultivated areas of significant size which separate the project area from the Orange River and therefore isolates the local water catchment. The cultivation of the proposed project area would therefore not add significant negative impact to the local water catchment feeding the Orange River as it is already isolated.

Mitigation measures to reduce potential impacts:

- Restrict all cultivation work to the proposed project footprint and prevent any unnecessary increase of the footprint size due to indiscriminate disturbance.

7.2. RISK RATINGS OF POTENTIAL IMPACTS

The following section provides the Environmental Risk as well as the Environmental Significance Ratings for the potential environmental impacts for the proposed project both before and after implementation of the recommended mitigation measures.

Table 4: Environmental Risk and Significance Ratings

	Proposed project	No-Go Alternative
Identified Environmental Impacts	Destruction/transformation of a Critical Biodiversity Area	The proposed development will not take place and as such this impact will not occur
Magnitude of Impact	High (8)	-
Duration of impact:	Permanent (5)	-
Extent of the impact	Site specific (1)	-
Degree to which local resources are irreplaceable	Moderate (3)	-
Degree to which the impact can be reversed:	Low (4)	-
Probability of occurrence:	Definite (5)	-
Cumulative impact prior to mitigation:	Medium	-
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	High (105)	-

Proposed mitigation:	The area only forms part of the CBA 2 and not a CBA 1 as per the discussion above. Due to the nature of the cultivation processes, no mitigation measures can be implemented which could result in acceptably reduced impacts on the area. Restrict all cultivation work to the proposed project footprint and prevent any unnecessary increase of the footprint size due to indiscriminate disturbance.	
Cumulative impact post mitigation:	Medium	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium High (99)	-
	Proposed project	No-Go Alternative
Identified Environmental Impacts	Destruction/damage to nationally protected tree species individuals	The proposed development will not take place and as such this impact will not occur
Magnitude of Impact	Medium (6)	-
Duration of impact:	Permanent (5)	-
Extent of the impact	Site specific (1)	-

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Degree to which local resources are irreplaceable	Moderate (3)	-
Degree to which the impact can be reversed:	Low (4)	-
Probability of occurrence:	High probability (4)	-
Cumulative impact prior to mitigation:	Medium High	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium High (76)	-
Proposed mitigation:	<p>A permit application must be submitted to the national and provincial departments for removal/destruction of the individuals. Such a permit application should not take longer than 30 days to obtain.</p> <p>It is however recommended that the project rather attempts to keep and protect some of the individual trees on site. A minimum 10 m buffer zone can be implemented around each individual in order to attempt to prevent any interaction with or damage to the above and below ground components of the trees during the cultivation processes. Such a buffer could be in the form of a physical fence to be</p>	

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	erected around each individual in order to discourage any potential contact interaction which could lead to any of the unacceptable impacts on the individuals as per the Act.	
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (34)	-
	Proposed project	No-Go Alternative
Identified Environmental Impacts	Destruction/damage to provincially protected species individuals	The proposed development will not take place and as such this impact will not occur
Magnitude of Impact	Medium (6)	
Duration of impact:	Permanent (5)	
Extent of the impact	Site specific (1)	
Degree to which local resources are irreplaceable	Low (2)	

Degree to which the impact can be reversed:	Low (4)	
Probability of occurrence:	High probability (4)	
Cumulative impact prior to mitigation:	Medium	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (72)	
Proposed mitigation:	A permit application must be submitted to the provincial department for the relocation of identified individuals. A suitable relocation environment must be identified and individuals must be adequately relocated with the assistance of a specialist. Such a permit application should not take longer than 30 days to obtain.	
Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (32)	

	Proposed project	No-Go Alternative
Identified Environmental Impacts	Impeding a water catchment	The proposed development will not take place and as such this impact will not occur
Magnitude of Impact	Low (4)	
Duration of impact:	Permanent (5)	
Extent of the impact	Local (2)	
Degree to which local resources are irreplaceable	Low (2)	
Degree to which the impact can be reversed:	Low (4)	
Probability of occurrence:	Medium probability (3)	
Cumulative impact prior to mitigation:	Medium	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (51)	

Proposed mitigation:	Restrict all cultivation work to the proposed project footprint and prevent any unnecessary increase of the footprint size due to indiscriminate disturbance.	
Cumulative impact post mitigation:	Medium	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (51)	

8. CONCLUSIONS AND RECOMMENDATIONS

Although the entire proposed project area forms part of a Critical Biodiversity Area 1, this categorisation is based on the endangered Upper Gariep Alluvial vegetation type and due to the ground truthing indication that the area rather falls inside the adjacently located Northern Upper Karoo vegetation type, it is rather only categorised as a CBA 2. The Northern Upper Karoo vegetation type is classified as least threatened and the reason for the CBA 2 classification is mainly based on the areas being classified as areas where biodiversity targets can be successfully achieved. The project area is directly adjacent to currently cultivated areas of significant size which separate the project area from the Orange River and therefore isolates the local catchment. The cultivation of the proposed project area would therefore not add significant negative impact to the local water catchment feeding the Orange River as it is already isolated. For these reason, the transformation of the CBA 2 is not considered a fatal flaw for the proposed project and is not expected to significantly jeopardise the project application process.

Provincial permit applications must be submitted to the department for the relocation of identified individuals of provincially protected and specially protected species. Cultivation can only commence once these permits have been obtained and identified individuals have been adequately removed and relocated. Such a permit application should not take longer than 30 days to obtain. The acquiring of required permits is not expected to significantly jeopardise the project application process if an adequate removal and relocation plan is provided to the department.

National and provincial permit applications must be submitted to the departments for the removal/destruction of the identified individuals of the nationally protected tree species *Boscia albitrunca*. Cultivation can only commence once these permits have been obtained from the relevant departments. Such a permit application should not take longer than 30 days to obtain. The acquiring of required permits is not expected to significantly jeopardise the project application process. It is however recommended that the project rather attempts to keep and protect some of the individual trees on site. A minimum 10 m buffer zone can be implemented around each individual in order to attempt to prevent any interaction with or damage to the above and below ground components of the trees during the cultivation processes. Any such damage will constitute a transgression of the law which can be criminally prosecuted.

The following recommendations and requirements with regards to the proposed project apply:

- According to the National Environmental Management Act (No 107 of 1998) the proposed project triggers various listed activities of the Environmental Impact Assessment Regulations, 2014 (Government Notices R983, R984 and R985 in Government Gazette No. 38282 of 04 December 2014) and a full Environmental Impact Assessment (EIA) therefore needs to be conducted. This is necessary in order to obtain the required Environmental Authorisation from the relevant departments prior to commencement of the proposed project.
- Once the project commences, ensure that the identified mitigation measures and recommendations as discussed under heading 7 are adequately implemented.
- If any natural wetland/watercourse is present within a 500 m radius of the proposed project area, a Water Use License Application (WULA) must be submitted to the Department of Water and Sanitation. This will be determined during the EIA phase.

9. REFERENCES

Conservation of Agricultural Resources Act (Act 43 of 1983)

Mucina, L. & Rutherford, M.C. (eds.) 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

National Environmental Management Act (Act 107 of 1998)

National Environmental Management: Biodiversity Act (Act 10 of 2004)

National Environmental Management: Biodiversity Act (Act 10 of 2004); Alien and Invasive Species Regulations, 2014

National Forests Act (Act 84 of 1998)

National Water Act (Act 36 of 1998)

The Northern Cape Nature Conservation Act (Act 9 of 2009)

10. APPENDIX



Figure 5: Image illustrating the top flat plateau of the elevated rocky ridge



Figure 6: Image illustrating the manmade wet area on the plateau



Figure 7: Image illustrating the dense woody component of the side-slope of the ridge



Figure 8: Image illustrating the lower lying flat area



Figure 9: Image illustrating the more degraded lower lying flat areas in the southern portion of the proposed project area