

FINAL ENVIRONMENTAL IMPACT REPORT

**Proposed cultivation of 100 ha for the establishment of
a vineyard and associated pipeline on Portion 10 & 11 of
the Farm De Eelt no 26 near Prieska within the
Siyathemba Local Municipality, Northern Cape Province**

NCDENC Reference number:

NC/EIA/06/PIX/SIY/PRI1/2016

**Prepared for: Mahoebe Eiendomme
(Pty) Ltd**

Prepared by: Enviroworks

December 2016



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T +27 (0)86 198 8895 | F +27 (0)86 719 7191
E office@enviroworks.co.za

REPORT REVIEW AND QUALITY MANAGEMENT

	Final Report	Revision 1	Revision 2	Revision 3
Issue/Revision Name	Final EIA Report			
Report prepared/revised by:	Rikus Lamprecht			
Date:	2016/12/13			
Signature:				
Report reviewed by:	Johan Botes			
Date:	2016/12/13			
Signature:				
Report reviewed and approved by applicant:	Henry Coetzee			
Date:	2016/12/13			
Signature:				

EXECUTIVE SUMMARY

Project location and description

The company, Mahoebe Eiendomme (Pty) Ltd, has recently commenced with the process of procuring Portion 10 of the Farm De Eelt no 26 near the town of Prieska in the Northern Cape Province (approximately 147.91 ha). The reason for the intended procurement is for establishing a 100 ha vineyard on this portion of natural previously uncultivated land. Although the vineyard will be approximately 100 ha in size, the additional 47.91 hectares will allow for the establishment of internal access roads around the vineyard and between vineyard blocks (wider than 8 m), a new settling dam (capacity will not exceed 15 000 m³) and associated infrastructure.

Table 1: Information of the farm portions associated with the proposed project

Farm Name and Number	SG 21 Digit Code	Land owner
Portion 10 of Farm De Eelt No 26	C060000000000260010	S & L Boerdery BK
Portion 11 of Farm De Eelt No 26	C060000000000260011	Mahoebe Eiendomme (Pty) Ltd

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

The centre point of the proposed water settling dam is as follows:

- Centre point 29°34'30.10"S 22°50'45.12"E

The relevant farm portions are approximately 15 km north-east of the town of Prieska in the Northern Cape Province. Portion 10 is owned by S & L Boerdery BK while Portion 11 is owned by Mr Henry Coetzee of Mahoebe Eiendomme (Pty) Ltd (the applicant). The owner of Portion 10 has provided his consent for the completion of the EIA process.

The properties fall 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 runs along the western boundary of the proposed project area on Portion 10 of the Farm De Eelt No 26) and a subsequent dirt farm road.

A proposed water transport pipeline (maximum 400 mm diameter and 1.3 km long) is also required to supply irrigation water from the Orange River to the proposed new vineyard area. An existing water extraction point with pumping system and pipeline is already present in the Orange River on Portion 11 of the Farm De Eelt no 26. This is being used for irrigation of crops on Portion 11 in accordance with the water use registration of the property. Additional pumps will be installed at the existing extraction point to accommodate for the irrigation requirements of the proposed vineyard.

The proposed water transport pipeline will commence from the existing water extraction point in the Orange River which is situated on Portion 11 of the Farm De Eelt No 26. From here it will traverse this Portion 11 to where it enters the adjacently located Portion 10 and then reaches the new proposed settling dam to be constructed on Portion 10. A narrow additional linear section of vegetation (approximately 5 m) will be cleared up the length of the river bank directly adjacent to the existing extraction point pipeline route in order to accommodate the additional piping infrastructure. This will not significantly impact on any important riparian vegetation species or ecological functions on the bank of the river as this area and vegetation is mostly disturbed already. Once the new pipeline reaches the top of the river bank, it will be buried subsurface to prevent any potential damage or surface obstruction. This new pipeline route will run alongside the existing pipeline route which is located adjacent to an existing dirt access road and telephone line. The surface area and vegetation of this existing pipeline route is already degraded and virtually no natural vegetation is still present. The area is in a highly transformed state with pioneer vegetation species and weeds mostly dominating the route. The new pipeline route will then traverse an existing cultivated pivot field on Portion 11 after which it will reach the proposed new water settling dam on Portion 10 of the Farm De Eelt No 26.

The starting, bend and end points of the proposed water transport pipeline is as follows:

- Start point 29°33'56.19"S 22°51'14.91"E
- Bend point 29°34'10.70"S 22°51'03.53"E
- End point 29°34'29.34"S 22°50'46.13"E

No additional electricity infrastructure will be required during the construction phase. All cultivation processes will either be manually conducted or via machines on site. The additional pumps required during the operational phase at the existing Orange River extraction point will be incorporated into the existing pumping system and electrical supply feed. This is already present at the existing extraction point and being used for the other irrigation purposes of existing crop fields as per the property water use registration.

Sufficient portable chemical toilets will be supplied on site for the manual labourers during the construction phase. These toilets will be cleaned and waste removed and adequately disposed of by an appropriate registered contractor on a regular basis as and when required. Sufficient portable chemical toilets will also be supplied on site for the manual labourers during the short annual harvesting periods. These toilets will also be cleaned and waste removed and adequately disposed of by an appropriate registered contractor on a regular basis as and when required.

It is not anticipated that significant quantities of general waste will be generated during the construction or operational phases of the project. Solid general waste generated on site will be removed and adequately disposed of by the applicant at the local municipal landfill site on a regular basis as and when required. It is envisaged that no significant hazardous waste will be generated on site during the construction or operational phases of the project. If any significant hazardous waste is however generated a suitable, registered waste contractor will be contracted to remove and adequately dispose of such waste at a suitable landfill site.

As discussed, water will be extracted from the Orange River and accumulated in a new on-site settling dam for irrigation purposes.

It is envisaged that the vineyard preparation and planting/development phase will take approximately 12 months to complete, while the operational phase will continue for an undisclosed period of time (multiple years).

National Environmental Management Act (No 107 of 1998) listed activities triggered

Enviroworks was appointed by Mahoebe Eiendomme (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to conduct a full Scoping & Environmental Impact Assessment (EIA) process for the proposed project.

The reason for an Environmental Impact Assessment being conducted for the proposed project is that the project triggers certain listed activities in terms of the National Environmental Management Act (No 107 of 1998); Environmental Impact Assessment Regulations, 2014 (Government Notices R983, R984 and R985 in Government Gazette No. 38282 of 04 December 2014). Considering the nature and scale of the development activities triggered by the proposed project, it was required that a full Scoping & EIA process be conducted to provide sufficient information to the competent authority in order for them to make an informed decision regarding the approval or rejection of the Environmental Authorisation (EA) applied for.

The specific development activities in terms of the Environmental Impact Assessment Regulations, 2014 which are triggered by the proposed project are listed in the table below:

Table 2: Environmental Impact Assessment Regulations, 2014 listed activities triggered by the proposed project

Regulation	Activity	Description of trigger activity in proposed project
<p>GN. R. 983 Listing Notice 1</p>	<p>Activity 9</p> <p>The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water-</p> <p>(i) with an internal diameter of 0,36 metres or more;</p>	<p>A maximum 400 mm pipeline of approximately 1.3 km in length will be constructed to transport water from the extraction point in the Orange River and deposit it into the proposed settling dam on site.</p>
<p>GN. R. 983 Listing Notice 1</p>	<p>Activity 19</p> <p>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from –</p> <p>(i) a watercourse</p>	<p>The installation of the required additional pumping and piping infrastructure for the proposed project at the water extraction point in the Orange River could potentially require the clearance and removal/relocation of more than 5 m² of material from the bank of the river.</p>
<p>GN. R. 983 Listing Notice 1</p>	<p>Activity 24</p> <p>The development of-</p>	<p>Associated access roads will be established around the</p>

Regulation	Activity	Description of trigger activity in proposed project
	(ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;	proposed vineyard and between the vineyard blocks which will be wider than 8 m. These roads will all fall inside the proposed approximately 147.91 ha project footprint.
GN. R. 984 Listing Notice 2	<p>Activity 13</p> <p>The physical alteration of virgin soil to agriculture, or afforestation for the purposes of commercial tree, timber or wood production of 100 hectares or more.</p>	<p>Cultivation and establishment of a vineyard on approximately 100 ha of natural vegetation.</p> <p>The total size of the farm portion to be impacted by the vineyard, roads and associated infrastructure of the proposed project is approximately 147.91 ha.</p>
GN. R. 984 Listing Notice 2	<p>Activity 15</p> <p>The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for -</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p>	<p>Cultivation and establishment of a vineyard on approximately 100 ha of natural vegetation.</p> <p>The total size of the farm portion to be impacted by the vineyard, roads and associated infrastructure of the proposed project is approximately 147.91 ha.</p>
GN. R. 985 Listing Notice 3	<p>Activity 4</p> <p>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</p>	<p>The site falls inside a Critical Biodiversity Area and associated access roads will be established around the</p>

Regulation	Activity	Description of trigger activity in proposed project
	<p>(a) In Free State, Limpopo, Mpumalanga and Northern Cape provinces:</p> <p>(ii) Outside urban areas, in:</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans</p>	<p>proposed vineyard and between the vineyard blocks which will be wider than 8 m. These roads will all fall inside the proposed approximately 147.91 ha project footprint.</p>
<p>GN. R. 985 Listing Notice 3</p>	<p>Activity 12</p> <p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with the maintenance management plan.</p> <p>(d) In Northern Cape:</p> <p>(ii) Within critical biodiversity areas identified in bioregional plans</p>	<p>The site falls inside a Critical Biodiversity Area and cultivation and establishment of a vineyard on approximately 100 ha will occur.</p> <p>The total size of the farm portion to be impacted by the vineyard, roads and associated infrastructure of the proposed project is approximately 147.91 ha.</p>
<p>GN. R. 985 Listing Notice 3</p>	<p>Activity 14</p> <p>The development of –</p> <p>(xii) infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>(a) In Northern Cape</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional Plans</p> <p>Where such development occurs-</p> <p>(a) Within a water course</p>	<p>The site falls inside a Critical Biodiversity Area and the additional pumping and piping infrastructure required to be installed for the proposed project at the water extraction point in the Orange River will exceed 10 m² in size.</p>

Needs and Desirability of the project

Portion 10 of the Farm De Eelt no 26 is currently of little economic value due to low grazing capacity for livestock purposes. The portion is currently being used for small scale sheep grazing by the applicant only when necessary. Should the portion not be developed and efficiently utilised, the economic value will stay low. The development of a vineyard on the farm will significantly increase the agricultural potential of the property, which will in turn increase the economic value.

The population of the Siyathemba Municipality is approximately 17 497 with 9374 living below the minimum living level (MLL). This constitutes a percentage of 53.58 %. The average monthly (individual) income for the district is approximately R 740 which is less than the stipend received as a grant from social services departments. The municipal district is a poverty stricken area and sustainable job creation is therefore a high priority for the local economy.

Thirty un-skilled local individuals will be employed for the duration of the establishment period. The total annual financial income value including the planting and pruning processes will be approximately R 1.4 million for the employees over the establishment period.

The experience and skills involved in completing these vineyard establishment processes will provide valuable capacity building and skills development and transfer to approximately 400 people during this process.

A semi-skilled manager along with approximately 4 permanent employment positions can then be appointed on a permanent for the duration of the operational phase once the establishment phase has been completed.

Once the vineyard has been established and moves into the production phase, the harvesting period of 4 weeks will also provide an income to approximately 375 individuals which will assist with the harvesting and will be worth up to R 970 000 for that period on an annual basis.

The expected annual project yield will be approximately 45 tons of grapes/ha which could generate an annual project income project of up to R 8.1 million.

Construction and operational phase job creation (local employment) and sustainable capacity building (skills, experience and resources development) of this project will aid in immediate and continuous local

community upliftment and poverty alleviation and are therefore regarded as significant socio-economic benefits associated with the proposed project to motivate the need and desirability.

The outcomes of this project are also in line with the requirements and objectives of the National Development Plan; Northern Cape Provincial Spatial Development Framework; Northern Cape Provincial Growth and Development Strategy as well as the Pixley Ka Seme District Municipality and Siyathemba Local Municipality Integrated Development Plans.

Scoping phase alternatives considered

An alternative viable site location was not identified and evaluated for the project. The specific proposed location for the vineyard cultivation on Portion 10 of the Farm De Eelt No 26 is preferred as it is the only viable portion of land available in that vicinity which is procurable. The portion is also situated directly adjacent to the homestead of the project applicant which is on Portion 11 of the Farm De Eelt No 26. Water will lawfully be obtained for irrigation through extraction from the Orange River on this farm portion. This will therefore render the proposed project area viable from an economic and logistic perspective.

Two preliminary water pipeline routes and settling dam locations were determined on the proposed project footprint during the Scoping phase. There were no significant differences between the potentially anticipated impacts of the two alternatives and all identified impacts can be reduced to within acceptable levels with adequate mitigation measures. The final preferred pipeline route and settling dam location were then determined and are discussed in this report.

If the no-go option is decided upon and the proposed project is not implemented, the negative environmental impacts associated with the proposed project and its alternatives will be avoided. If the proposed project however does not go ahead, the local communities will forego the economic benefits which the project will have on the area such as immediate additional employment opportunities and revenue streams and most importantly, sustainable capacity building (skills, experience and resources development) for the future. The no-go option is therefore not recommended.

Description of the environment

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 (organisation of individuals in space that constitutes a stand of plants) and species composition 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.

In accordance with the Provincial Spatial Biodiversity Plan, the proposed project area also falls inside an area categorised 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 (AZa 4) while the ground truthing indicated that the area rather falls inside the adjacently located vegetation type (NKu 3) and it is then rather only categorised as a CBA 2.

The project area is directly adjacent to currently cultivated areas of significant size which separate the project area from the Orange River and impedes the local surface water catchment and drainage towards the river. The cultivation of the proposed project area would therefore not add significant negative impact to the local surface water catchment feeding the Orange River as it is already isolated. For these reasons, the transformation of the CBA 2 is not considered a fatal flaw for the proposed project.

No Red Data Listed plant species were encountered. Nationally and provincially protected plant species were however identified on the proposed project area. National and/or provincial permit applications must be submitted to the relevant departments for the relocation or removal/destruction of identified individuals of nationally and provincially protected and specially protected species. Cultivation can only commence once these permits have been obtained and identified individuals have been adequately removed and/or relocated.

Eighteen individuals of the nationally protected tree species *Boscia albitrunca* were identified on the proposed project area. The applicant will apply for a removal permit for approximately 7 individuals which will have to be removed due to operational requirements of the project. The remaining 11 individuals will be left in situ and conserved. 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. It can be a physical or hypothetical buffer. The applicant will also procure a significant number of *Boscia albitrunca* saplings which will be planted along the boundary fence of the vineyard as part of mitigation measures for the removal of other individuals

The proposed project area and vast surrounding natural land is very homogenous in terms of habitat and no significant faunal or avifaunal habitat variety exists. The proposed project area does not fall inside any Important Bird and Biodiversity Areas (IBA). The project area therefore provides no potentially important or unique faunal or avifaunal habitats which need to be conserved for the purposes of Red Data Listed terrestrial animal or bird species management. No Red Data Listed terrestrial animal or bird species were encountered during the site visit conducted by the specialist. Due to the mobility of most terrestrial animal and bird species, individuals simply tend to leave an area where disturbance is taking place and disperse to other similar, adequate areas.

This existing extraction point and pumping system in the Orange River will simply be slightly widened by no more than 5 m to accommodate the proposed vineyard irrigation requirements and additional infrastructure. The riparian vegetation immediately surrounding the existing extraction point is largely disturbed and mainly consists of pioneer and weed species such as *Asparagus sp.* Therefore, due to no conservationally significant vegetation species being present in the riparian area, the clearance process will not significantly impact on any important riparian vegetation species or ecological functions as this area is mostly disturbed already.

To conclude from an ecological perspective, no fatal flaws were identified which would merit rejection of the proposed project. All identified ecological impacts can be mitigated to an acceptable level.

Agriculture and soil suitability assessment

Pedological results indicate that 91 of the 149 ha is preferable for vineyard cultivation under drip and micro irrigation, with deep ripping of soft material needed as amelioration. Deep ripping of hard carbonate would also ameliorate the remaining 58 ha, but would cost more than the deep ripping of the initial 91 ha.

The entire proposed project area is therefore suitable for vineyard cultivation with the difference being the amount of soil preparation being required to suitably ameliorate the areas.

Heritage Impact Assessment

A relatively low density of weathered stone tools was recorded as isolated surface occurrences, but no above-ground evidence was found of fossils, fossil exposures or in situ Stone Age archaeological sites. There are also no indications of rock art, prehistoric structures, graves or historically significant structures older than 60 years within the proposed development footprint. Except for the lower valley fills where rock art localities are likely to occur on rocky outcrops, the study area is characterized by flat terrain and is not

considered paleontologically or archaeologically vulnerable. The survey area is assigned a rating of Generally Protected C (GP.C).

However, although considered unlikely, the potential occurrence of isolated and unmarked graves or intact subsurface archaeological finds not recorded during this survey can never be excluded. It is therefore instructed that work stops immediately in the event of potential exposure of any artefacts and that South African Heritage Resources Agency (SAHRA) and a qualified archaeologist are informed.

As far as the palaeontological and archaeological heritage is concerned, the proposed development may proceed within the footprint with no further heritage assessments required.

Public Participation Process

The PPP for the Scoping Report commenced on 12 September 2016 and concluded on 13 October 2016. All stakeholders and I & AP’s were adequately notified of the Public Participation Processes taking place as well as the availability of the relevant documents for comment as per Regulation 41 of the EIA Regulations, 2014. All comments received from the stakeholders and I & AP’s during the Scoping phase together with the subsequent responses provided were incorporated into the initial Public Participation Report which was submitted to the competent authority along with the Final Scoping Report.

See table below providing the summary of all comments and responses during the Scoping phase:

Table 3: Summary of all comments and responses received during the Scoping Report PPP

Commenting party	Comment received	Response provided
1. Department of Agriculture, Forestry and Fisheries	<p>See proof of comment letter under number 1 below.</p> <p>2.1. It is recommended that comments be obtained from Nature Conservation.</p> <p>2.2. Provide an indication of the condition of the riparian vegetation at the water extraction point in the Orange River.</p> <p>2.3. The Department supports the recommendations that <i>Boscia albitrunca</i> individuals identified on site be left intact as far as possible but where it cannot be avoided</p>	<p>2.1. A notification of the PPP on the project was sent to the Northern Cape Department of Environment and Nature Conservation on 11 September 2016 and a follow up reminder email requesting comment was sent on 28 September 2016.</p> <p>2.2. The riparian vegetation at the water extraction point has been discussed in the Final Scoping Report.</p> <p>2.3. Certain individuals of the protected species <i>Boscia albitrunca</i> will be left intact and</p>

	<p>and NFA license and Floral Permit must be applied for and obtained prior to disturbance.</p>	<p>conserved while a number of individuals will have to be removed due to operational requirements of the proposed project. Permits will be obtained for the individuals to be removed.</p>
<p>2. South African Heritage Resources Agency (SAHRA)</p>	<p>Comments from SAHRA were received on 11 October 2016. The final recommendations were as follow:</p> <p>The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit accepts and promotes the recommendations in the HIA. The recommendations in the HIA and the following additional conditions must be included in the Final EIA and Environmental Management Programme (EMPr):</p> <ul style="list-style-type: none"> • The final EIA and all appendices must be submitted to SAHRA and uploaded to the case file; • If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. 	<p>The following response was sent via email on 11 October 2016:</p> <p>Thanks a lot. I will review and get back to you if there are any question/uncertainties.</p> <p>Regards</p>

	<p>If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Itumeleng Masiteng/Mimi Seetelo 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required;</p> <ul style="list-style-type: none"> • Should the proposed development be granted an Environmental Authorisation, SAHRA must be informed and the decision letter must be uploaded to the case file. 	
<p>No further comments were received during the Public Participation Period.</p>		

The PPP for the EIA Report commenced on 11 November 2016 and concluded on 12 December 2016. All stakeholders and I & AP’s were adequately notified of the Public Participation Processes taking place as well as the availability of the relevant documents for comment as per Regulation 41 of the EIA Regulations, 2014. All comments received from the stakeholders and I & AP’s during the EIA phase together with the subsequent responses provided were incorporated into the Final Public Participation Report which has been submitted to the competent authority along with the Final EIA Report.

See table below providing the summary of all comments and responses during the EIA phase:

Table 4: Summary of all comments and responses received during the EIA Report PPP

Commenting party	Comment received	Response provided
1. Department of Water and Sanitation	See the pre-application consulting form in Appendix C.	See the pre-application consulting form in Appendix C.
2. South African Heritage Resources Agency (SAHRA)	<p>The South African Heritage Resources Agency (SAHRA) notes the submission of the Draft Environmental Impact Assessment (EIA) and appendices for the proposed cultivation of 100 ha for the establishment of a vineyard and associated pipeline on Portion 10 & 11 of the farm De Eelt, near Prieska, Northern Cape Province. It is further noted that the Final Comment issued by SAHRA on the 11/10/2016 has been incorporated into the dEIA.</p> <p>As per the Final Comment, the Final EIA and appendices must be submitted to the case application on the South African Heritage Resources Information System (SAHRIS) upon submission to the Department of Environmental Affairs (DEA). Should the Environmental Authorisation for the development be granted, SAHRA must be notified and the relevant documents uploaded to</p>	<p>Thank you very much Natasha.</p> <p>This final SAHRA comments document will also be included into the Final EAI Report for consideration by the competent authority.</p> <p>Regards</p>

	the case file on SAHRIS.	
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It is concluded that the level and time period of advertising, notification and additional mechanisms and communication incorporated into this Public Participation Process on both the Scoping Report and Environmental Impact Report, to inform surrounding land users, stakeholders, I & AP’s and identified organs of state, was adequate for providing sufficient opportunity for participation and engagement.

No significant comments were received opposing the project or which would potentially jeopardise the authorisation. All comments received were adequately addressed and queries could be mitigated to within acceptable levels.

Environmental Impact Assessment

The following potential environmental impacts and cumulative impacts (both positive and negative) were identified which the construction as well as operational phases of the proposed project will have on the surrounding environment. Mitigation measures were provided by specialist in order to reduce the impacts’ significances to within acceptable levels.

Table 5: Environmental Risk and Significance Ratings for the Construction Phase

	Vineyard together with the preferred pipeline and water settling dam	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
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 (70)	-
	Vineyard together with the preferred pipeline and water settling dam	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
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 in order to ensure that no restricted activity is unlawfully carried out on these individuals.</p> <p>It is however recommended that the project rather attempts to keep and protect some of the individual trees on site. The applicant will apply for a removal permit for approximately 7 individuals which will have to be removed due to operational requirements of the project. The remaining 11 individuals will be left in situ and conserved. This will however only be finalised during the EIA phase. 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. It can be a physical or hypothetical buffer.</p>	-

	The applicant will also procure a significant number of <i>Boscia albitrunca</i> saplings which will be planted along the boundary fence of the vineyard as part of mitigation measures for the removal of other individuals.	
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (34)	-
	Vineyard together with the preferred pipeline and water settling dam	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
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.	-
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (32)	-

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Alien and Invasive species establishment	The proposed development will not take place and as such this impact will not occur
Cumulative impact prior to mitigation:	Low	-
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (36)	-
Proposed mitigation:	Continual monitoring and adequate active management (chemical or physical removal) of undesired alien and invasive species must take place during the construction phase in order to prevent significant establishment and spreading.	-
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (24)	-
	Vineyard together with the preferred pipeline and water settling dam	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
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)	-
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Dust generation and emissions	The proposed development will not take place and as such this impact will not occur
Cumulative impact prior to mitigation:	Low	-
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (33)	-
Proposed mitigation:	Dust Management measures must be implemented specifically during the construction phase in order to manage and minimize undesired dust emissions.	-
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (16)	-
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Damage or destruction of archaeological and palaeontological heritage	The proposed development will not take place and as such this impact will not occur
Cumulative impact prior to mitigation:	Low	-
Significance rating of impact	Low (27)	-

<p>prior to mitigation (Low, Medium, Medium-High, High, or Very-High)</p>		
<p>Proposed mitigation:</p>	<p>Restrict all cultivation work to the proposed project footprint as this was the only area assessed during the site inspection.</p> <p>If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Itumeleng Masiteng/Mimi Seetelo 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required.</p>	-
<p>Cumulative impact post mitigation:</p>	<p>Low</p>	-
<p>Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)</p>	<p>Low (18)</p>	-
	<p>Vineyard together with the preferred pipeline and water settling dam</p>	<p>No-Go Alternative</p>
<p>Identified Environmental Impacts</p>	<p>Job creation and capacity building (skills, experience and resources development)</p>	<p>The proposed development will not take place and as such this impact will not occur</p>
<p>Cumulative impact prior to mitigation:</p>	<p>Positive</p>	-

Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive (+ 56)	-
Proposed mitigation:	None	-
Cumulative impact post mitigation:	Positive	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive (+ 56)	-

Table 6: Environmental Risk and Significance Ratings for the Operational Phase

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued destruction/transformation of a Critical Biodiversity Area	The proposed development will not take place and as such this impact will not occur
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:	Ensure no unnecessary expansion of the project footprint occurs.	
Cumulative impact post mitigation:	Medium	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (70)	-

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued destruction/damage to nationally protected tree species individuals	The proposed development will not take place and as such this impact will not occur
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>Once the protected individuals identified for preservation have been adequately buffered, it is important that the buffer be sufficiently maintained on a continual basis to ensure its integrity and functionality. It can be a physical or hypothetical buffer.</p> <p>Complete a training and awareness intervention with the employees and any new/additional employees in order to inform them of the protected tree individuals as well as the reasoning behind the protection.</p>	-
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (34)	-
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued destruction/damage to provincially protected species individuals	The proposed development will not take place and as such this impact will not occur
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:	Ensure all identified provincially protected species individuals are suitably relocated with the assistance of a specialist prior to the commencement of any cultivation.	-																					
Cumulative impact post mitigation:	Low	-																					
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (32)	-																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 35%; text-align: center;">Vineyard together with the preferred pipeline and water settling dam</th> <th style="width: 35%; text-align: center;">No-Go Alternative</th> </tr> </thead> <tbody> <tr> <td>Identified Environmental Impacts</td> <td>Continued impeding of a water catchment</td> <td>The proposed development will not take place and as such this impact will not occur</td> </tr> <tr> <td>Cumulative impact prior to mitigation:</td> <td>Medium</td> <td>-</td> </tr> <tr> <td>Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)</td> <td>Medium (51)</td> <td>-</td> </tr> <tr> <td>Proposed mitigation:</td> <td>Restrict all cultivation work to the proposed project footprint and prevent any unnecessary increase of the footprint size due to indiscriminate disturbance.</td> <td>-</td> </tr> <tr> <td>Cumulative impact post mitigation:</td> <td>Medium</td> <td>-</td> </tr> <tr> <td>Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)</td> <td>Medium (51)</td> <td>-</td> </tr> </tbody> </table>				Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative	Identified Environmental Impacts	Continued impeding of a water catchment	The proposed development will not take place and as such this impact will not occur	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)	-
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative																					
Identified Environmental Impacts	Continued impeding of a water catchment	The proposed development will not take place and as such this impact will not occur																					
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)	-																					

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Soil erosion	The proposed development will not take place and as such this impact will not occur
Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (39)	-
Proposed mitigation:	Ensure adequate erosion control measures are implemented to reduce the risk of soil erosion during the operational phase.	-
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (33)	-

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued dust generation and emissions	The proposed development will not take place and as such this impact will not occur
Probability of occurrence:	Medium probability (3)	-
Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (33)	-
Proposed mitigation:	Continued Dust Management measures must be implemented in order to manage and minimize undesired dust emissions.	-

Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (16)	-
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued damage or destruction of archaeological and palaeontological heritage	The proposed development will not take place and as such this impact will not occur
Cumulative impact prior to mitigation:	Low	-
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (27)	-
Proposed mitigation:	<p>Restrict all cultivation work to the proposed project footprint as this was the only area assessed during the site inspection.</p> <p>If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Itumeleng Masiteng/Mimi Seetelo 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required.</p>	-

Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (18)	-
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued job creation and capacity building (skills, experience and resources development)	The proposed development will not take place and as such this impact will not occur
Cumulative impact prior to mitigation:	Positive	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive (+ 56)	-
Proposed mitigation:	None	-
Cumulative impact post mitigation:	Positive	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive (+ 56)	-

Preferred alternative concluding statement

In identifying, evaluating and comparing impacts associated with the proposed vineyard establishment and considered alternatives as well as financial and logistic feasibility, it has been concluded that the preferred pipeline route and water settling dam location can be utilised for the proposed project. The positions of the vineyard, pipeline route and water settling dam do not pose significant environmental risk which warrants refusal of the authorisation and will not result in any unacceptable environmental impacts which cannot be adequately mitigated to within acceptable levels.

Professional opinion of the EAP

After careful consideration of the findings and outcomes during the EIA phase, Enviroworks is of the opinion that the development of the proposed vineyard along with the associated pipeline and water settling dam can be undertaken without unacceptable or unmanageably significant negative impacts or fatal flaws on the environment, should the prescribed mitigation measures be adequately implemented. Based on all information that was captured in this report, the proposed development will not lead to unacceptable impacts or fatal flaws and should be considered plausible in the framework of NEMA. The majority of the anticipated impacts have low to medium ratings while the impacts determined to have medium-high to high ratings can be suitably reduced to acceptable levels by the implementation of the mitigation measures identified and recommended by the specialists.

The socio-economic benefits of the proposed project towards the local communities far outweigh the current socio-economic and agricultural potential of the property. These benefits also outweigh the significance of identified potential environmental impacts after mitigation implementation.

Conclusion

This EIA process has adequately assessed the potential impacts associated with the proposed vineyard development and determined based on the outcomes of a multitude of contributing information that the proposed development would not result in any unacceptable environmental impacts or fatal flaws and as such may be authorised.

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Appendix G – I & AP registration form

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Appendix I – Photo report

Appendix J – EMPr

ABBREVIATIONS

BA	Basic Assessment
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983)
CEL	Cost Estimate Letter
CIA	Cumulative Impact Assessment
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CPA	Communal Property Association
CRR	Comments and Responses Report
CSP	Concentrated Solar Power
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DENC	Department of Environment and Nature Conservation
DM	District Municipality
DMR	Department of Mineral Resources
DoE	Department of Energy
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
FSR	Final Scoping Report
Ha	Hectares
HTF	Heat Transfer Fluid
I & AP's	Interested and Affected Parties
IBA	Important Bird and Biodiversity Areas
IDP	Integrated Development Plan
IPP	Independent Power Producer
kV	Kilovolt
LED	Local Economic Development
LM	Local Municipality

LSA	Late Stone Age
MAP	Mean Annual Precipitation
MASL	Metres Above Sea Level
MLL	Minimum living level
MSA	Middle Stone Age
MVA	Megavolt ampere
MW	Megawatt
NCPSDF	Northern Cape Provincial Spatial Development Framework
NDP	National Development Plan
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act (Act 10 of 2004)
NEMWA	National Environmental Management: Waste Act (Act 59 of 2008)
NFA	National Forests Act (Act 84 of 1998)
NHRA	National Heritage Resources Act (Act 25 of 1999)
NIP	National Infrastructure Plan
NWA	National Water Act (Act 36 of 1998)
PFS	Pre-feasibility Study
PPP	Public Participation Process
PUC	Point of Utility Connection
PoSEIA	Plan of Study for Environmental Impact Assessment
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework
SIA	Social Impact Assessment
SIP	Strategic Integrated Project
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change
VIA	Visual Impact Assessment
WRYCM	Water Resource Yield Computer Model
WULA	Water Use Licence Application

REPORT LAYOUT

The table below summarises the content layout of this report.

Chapter	Chapter Heading	Content Summary
1	Introduction	Provides a brief background/overview of the proposed project and the importance of agriculture in South Africa. It also briefly discusses the project alternatives and project applicant information
2	Environmental Assessment Practitioner	Provides details and expertise of the EAP undertaking this EIA process, as well as information on Public Participation officer and internal reviewer
3	Relevant Environmental Legislation and Guidelines	Briefly explains the environmental legislation applicable to the proposed project on a national, provincial and district/local level. It also provides an overview of the guideline documents that are relevant to this EIA process and discusses the listed activities applicable to this proposed project as per the NEMA: EIA Regulations, 2014.
4	Project location and description	Describes the project location, a detailed description of the proposed project, as well as the relevant site infrastructure and services.
5	Need and Desirability of the Project	Explains the need and desirability of the project in line with the associated local and provincial advantages.
6	Consideration of Alternatives	Describes those alternatives that have been considered (i.e. identified and investigated), and indicates which alternatives are deemed to be “feasible” and “reasonable”. Also provide a comparative assessment of the potential impacts (i.e. advantages and disadvantages).
7	Description of the Environment	Describes the biophysical, social, economic and cultural aspects of the existing environment.
8	Public Participation Process	Explains the public participation process that is being undertaken as part of this EIA process.
9	Assumptions, Uncertainties and Gaps in Knowledge	Provides the assumptions, uncertainties and gaps in knowledge associated with this EIA process.
10	Environmental	Provides a summary of the environmental impacts identified during scoping, describes the project phases considered as part of this

	Impact Assessment	impact assessment, describes similar activities in the area (for cumulative assessment purposes), describes the impact assessment methodology applied, and assesses the potential impacts associated with the proposed project, without and with mitigation (including alternatives and cumulative impacts).
11	EAP's Professional Opinion and Impact Assessment Statement	Provides the EAP's professional opinion on this proposed project, an Environmental Impact Statement, as well as a conclusion.
12	Conclusion	Provides a final conclusion on the project
13	References	Lists all references referred to in this EIA Report

1. INTRODUCTION

The agricultural industry forms a significant part of the annual GDP of the Republic of South Africa. Agriculture primarily contributes in the form of national food production and security through import and export processes as well as primary and secondary employment creation.

The company Mahoebe Eiendomme (Pty) Ltd has recently commenced with the process of procuring Portion 10 of the Farm De Eelt no 26 near the town of Prieska in the Northern Cape Province (approximately 147.91 ha). The reason for the intended procurement is for establishing a 100 ha vineyard on this portion of natural previously uncultivated land. The grapes produced will be used for the local production and distribution of wine. It is anticipated that 45 tons/ha can be produced on the proposed project area which will amount to a total of 4500 tons/annum.

The completion of the farm portion procurement process is however dependent on a number of factors. The major conditional factors are 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 (EA) from the competent authority. The Northern Cape Department of Environment and Nature Conservation has in this case been identified as the competent authority.

An alternative viable site location was not identified and evaluated for the project. The specific proposed location for the vineyard cultivation is preferred as it is the only viable portion of land available in that vicinity which is procurable. Procurements arrangements have been made between the applicant and the current land owner. The portion is also situated directly adjacent to the homestead of the intending developer/project applicant which is on Portion 11 of the Farm De Eelt no 26 from where water will be lawfully obtained for irrigation through extraction from the Orange River. This will render the project viable from an economic and logistic perspective.

In accordance with the National Environmental Management Act (Act 107 of 1998); Environmental Impact Assessment Regulations of 2014, a full Scoping & Environmental Impact Assessment (EIA) processes is required for the proposed project in order to obtain the necessary environmental authorisation from the competent authority. Enviroworks was appointed by the owner of Mahoebe Eiendomme (Pty) Ltd to act as the independent Environmental Assessment Practitioner (EAP) to facilitate the entire environmental authorisation application process and complete the full Scoping & EIA processes for the construction and operational phases of the proposed project.

The following report aims to give context to the proposed development through providing a comprehensive description of the envisaged activities and relevant infrastructure; the identification of significant environmental impacts associated to the proposed project; identification of appropriate alternatives and mitigation measures for reduction of undesired impacts; and communication of results in a clear and concise manner to the competent authority and other relevant parties.

1.1 PROJECT APPLICANT INFORMATION

Table 7: Project applicant information

Company/entity name:	Mahoebe Eiendomme (Pty) Ltd
Registration number:	2001/014186/07 (see Appendix F for documentation)
Physical address:	Farm Mahoebe, Prieska, Northern Cape Province
Postal address:	PO Box 410, Prieska 8940
Contact person:	Johannes Hendrik Coetzee
ID number:	541104 5039 082
Designation:	Owner
Contact number:	072 403 8717
E-mail address:	mahoebe2@gmail.com

2. ENVIRONMENTAL ASSESSMENT PRACTITIONER

2.1 DETAILS OF THE EAP

Envioworks was appointed by Mahoebe Eiendomme (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to conduct a full Scoping & EIA process for the proposed project.

Envioworks was established in November 2002. Although the formal establishment of the company took place in 2002, it is backed by more than 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 Envioworks 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. Through an integration of skills and expertise, it is envisioned that Envioworks will deliver exceptional, competitive services for task execution and to meet deliverables. Envioworks through years of experience and industry presence assures the seamless execution and roll out of tasks to achieve projected results on time. Our past experience on vineyard cultivation projects further benefits our understanding of the required and associated processes and the impacts thereof.

Table 8: Details of the EAP

Company/entity name:	Rikus Lamprecht (on behalf of Envioworks)
Physical address:	5 Walter Sisulu Street; Universitas; Bloemfontein; 9301
Postal address:	PO Box X 01; Suite 116; Brandhof; 9324
Contact person:	Rikus Lamprecht
Designation:	Senior Environmental Consultant
Contact number:	072 230 9598
E-mail address:	rikus@envioworks.co.za
Qualifications:	M.Env.Sci Ecological Remediation and Sustainable Utilisation

2.2 EXPERTISE OF THE EAP REPRESENTATIVE

Rikus Lamprecht was employed by Enviroworks in 2016 as a Senior Environmental Consultant. Rikus was previously employed by Fraser Alexander Tailings from 2011 to 2015 as an Environmental Contracts Manager where he was responsible for the technical and operational management of all Fraser Alexander Tailings' mining environmental rehabilitation work. He was responsible for all facets of project management as well as implementation of rehabilitation and environmental strategies by planning activities, organizing physical, financial and human resources, delegating task responsibilities, leading people, controlling risks and providing technical support.

Rikus holds a B.Sc Botany and Zoology as well as an M.Env.Sci Ecological Remediation and Sustainable Utilisation degree. His environmental management knowledge and practical experience as well as his enthusiasm, disciplined goal-driven mind-set and high personal standards ensures high quality outputs during the implementation and completion of any environmental projects.

Environmental Impact Assessment Experience

- Management of the Environmental Authorisation and EIA processes of the proposed Meerkat Hydropower Facility Project in the Orange River in the Northern Cape Province.
- Management of the Environmental Authorisation and EIA processes of the proposed N8 Realignment Project in the Free State Province.
- Conducting of Environmental Impact Assessment Report for the proposed cultivation of a 500 ha Vineyard for CarpeDiem in the Northern Cape
- Management of the 24G Environmental Authorisation and EIA processes of the Mooihoekdam Project in the Free State Province.
- Management of the Environmental Authorisation and EIA processes of the proposed Metsimatala CSP facility in the Northern Cape Province.
- Technical review of three Scoping Reports on behalf of the Northern Free State Mineral Resources Stakeholders Forum, Free State Agriculture and VKB Agriculture for three applications for exploration rights for hydrocarbon exploration in the Free State Province

Experience as an Environmental Control Officer

- Completed an environmental site audit as an Environmental Control Officer (ECO) for the upgrade and construction of bridges on the N14 highway between Upington and Kuruman, Northern Cape Province.

- Completed an environmental site audit as an Environmental Control Officer (ECO) for the Neotel Optic Fibre line development near Nelspruit, Mpumalanga Province.

Permits and licencing

- Conducting of Waste License and Air Emissions License applications for the 24G process of Clinvet International (Pty) Ltd, Free State Province.

Specialist report completion

- Completion of a specialist vegetation study and report for the proposed Olifantshoek Bulk Water Supply Project in the Northern Cape Province.
- Completion of a specialist vegetation study and report for the proposed N8 gravel quarries in the Free State Province.
- Completion of a specialist wetland study and report for the Lafarge Lichtenburg cement production facility and quarry in the North West Province.
- Completion of a specialist vegetation study and report for the proposed Nooitgedacht Retirement Estate development near Nelspruit in the Mpumalanga Province.
- Completion of a specialist vegetation study and report for the proposed Ventersburg Bulk Water Supply Project in the Free State Province.

See Appendix A for Curriculum Vitae.

2.3 PUBLIC PARTICIPATION OFFICER

The entire Public Participation Process for the Scoping as well as EIA phases will also be conducted and coordinated by Rikus Lamprecht.

See Appendix A for Curriculum Vitae.

2.4 DETAILS OF THE INTERNAL REVIEWERS

Elbi Bredenkamp started her career as a case officer and served as an environmental specialist with the Department of Minerals and Energy gaining extensive knowledge of mining impact and attributing management mechanisms.

From 1997 to 2002 Elbi further developed her knowledge in the environmental field as a case officer working for the Department of Tourism, Environment and Economic Affairs, Free State (DTEEA-FS). Here Elbi was

responsible for reviewing environmental impact assessments and developing administrative processes & organizational structures within the department. Through ongoing dealings with Environmental Legislation Elbi familiarized herself with the National Environment Management Act (Act 107 of 1998 “NEMA”) and NEMA EIA Regulations.

In 2002 Elbi established Enviroworks. As the Director of the company, Elbi gained extensive experience in the conducting of Environmental Impact Assessments, Risk Analysis, Auditing and Monitoring and Compiling of Environmental Management Plans for numerous projects. A familiarity with departmental mechanisms and functioning aided towards the success of these projects.

Designation: Company Director
Contact number: 082 562 4134
Email address: elbi@enviroworks.co.za

JOHAN BOTES

Senior Environmental Specialist and General Manager

Relevant

Qualifications

Baccalaureus Artium Honores (B.A. Hons.) in Geography: University of the Free State (2013)

Baccalaureus Artium (B.A.) in Geography and Environmental Management University of the Free State (2012)

Professional Registration

IAIA Registration Number: 4043

AIS Registration Number: 1032

Work Experience

June 2014 – Present Environmental Specialist at Enviroworks

Dec 2013 – May 2014 Environmental Control Officer at Savannah Environmental

Dec 2012 – March 2013 Environmental Consultant Intern at Enviroworks

Key Project Experience

Project Management Experience

- Conducting of Environmental Impact Assessment Report for the proposed 45MW Meerkat Hydro Power Facility in the Northern Cape.
- Conducting of Environmental Impact Assessment Report for the proposed 150MW PV Metsimatala Solar Power Project in the Northern Cape.
- Conducting of Basic Assessment processes for the proposed Optic fibre cable installation in and around the town of Lephalale on behalf of NEOTEL.
- Conducting of Basic Assessment processes for the proposed Optic fibre cable installation in and around the town of Thohoyandou on behalf of NEOTEL.
- Conducting of Basic Assessment processes for the proposed Optic fibre cable installation in and around the town of Groblersdal on behalf of NEOTEL.
- Conducting of Basic Assessment processes for the proposed upgrading and widening of Nathen Bridge in Blomfontein on behalf of the Mangaung Metropolitan Municipality.

- Conducting of Basic Assessment processes for the proposed construction of two new roads and the upgrading of one existing road in Botshabeo on behalf of the Mangaung Metropolitan Municipality.

Environmental Impact Assessment Experience

- Conducting of Environmental Impact Assessment Report for the proposed 180 hectare Cecilia Park Residential development in Bloemfontein on behalf of Mzansi Africa Civils Engineering.
- Conducting of Environmental Impact Assessment Report for the proposed construction of a steel galvanizing plant in Botshebelo, Free State Province on behalf of Bombenero Investments.
- Conducting of Environmental Impact Assessment Report for the proposed opening of 3 borrow pits and 1 gravel quarry around the Ladybrand area, Free State Province.

Basic Assessment Experience

- Conducting of Basic Assessment report for the proposed Fuel Zone Petroleum Depot in Welkom, Free State Province.
- Conducting of Section 24 G Rectification application for the already established residential development on the farm Proteahof 217, Delportshoop, Northern Cape.
- Conducting of Basic Assessment processes for the proposed opening of 9 borrow pits around the Ladybrand area, Free State Province.
- Conducting of Basic Assessment processes for the proposed Optic fibre cable installation between Prince Albert and Oudtshoorn on behalf of NEOTEL.
- Conducting of Basic Assessment report for the proposed Nooitgedach Retirement Village in White River, Mpumalanga.
- Conducting of Basic Assessment processes for the proposed construction of 19 signalling masts in the railway reserves of Cape Town and Stellenbosch on behalf of the Passenger Rail Association of South Africa (PRASA).
- Conducting of Basic Assessment processes for the proposed construction of 1 signalling mast in the railway reserve at St James Station, Cape Town on behalf of the Passenger Rail Association of South Africa (PRASA).
- Conducting of Basic Assessment processes for the proposed construction of 1 signalling mast in the railway reserve at Clovelly Station, Cape Town on behalf of the Passenger Rail Association of South Africa (PRASA).
- Conducting of Basic Assessment processes for the proposed upgrading and widening of Nathen Bridge in Bloemfontein on behalf of the Mangaung Metropolitan Municipality.

- Conducting of Basic Assessment processes for the proposed construction of two new roads and the upgrading of one existing road in Botshabeo on behalf of the Mangaung Metropolitan Municipality.

Experience as an Environmental Control Officer

- Environmental Control Officer (ECO) for the Mission Point Sand Mining facility near Sasolburg, Free State Province.
- Environmental Control Officer (ECO) for the Rooikraal Truck stop facility near Vrede, Free State Province.
- Environmental Control Officer (ECO) for the widening of bridge structures over the Orange River for BVi on behalf of SANRAL, near Hopetown, Northern Cape
- Environmental Control Officer (ECO) for the construction of a 2.7 km Bus route, Thaba Nchu, Free State Province.
- Environmental as an Environmental Control Officer (ECO) for the installation of optic fibre cables in and around the town of Nelspruit on behalf of NEOTEL.
- Environmental as an Environmental Control Officer (ECO) for the construction of the Khi Solar One Concentrated Solar Power facility near Upington.
- Environmental as an Environmental Control Officer (ECO) for the construction of a 132kV Substation in Bloemfontein for Dihlase Consulting Engineers.
- Environmental as an Environmental Control Officer (ECO) for the installation of optic fibre cables in and around the town of Thohoyandou on behalf of NEOTEL.
- Environmental as an Environmental Control Officer (ECO) for the installation of optic fibre cables in and around the town of Lephaale on behalf of NEOTEL.
- Environmental as an Environmental Control Officer (ECO) for the installation of optic fibre cables in and around the town of Grobersdal on behalf of NEOTEL.
- Environmental as an Environmental Control Officer (ECO) for the installation of optic fibre cables in and around the town of Kathu on behalf of NEOTEL.

Experience in Permits and Licencing

- Water Use Licence Application for the installation of carbon optic fibre cable within 32 metres of a watercourse on behalf of NEOTEL.
- Water Use Licence Application (General Authorisation) for the installation of carbon optic fibre cable within 500 metres of a wetland on behalf of NEOTEL.
- Waste Management Licence for the storage and reuse of hazardous waste water for the Bombenero Galvanizing Steel Facility in Botshabelo, Free State Province on behalf of Bombenero Investments.

Other Experience

- Annual Environmental Audit in Terms of Section 34 of Government Notice 982 for the Mission Point Mining near Sasolburg, Free State Province.
- Calculating Financial Provisions (Quantum Calculations) for the Mission Point Mining near Sasolburg, Free State Province.
- Compilation of construction and operational phase Waste Management Plan for the proposed Cecilia Park Residential Development, Bloemfontein, Free State Province.
- Conducting of Environmental Risk Assessment for the proposed establishment of a Diesel Depot in Welkom, Free State Province.
- Compiling Environmental Risk Assessment for the proposed optic fibre cable installation in and around the town of Groblersdal on behalf of NEOTEL.
- Compiling Environmental Risk Assessment for the proposed optic fibre cable installation in and around the town of Lephalale on behalf of NEOTEL.
- Compiling Environmental Risk Assessment for the proposed optic fibre cable installation in and around the town of Thohoyandou on behalf of NEOTEL.
- Compiling Environmental Risk Assessment for the proposed optic fibre cable installation in and around the town of Nelspruit on behalf of NEOTEL.
- Compiling Environmental Risk Assessment for the proposed optic fibre cable installation in and around the town of Kathu on behalf of NEOTEL.
- Compiling Environmental Risk Assessment for the proposed optic fibre cable installation in and around the town of Groblersdal on behalf of NEOTEL.
- Training of construction personnel and environmental advisory services for personnel of the Khi Solar One Concentrated Solar Power facility near Upington.
- GIS mapping and technical support for various projects, including the drawing of locality and sensitivity maps.
- Public participation processes and assistance to several projects.
- Compilation of Bitumen Waste Report for Penny Farthing Engineering, Venterstad, Eastern Cape.

Designation: Office Manager

Contact number: 082 459 8206

Email address: johan@enviroworks.co.za

See Appendix A for Curriculum Vitae.

3. RELEVANT ENVIRONMENTAL LEGISLATION AND GUIDELINES

3.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA (ACT 108 OF 1996)

Section 24 of the Constitution of South Africa provides the main national legislative obligation towards sustainable environmental management and development. This section forms the foundation of all other subsequent environmental legislation and governance in South Africa. Section 24 states the following:

every person shall have the right -

- (a) to an environment that is not harmful to their health nor well-being; and
- (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures, that -
 - (i) prevent pollution and ecological degradation;
 - (ii) promote conservation; and
 - (i) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

The following sections provide an overview of the relevant environmental legislation and guideline documents applicable to the proposed project.

3.2 OTHER RELEVANT ENVIRONMENTAL LEGISLATION

Aside from NEMA, other key environmental legislation, policies, plans and guidelines will also be triggered by the proposed project, whilst others shall provide strategic goals and priorities for different resources and sectors.

The environmental legislation relevant to the proposed project and which has been taken into account in the preparation of the Final Scoping Report is summarised below:

3.2.1 National

3.2.1.1 National Environmental Management Act (Act 107 of 1998) (NEMA)

NEMA is the principle/framework legislation governing EIA and subsequent EA processes under the authority of the National Department of Environmental Affairs.

NEMA makes provisions for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment; institutions that will promote co-operative governance;

procedures for co-ordinating environmental functions exercised by Organs of State and to provide for matters connected therewith.

Section 2 of the Act establishes a set of principles, which apply to the activities of all Organs of State that may significantly affect the environment. These include the following:

- Development must be sustainable;
- Pollution must be avoided or minimised and remedied;
- Waste must be avoided or minimised, reused or recycled;
- Negative impacts must be minimised and positive impacts enhanced; and
- Responsibility for the environmental health and safety consequences of a policy, project, product or service exists throughout its entire life cycle.

These principles are taken into consideration when a Governmental Department needs to exercise its powers for example, during the processes of granting permits or Environmental Authorisations or the enforcement of existing legislation or conditions of approval.

Section 23 of NEMA furthermore provides for general objectives of Integrated Environmental Management. In alignment with these objectives, the potential impacts on the biophysical and socio-economic environments are identified and evaluated. These potential environmental impacts have been assessed during the Scoping Report phase and mitigation measures are provided where relevant.

The subsequent Environmental Impact Assessment Regulations, 2014 (Government Notices R983, R984 and R985 in Government Gazette No. 38282 of 04 December 2014), which are also referred to as Listing Notices 1, 2 and 3 respectively, list development activities which will trigger the necessity to conduct either a Basic Assessment or a full Scoping & EIA process prior to EA being obtained for a proposed project. Listing notices 1 & 3 activities require only a Basic Assessment to be conducted while Listing notice 2 activities trigger the requirement for a full Scoping & EIA process to be conducted.

Considering the nature and scale of the development activities triggered by the proposed project, it was required that a full Scoping & EIA process be conducted to provide sufficient information to the competent authority in order for them to make an informed decision regarding the approval or rejection of the EA applied for.

Only once the EA is granted and the required supporting permits have been issued, may the applicant lawfully commence with the proposed project. The Scoping & EIA process is therefore a critical component in the feasibility and planning stage of any proposed project.

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

NEMBA aims to provide for the management and conservation of the country's rich biodiversity within the framework of NEMA. It aids in the protection of species and ecosystems which warrant national protection and provides for the sustainable usage of the country's indigenous biological resources.

NEMBA and its Regulations was therefore utilised for determining the ecological/biodiversity significance, value and subsequently the adequate management of the proposed project area with regards to ecosystems, habitats and individual species.

The Department of Environmental Affairs is responsible for the implementation and overseeing of this legislation along with the South African National Biodiversity Institute (SANBI).

3.2.1.3 National Forests Act (Act 84 of 1998) (NFA)

The aim of the NFA is to promote the sustainable usage, management and development of forests for the benefit of all in South Africa. The Act also makes special provisions for the protection of specific forests and tree species which duly require formal protection in order to ensure their prolonged existence.

The National Forests Act was therefore utilised to determine the potential presence of any protected forests or tree species in the proposed project area in order to ensure that the correct processes are followed for the approval of any listed activities for which a permit may be necessary regarding such forests or species, should it be required.

Permit applications in terms of the National Forests Act are lodged with the Department of Agriculture, Forestry and Fisheries.

3.2.1.4 Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA)

CARA aims to provide for the protection and control over utilisation of the country's agricultural resources in order to promote conservation of soils, water and natural vegetation as well as the combatting of weeds and invader plants. Sustainable utilisation is a key objective.

CARA was therefore used for determining the agricultural significance, value and subsequently the adequate management of the proposed project area.

It is overseen by The Department of Agriculture, Land Reform and Rural Development in the Northern Cape Province.

3.2.1.5 National Water Act (Act 36 of 1998) (NWA)

The NWA aims to ensure sustainable use of water through the protection of the quality of water resources for the benefit of all water users. Its principal focus is the rectification and equitable allocation and use of the scarce and disproportionately distributed water resources of South Africa.

The property of the proposed project has standing water rights which allows the owner to extract from the Orange River. Section 21 of NWA defines the types of water uses which require a Water Use License to be applied for. The Act stipulates that a Water Use License Application must be submitted if a development takes place within 500 m of a natural watercourse. The relevance of this section of the Act to the specific project will be determined during the Environmental Impact Assessment phase.

The Department of Water and Sanitation is responsible for the implementation and overseeing of this legislation and is also the responsible authority for the issuing of permits for water use.

3.2.1.6 National Heritage Resources Act (Act 25 of 1999) (NHRA)

The NHRA aims to provide for the integrated and interactive management and conservation of the national heritage resources in South Africa so that they may be bequeathed for future generations.

Section 38 lists categorised development processes which require the South African Heritage Resources Agency (SAHRA) to be notified and furnished with an archaeological and palaeontological study of a proposed project area in order to obtain project authorisation. The following development processes are triggered during the construction and operational phases of the proposed project:

(1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as -

(c) any development or other activity which will change the character of a site -

(i) exceeding 5 000m² in extent; or

The South African Heritage Resources Agency (SAHRA) has a mandate, in terms of the NHRA, to enforce the conditions of the NHRA, and hence oversees the management of heritage resources together with provincial heritage agencies.

3.2.1.7 National Development Plan – 2030 (NDP)

The executive summary of the National Development Plan (NDP) initiates with the following paragraph, *“The National Development Plan aims to eliminate poverty and reduce inequality by 2030. South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society.”*

Chapter 6 of the NDP specifically discusses the role and importance of commercial agriculture in the success of the country’s economy and reaching the objectives of the NDP. It discusses the potential associated with the expansion of irrigated land towards food security and also job creation and capacity building (skills development and experience). The opportunity for the expansion of specifically grape production in the Orange River region is also highlighted as having significant potential benefits.

The development of the proposed vineyard could therefore be beneficial in terms of the goals/objectives described with regards to agriculture in the NDP.

3.2.2 Provincial

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

In addition to the NFA, the Northern Cape Nature Conservation Act also makes provision for the protection and sustainable utilisation of wild animals, aquatic biota and plants on a provincial scale in the Northern Cape Province. It is therefore used in conjunction with the NFA to determine the ecological/biodiversity significance, value and subsequent management of the proposed project area.

The Northern Cape Nature Conservation Act was utilised to determine the potential presence of any provincially protected or specially protected species in the proposed project area in order to ensure that the correct processes are followed for the approval of any listed activities for which a permit may be necessary regarding such species, should it be required.

Permit applications in terms of the Northern Cape Nature Conservation Act (Act 9 of 2009) are lodged with the relevant provincial authority, which in this case is the Department of Environment and Nature Conservation in the Northern Cape Province.

3.2.2.2 Northern Cape Provincial Spatial Development Framework

The Northern Cape Provincial Spatial Development Framework (NCPSTDF) was formulated in 2011 to meet the requirements of the Northern Cape Planning and Development Act, 1998 (Act 7 of 1998) and the Municipal Systems Act, 2000 (Act 32 of 2000). Prepared in accordance with a bioregional planning approach adapted to suit the site-specific requirements of the Northern Cape, the NCPSTDF recognises that no region or area should be planned and managed as an 'island' in isolation from its surroundings. Together, unit areas form part of the broader environment and the mutual relationships and linkages between adjacent units must be understood and applied.

The framework aims to act as a policy and strategy providing direction and guidance for:

- future land use,
- spatial context for provincial sectoral strategies,
- promoting a developmental state,
- alignment of environmental management priorities, and
- mobilising the overarching objective of the Northern Cape Provincial Growth and Development Strategy (PGDS) to build prosperous, sustainable and growing provincial economy to eradicate poverty and improves social development.

A focus for achieving sustainable development as discussed in the framework, requires four areas of capital, being environmental, human, infrastructure and monetary. The plan further stresses the need for integrative participation, positive interventions and innovative finance. The SDF makes specific reference to the importance of agriculture and capacity increase in this sector in the Northern Cape Province. The proposed project will make a positive contribution towards various objectives of the SDF.

3.2.2.3 Northern Cape Provincial Growth and Development Strategy (NCPGDS)

The Northern Cape Provincial Growth and Development Strategy (NCPGDS) (2004 – 2014) highlights the most significant growth and development challenge as the reduction of poverty, and that only through long-term sustainable economic growth and development shall this be achieved. Important areas where growth can be achieved include agriculture and agro-processing, transport and tourism. In support of such growth areas the creation of opportunities for life-long learning, improvement of labour force skills to enhance productivity and expanding access to education and knowledge shall lead to the further realisation of such growth.

The inclusion of macro-level objectives shall mobilize these primary growth areas. Such objectives include the developing of human and social capital, improving the efficiency and effectiveness of governance and associated institutions and enhancing infrastructure for economic growth and development.

3.2.3 District and Local

3.2.3.1 Pixley Ka Seme District Municipality Integrated Development Plan 2015-2016 Review

The District Municipality has developed its vision, development priorities, objectives and strategies with specific outcomes and outputs for the 2015/2016 financial year.

Vision

Pixley Ka Seme DM, Pioneers of Development, and Home and Future for all.

Mission

The Pixley Ka Seme DM will achieve its vision by:

- Using the integrated development planning process to create a home for all in our towns, settlements and rural areas through rendering efficient and effective, excellent and dedicated services
- Providing political and administrative leadership in the development planning process
- Promoting economic growth that is shared across and within communities;
- Assisting local municipalities to provide a sustainable delivery of services to local communities;
- Mainstream integrated planning in the operations of our municipalities;
- Ensuring that all development initiatives in the district are aligned to the National Development Plan.

The proposed project will be able to contribute positively to these objectives through job creation and sustainable capacity building (skills development and experience).

3.2.3.2 Siyathemba Local Municipality Integrated Development Plan Final 29 May 2015

The following vision and mission is engrained into the Integrated Development Plan (IDP) of the Siyathemba Local Municipality

Vision

Siyathemba Municipality undertakes to improve the standard of living of its entire community by delivering visible and affordable services.

Mission

To be a developmental Municipality, which has the interests of its communities at the centre of all its activities.

This will be done through:

- an optimal distribution of resources
- economic development through job creation and poverty reduction strategies
- effective and efficient service delivery through optimal distribution and human resources development; and
- effective and efficient maintenance of equipment and buildings

The proposed project will be able to contribute positively to these objectives through job creation and sustainable capacity building (skills development and experience).

3.3 RELEVANT GUIDELINES

The table below lists the Guideline Documents that are applicable to the proposed project, and which are considered as part of the EIA process, as are required in terms of the NEMA EIA Regulations; 2014.

Table 9: Applicable guideline documents

1	DETEA EIA Guideline and Information Document Series
1.1	<i>Draft Guideline on the Need and Desirability in terms of the EIA Regulations of 2010. Integrated Environmental Management Guideline Series 9, Government Notice 792 of 2012.</i>
2	DEA & DP EIA Guideline and Information Document Series
2.1	<i>Guideline on Generic Terms of Reference for EAPs and Project Schedules, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs & Development Planning, March 2013.</i>
2.2	<i>Guideline on Need and Desirability, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs & Development Planning, March 2013.</i>
2.3	<i>Guideline on Alternatives, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs & Development Planning, March 2013.</i>
2.4	<i>Guideline on Public Participation, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs & Development Planning, March 2013.</i>
3	DEA&DP Guideline Document Series for Involving Specialists in the EIA Process, and others

3.1	<i>Guideline for Environmental Management Plans</i> . CSIR Report No ENV-S-C2005-053 H. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town (Lochner, P. 2005).
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3.4 NEMA LISTED ACTIVITIES TRIGGERED BY THE PROPOSED PROJECT

The development activities in the National Environmental Management Act (Act 107 of 1998): Environmental Impact Assessment Regulations, 2014 (Government Notices R983, R984 and R985 in Government Gazette No. 38282 of 04 December 2014) which are triggered by the proposed project are listed in the table below:

Table 10: Environmental Impact Assessment Regulations, 2014 listed activities triggered by the proposed project

Regulation	Activity	Description of trigger activity in proposed project
GN. R. 983 Listing Notice 1	<p>Activity 9</p> <p>The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water-</p> <p>(ii) with an internal diameter of 0,36 metres or more;</p>	A maximum 400 mm pipeline of approximately 1.3 km in length will be constructed to transport water from the extraction point in the Orange River and deposit it into the proposed settling dam on site.
GN. R. 983 Listing Notice 1	<p>Activity 19</p> <p>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from –</p> <p>(ii) a watercourse</p>	The installation of the required additional pumping and piping infrastructure for the proposed project at the water extraction point in the Orange River could potentially require the clearance and removal/relocation of more than 5 m ² of material from the bank of the river.
GN. R. 983 Listing Notice 1	<p>Activity 24</p> <p>The development of-</p>	Associated access roads will be established around the proposed vineyard and

Regulation	Activity	Description of trigger activity in proposed project
	(ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;	between the vineyard blocks which will be wider than 8 m. These roads will all fall inside the proposed approximately 147.91 ha project footprint.
GN. R. 984 Listing Notice 2	<p>Activity 13</p> <p>The physical alteration of virgin soil to agriculture, or afforestation for the purposes of commercial tree, timber or wood production of 100 hectares or more.</p>	<p>Cultivation and establishment of a vineyard on approximately 100 ha of natural vegetation.</p> <p>The total size of the farm portion to be impacted by the vineyard, roads and associated infrastructure of the proposed project is approximately 147.91 ha.</p>
GN. R. 984 Listing Notice 2	<p>Activity 15</p> <p>The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for -</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p>	<p>Cultivation and establishment of a vineyard on approximately 100 ha of natural vegetation.</p> <p>The total size of the farm portion to be impacted by the vineyard, roads and associated infrastructure of the proposed project is approximately 147.91 ha.</p>
GN. R. 985 Listing Notice 3	<p>Activity 4</p> <p>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>(a) In Free State, Limpopo, Mpumalanga</p>	The site falls inside a Critical Biodiversity Area and associated access roads will be established around the proposed vineyard and

Regulation	Activity	Description of trigger activity in proposed project
	and Northern Cape provinces: (ii) Outside urban areas, in: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans	between the vineyard blocks which will be wider than 8 m. These roads will all fall inside the proposed approximately 147.91 ha project footprint.
GN. R. 985 Listing Notice 3	Activity 12 The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with the maintenance management plan. (d) In Northern Cape: (ii) Within critical biodiversity areas identified in bioregional plans	The site falls inside a Critical Biodiversity Area and cultivation and establishment of a vineyard on approximately 100 ha will occur. The total size of the farm portion to be impacted by the vineyard, roads and associated infrastructure of the proposed project is approximately 147.91 ha.
GN. R. 985 Listing Notice 3	Activity 14 The development of – (xii) infrastructure or structures with a physical footprint of 10 square metres or more; (b) In Northern Cape (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional Plans Where such development occurs- (b) Within a water course	The site falls inside a Critical Biodiversity Area and the additional pumping and piping infrastructure required to be installed for the proposed project at the water extraction point in the Orange River will exceed 10 m ² in size.

3.5 NEMA REGULATION 23 EIA REPORT INFORMATION COMPLIANCE

Regulation 23 of the Environmental Impact Assessment Regulations, 2014 (Government Notices R982 in Government Gazette No. 38282 of 04 December 2014) refers to Appendix 3 which provides the content requirements for an EIA Report.

The table below lists the relevant requirements for the EIA Report as per Appendix 3 of the Regulations as well as providing cross-references to where the relevant information is located in this document and/or its appendices.

Table 11: Information required in the EIA Report as per Appendix 3 of GN R. 982 of the EIA Regulations, 2014

EIA Regulations 2014 - Appendix 3 – Scope of assessment and content of environmental impact assessment reports	Location in this document
(a) details of-	
(i) the EAP who prepared the report; and	Section 2.1
(ii) the expertise of the EAP, including a curriculum vitae;	Section 2.2
(b) the location of the activity, including-	Section 4.1
(i) the 21 digit Surveyor General code of each cadastral land parcel;	Section 4.1
(ii) where available, the physical address and farm name;	Section 4.1
(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section 4.1
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is-	Section 4.1
(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or	N/A
(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	N/A
(d) a description of the scope of the proposed activity, including-	
(i) all listed and specified activities triggered and being applied for; and	Section 3.4
(ii) a description of the associated structures and infrastructure related to the development;	Section 4.2
(e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;	Section 3
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 5
(h) a full description of the process followed to reach the proposed	Section 4.1

development footprint within the approved site, including:	
(i) details of the development footprint alternatives considered;	Section 4.1
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 8
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Section 8
(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 7
(v) the impacts and risks identified, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Section 9
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;	Section 9.1
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 9.2
(viii) the possible mitigation measures that could be applied and level of residual risk;	Section 9.2
(ix) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and	N/A
(x) a concluding statement indicating the preferred alternative development location within the approved site;	Section 9.4
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity the associated structures and infrastructure will impose on the preferred location through the life of the activity including:	Section 9
(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and;	Section 9.2
(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Section 9.3
(j) an assessment of each identified potentially significant impact and risk, including;	Section 9.3
i) cumulative impacts	Section 9.4
ii) the nature, significance and consequences of the impact and risk;	Section 9.3
iii) the extent and duration of the impact and risk	Section 9.3
iv) the probability of the impact and risk occurring	Section 9.3
v) the degree to which the impact and risk can be reversed	Section 9.3
vi) the degree to which the impact and risk may cause irreplaceable loss of resources and;	Section 9.3
vii) the degree to which the impact and risk can be mitigated	Section 9.3

(k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 of these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report	Section 7
(l) an environmental impact statement which contains-	Section 11.2
i) a summary of the key findings of the environmental impact assessment:	Section 11.2
ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers and;	Section 7 Appendix B
iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section 9.3
(m) based on the assessment and where applicable, recommendations from specialist reports, the recording of proposed management objectives, and the impact management outcomes for the development for inclusion in the EMPR as well as for inclusion as conditions of authorisation	Section 7
(n) the final proposed alternatives which respond to the impact management measures, avoidance and mitigation measures identified through the assessment	Section 9.4 Section 11.1
(o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are not to be included as conditions of authorisation	N/A
(p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed	Section 10
(q) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of the authorisation	Section 11
(r) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised	N/A
(s) an undertaking under oath or affirmation by the EAP in relation to-	Appendix H
(i) the correctness of the information provided in the report;	
(ii) the inclusion of comments and inputs from stakeholders and interested and affected parties; and	Appendix H
iii) the inclusion of inputs and recommendations from the specialist reports where relevant	Appendix H
(iii) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	Appendix H

(t) where applicable, details of any financial provisions for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts	N/A
(u) an indication of any deviation from the approved scoping report, including the plan of study including-	Appendix I
i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks and	N/A
ii) a motivation for the deviation	N/A
(v) any specific information that may be required by the competent authority and	NA
(w) any other matter required in terms of section 24(4)(a) and (b) of the Act.	N/A

4. PROJECT LOCATION AND DESCRIPTION

The following section provides an overview of the proposed project location as well as a detailed description of the proposed project.

4.1 PROJECT LOCATION

The proposed project area is approximately 147.91 ha in surface size and is situated on Portion 10 of the Farm De Eelt No 26. The new 100 ha vineyard with new internal roads and new settling dam will be situated on Portion 10 of the Farm De Eelt No 26.

A proposed water transport pipeline will be constructed and will commence from the existing water extraction point in the Orange River which is situated on Portion 11 of the Farm De Eelt No 26. From here it will traverse this Portion 11 to where it enters the adjacently located Portion 10 and then reaches the new proposed settling dam to be constructed on Portion 10 (as stated above).

The relevant farm portions are approximately 15 km north-east of the town of Prieska in the Northern Cape Province. Portion 10 is owned by S & L Boerdery BK while Portion 11 is owned by Mr Henry Coetzee of Mahoebe Eiendomme (Pty) Ltd (the applicant). The owner of Portion 10 has provided his consent for the completion of the EIA process (see Appendix F).

The properties fall 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 runs along the western boundary of the proposed project area on Portion 10 of the Farm De Eelt No 26) and a subsequent dirt farm road.

See locality map below.

Table 12: Information of the farm portions associated with the proposed project

Farm Name and Number	SG 21 Digit Code	Land owner
Portion 10 of Farm De Eelt No 26	C0600000000002600010	S & L Boerdery BK
Portion 11 of Farm De Eelt No 26	C0600000000002600011	Mahoebe Eiendomme (Pty) Ltd

(See Appendix F for the title deeds)

Title deed number for Portion 11 of Farm De Eelt No 26: 5529-1996

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

The starting, bend and end points of the proposed water transport pipeline is as follows:

- Start point 29°33'56.19"S 22°51'14.91"E
- Bend point 29°34'10.70"S 22°51'03.53"E
- End point 29°34'29.34"S 22°50'46.13"E

The centre point of the proposed water settling dam is as follows:

- Centre point 29°34'30.10"S 22°50'45.12"E

Table 13: Details of relevant land owner of Portion 10

Company/entity name:	S & L Boerdery BK
Postal address:	PO Box 122, Prieska 8940
Contact person:	Schalk Theron
Designation:	Owner
Contact number:	082 802 2211
E-mail address:	tschalk@xsinet.co.za

Table 14: Details of relevant land owner of Portion 11

Company/entity name:	Mahoebe Eiendomme (Pty) Ltd
Postal address:	PO Box 410, Prieska 8940
Contact person:	Johannes Hendrik Coetzee
Designation:	Owner
Contact number:	072 403 8717
E-mail address:	mahoebe2@gmail.com

A visual illustration of the proposed project area is provided in Figures 1 & 2 while the location of the proposed project area in relation to the nearby town, access roads and adjacent farms is illustrated on the locality map in Figure 3 below (also see Appendix I for the Photo Report):



Figure 1: Image visually illustrating the general bottom flat landscape of the proposed project area



Figure 2: Image visually illustrating the general bottom flat landscape of the proposed project area

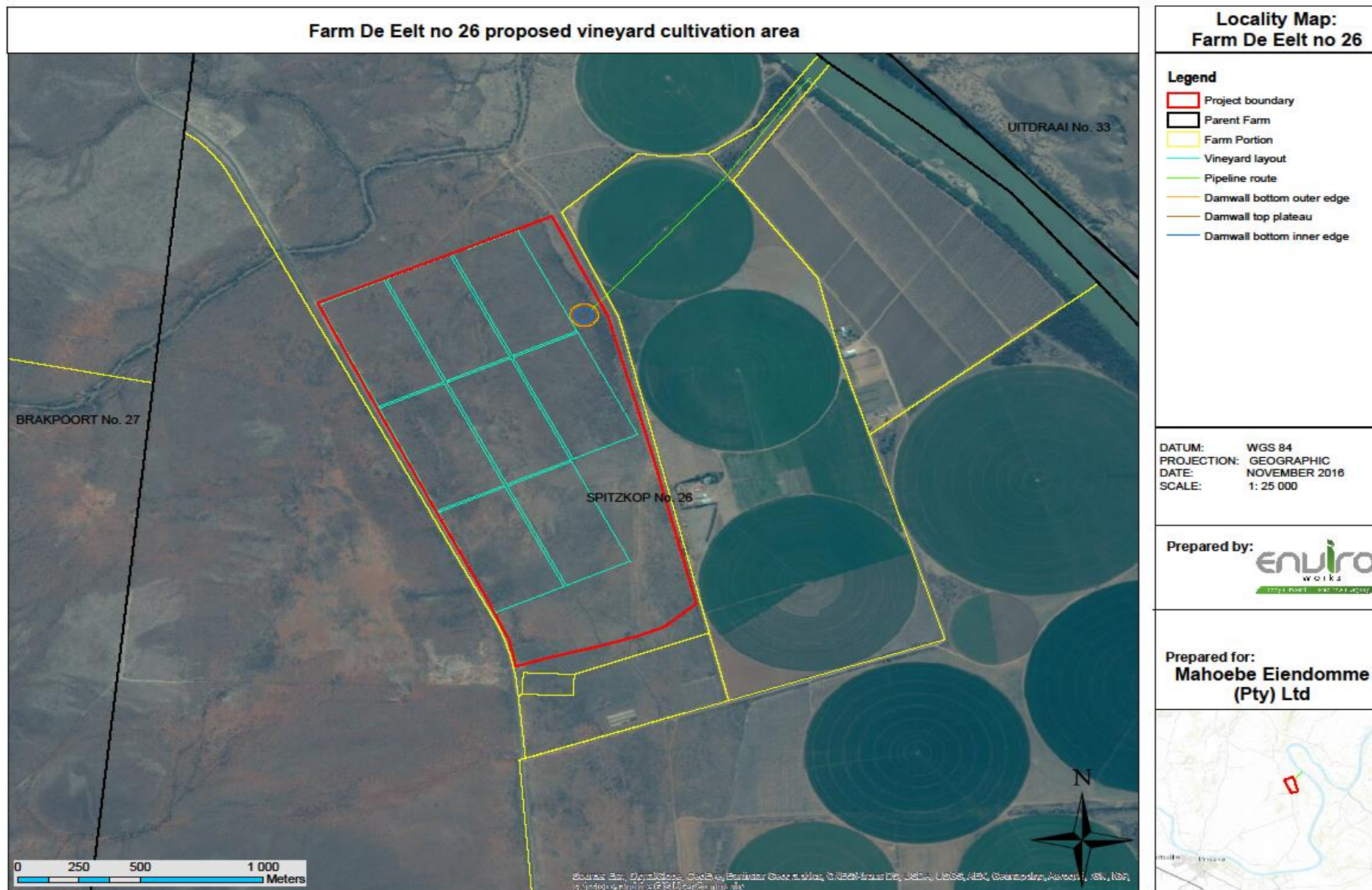


Figure 3: Locality map of the proposed project layout (see Appendix B for an A3 size version)

4.2 PROJECT DESCRIPTION

Mahoebe Eiendomme (Pty) Ltd intends to cultivate an approximately 100 ha piece of land on the 147.91 ha project location as discussed above for the establishment of a vineyard. The principal objective for the grapes produced will be for the local production and distribution of wine. It is anticipated that 45 tons/ha can be produced on the proposed project area which will amount to a total of 4500 tons of grapes per annum. Although the vineyard will be approximately 100 ha in size, the additional 47.91 hectares will allow for the establishment of internal access roads around the vineyard and between vineyard blocks, new settling dam and associated infrastructure. It will also allow for a degree of practical flexibility in the layout of the vineyard blocks inside the proposed project area as practical issues once the construction phase commences might necessitate slight alterations as the process progresses.

An existing extraction point with pumping system and pipeline is already established on the bank of the Orange River for the current irrigation operations of crops on Portion 11 of the Farm De Eelt no 26 (see Appendix I for the Photo Report). The existing extraction point and pumping system will simply be slightly widened to accommodate the additional pumps necessary for the proposed vineyard irrigation requirements. A maximum 400 mm water transport pipeline will be constructed to extract water from the existing water extraction point in the river and transport water to the new onsite settling dam to be constructed and used for irrigation purposes.

The project will entail three major aspects namely:

- Construction of a new on-site water settling dam on Portion 10 of the Farm De Eelt No 26.
- Installation of additional pumps at the water extraction point in the Orange River on Portion 11 of the Farm De Eelt No 26 and construction of a new pipeline from the existing extraction point which will traverse Portion 11 and enter the adjacently located Portion 10 where it reaches the new proposed settling dam situated on Portion 10.
- Cultivation of a 100 ha vineyard and construction of an associated access road network on Portion 10 of the Farm De Eelt No 26.

4.2.1 Construction of an onsite water settling dam

- A water settling dam with a maximum outer footprint diameter of approximately 100 m will be constructed in the north eastern section of the proposed project footprint (as per the locality/layout map Figure 3). The construction of the dam is also included in the Water Use License application. The maximum dam capacity will not exceed 15 000 m³ and dam wall height will not exceed 4 m. The inner portion of the dam will be adequately lined to prevent seepage and water loss. The main purpose of

this dam will not necessarily be for storage of water but rather to provide the water extracted from the Orange River sufficient time and opportunity for unwanted silt and other materials to settle down to the bottom before using the water for irrigation. The dam will therefore mainly serve to improve irrigation water quality.

- The silt collecting at the bottom of the dam will be cleaned out as and when necessary. The dam will simply be drained and labourers will manually sweep all the collected silt to one point in the dam for removal. Due to the high quality and low organic content of the collected silt, the product will be provided to a ceramic sculpturing entity for use in sculpting processes. From past experience it is however anticipated that such dam cleaning out is only required in intervals in excess of 15 years.
- Currently there is no need for the construction of any storage building or additional infrastructure on the proposed project footprint. If the necessity however arises in the future, the correct processes will be followed in order to lawfully allow for the construction of such infrastructure.

4.2.2 Installation of additional pumps and construction of a pipeline from the existing water extraction point in the Orange River to the new proposed on-site settling dam

- An existing water extraction point with pumping system and pipeline is already present in the Orange River on Portion 11 of the Farm De Eelt no 26 which is being used for irrigation of crops on Portion 11 (see figure below). This is in accordance with the water use registration of the property. Additional pumps will be installed at the extraction point to accommodate for the irrigation requirements of the proposed new vineyard.



Figure 4: Existing water extraction point in the Orange River

- A maximum 400 mm pipeline of approximately 1.3 km in length will be constructed to transport water from the existing extraction point in the Orange River and deposit the water into the proposed new settling dam located on Portion 10 of the Farm De Eelt no 26. A narrow additional linear section of approximately 5 m will be cleared up the length of the river bank directly adjacent to the existing extraction point pipeline route in order to accommodate the additional piping infrastructure. This will not significantly impact on any important riparian vegetation species or ecological functions on the bank of the river as this area and vegetation is mostly disturbed already. Once the pipeline reaches the top of the river bank, it will be buried subsurface to prevent any potential damage or surface obstruction. A trench of approximately 900 mm wide will be excavated in order to accommodate the subsurface burial of the pipeline and closed afterwards.
- The pipeline route will traverse Portion 11 of the Farm De Eelt no 26 and run directly adjacent to the route of the existing underground pipeline which feeds the existing irrigation activities. This existing pipeline route is adjacent to an existing dirt access road and telephone line of which the surface area and vegetation is already degraded and where virtually no natural vegetation is still present. The area is in a highly transformed state with pioneer vegetation species and weeds mostly dominating the route. The pipeline route will then also traverse an existing cultivated pivot field on Portion 11 of the Farm De Eelt no 26 before it enters the proposed project footprint area and reaches the proposed new settling dam on Portion 10 of the Farm De Eelt no 26. Portion 11 of the Farm De Eelt no 26 on which the proposed pipeline route and cultivated pivot field are situated belongs to the applicant.



Figure 5: Illustration of the route of existing underground pipeline



Figure 6: Illustration of the proposed pipeline route traversing an existing cultivated pivot field

4.2.3 Cultivation of a 100 ha vineyard and construction of an associated access road network

A 100 ha vineyard will be established on the proposed 147.91 ha project footprint Portion 10 of the Farm De Eelt no 26 (as per the locality/layout map Figure 3). Access roads of wider than 8 m will be constructed around the outer boundary of the vineyard as well as between the vineyard blocks.

The cultivation and planting process will work as follows:

- The vineyard blocks amounting to a total of approximately 100 ha will be laid out as per the locality map in Figure 3 with access roads of wider than 8 m around the outer boundary of the vineyard as well as between the vineyard blocks. This will allow for sufficient access and adequate machine/truck movement between the vineyard blocks.
- The area will be cleared with the use of a Bulldozer and deep-ripped with the dozer tines to breakup and aerate the soils and ensure sufficient water infiltration.
- Surface rocks will be manually removed from the area.
- Soil preparation will then be conducted by cultivation with the use of a chisel plough.
- Amelioration recommendations will be obtained from a soil scientist through chemical and organic soil analyses in order to ensure the appropriate nutrients/minerals as required for the vineyard are incorporated into the growth medium (soil) prior to planting.
- A drip irrigation system will be implemented in accordance with the vineyard blocks layout.
 - The irrigation mainlines will run from the proposed new settling dam along the access roads situated between the vineyard blocks.

- Secondary lines will branch out of the mainlines and will perpendicularly traverse the vineyard blocks at regular intervals in order to adequately irrigate the required surface areas.
- Irrigation water will be abstracted from the existing extraction point in the Orange River as per the allotted water rights registration for the consolidated farm portions.
 - See Appendix H for the water use rights documentation indicating the allowable water use.
 - 10 000 m³/ha/annum over a total 134 ha is allotted in terms of the water use rights documentation. This equates to 1000 mm/ha/annum allowed.
 - The amount of water required for sufficient vineyard irrigation is only approximately 600 mm/ha/annum of which approximately 200 mm is expected to be obtained from rainfall. The remaining 400 mm/ha/annum will effectively be required from the river extraction for irrigation.
 - The water use of the property therefore adequately allows for sufficient irrigation of the vineyard together with the necessary irrigation of existing crops in the pivot fields.
- Planting of vineyard sprouts will be conducted manually through manual labour. sprout
 - Each sprout will be individually placed in a hole at the distances from each other as specified by the applicant's agricultural consultant.
 - They will be watered and closed up with surrounding soil to commence the growth and development process.

4.2.4 Project Description Summary

The development will constitute a total footprint area of approximately 147.91 ha as indicated on the locality map in Figure 3 (the entire fenced off section of Portion 10 of the Farm De Eelt No 26). This will include the 100 ha vineyard along with internal access roads (wider than 8 m) and new on-site settling dam (maximum 15 000 m³ capacity). Pumps and a pipeline (maximum 400 mm) will also be installed from the existing water extraction point in the Orange River on Portion 11 of the Farm De Eelt No 26 to transport water to the new proposed water settling dam on Portion 10 of the Farm De Eelt No 26.

Soil preparation and clearance needs to commence by March 2017 in order for planting processes to be completed during the growing season to follow. It is envisaged that the vineyard preparation and planting/development phase will take approximately 12 months to complete, while the operational phase will continue for an undisclosed period of time (multiple years).

If the operational phase is ever concluded in the future, the area will be suitably rehabilitated in order to return the project area to a self-sustainable ecological state.

4.3 PROJECT SERVICES

4.3.1 Electricity Supply

- No additional electricity infrastructure will be required during the construction phase. All cultivation processes will either be manually conducted or via machines on site.
- The additional pumps required during the operational phase at the existing Orange River extraction point will be incorporated into the existing pumping system electrical supply feed. This is already present at the existing extraction point and being used for the other irrigation purposes of existing crop fields as per the property water use registration.

4.3.2 Sewage Management

- Sufficient portable chemical toilets will be supplied on site for the manual labourers during the construction phase. These toilets will be cleaned and waste removed and adequately disposed of by an appropriate registered contractor on a regular basis as and when required.
- Sufficient portable chemical toilets will also be supplied on site for the manual labourers during the short annual harvesting periods. These toilets will also be cleaned and waste removed and adequately disposed of by an appropriate registered contractor on a regular basis as and when required.

4.3.3 Solid Waste Management

- It is not anticipated that significant quantities of general waste will be generated during the construction or operational phases of the project.
- Solid general waste generated on site will be removed and adequately disposed of by the applicant at the local municipal landfill site on a regular basis as and when required.
- It is envisaged that no significant hazardous waste will be generated on site during the construction or operational phases of the project. If any significant hazardous waste is however generated a suitable, registered waste contractor will be contracted to remove and adequately dispose of such waste at a suitable landfill site.

4.3.4 Water Supply

As discussed under section 4.2 above, water will be extracted from the existing extraction point in the Orange River on Portion 11 of the Farm De Eelt No 26 and accumulated in a new proposed on-site settling

dam for irrigation purposes. See Appendix H for the water use rights documentation indicating the allowable water use.

5. NEEDS AND DESIRABILITY OF THE PROJECT

Various key factors must be taken into consideration as motivation/incentive for the potential benefits involved with the proposed project. These factors have been summarised below:

Portion 10 of the Farm De Eelt no 26 is currently of little economic value due to low grazing capacity for livestock purposes. The portion is currently being used for small scale sheep grazing by the applicant only when necessary. Should the portion not be developed and efficiently utilised, the economic value will stay low. The development of a vineyard on the farm will significantly increase the agricultural potential of the property, which will in turn increase the economic value.

The population of the Siyathemba Municipality is approximately 17 497 with 9374 living below the minimum living level (MLL). This constitutes a percentage of 53.58 %. The average monthly (individual) income for the district is approximately R 740 which is less than the stipend received as a grant from social services departments.

There has been a decrease in the number of people employed and an associated increase in the number of unemployed in the district between the 2001 and 2011 censuses. This result is directly related to the number of businesses that have closed in the region during the period reflected and indicates the need for a retention or wholesale and retail strategy regarding these businesses. Unemployment reached approximately 28.3 % with youth unemployment reaching 35.4 % in 2011 as per Stats SA 2011 Census.

While the number of jobs increased in South Africa, as well as the Northern Cape and Pixley Ka Seme District Municipality between 2000 and 2009, it declined in Siyathemba Municipality. The unemployment rate has steadily increased in Siyathemba over the past decade.

The labour participation rate for Siyathemba Municipality is 48.19 %. This indicates the labour force as a percentage of the population in the age group 15 - 64 years of age.

The total number of persons dependent on/supported by every person in the labour force, excluding him or herself is indicated by the labour dependency ratio and working individuals in the Siyathemba Municipality have to support approximately 1.99 additional persons.

The youth dependency ratio indicates the total number of youths, aged 0 - 14, supported by every person in the labour force, excluding him or her. The ratio in the Siyathemba Municipality is 0.36.

The labour aged dependency ratio indicates the total number of aged persons, older than 65, supported by every person in the labour force, excluding him or herself. The ratio for the district is 0.85.

The labour absorption capacity is the ability of the formal sector of the economy to absorb the supply of labour in the region. Approximately 25 % of the economically active population of the district is unemployed.

The Department of Economic Development and Tourism in the Northern Cape has recently concluded the development of its Provincial Local Economic Development (LED) Strategy in line with the Northern Cape Growth and Development Strategy. The LED is an approach to sustainable economic development that encourages residents of local communities to work together to stimulate local economic activity that will result in, inter alia, an improvement in the quality of life for all in the local community. These Strategies provide the foundation for Integrated Economic Development Planning throughout the Northern Cape. A development such as the proposed project would present a definite benefit and positive addition to the LED through local job creation and skills development and contribute to the alleviation of poverty and unemployment in the local municipality. This will enable a better livelihood and a higher quality of living to individuals involved.

The establishment of the vineyard will take approximately 12 months to complete. Thirty un-skilled local individuals will be employed for the duration of the establishment period. The total annual financial income value including the planting and pruning processes will be approximately R 1.4 million for the employees over the establishment period.

The experience and skills involved in completing these vineyard establishment processes will provide valuable capacity building and skills development and transfer to approximately 400 people during this process.

A semi-skilled manager along with approximately 4 permanent employment positions can then be appointed on a permanent for the duration of the operational phase once the establishment phase has been completed.

Once the vineyard has been established and moves into the production phase, the harvesting period of 4 weeks will also provide an income to approximately 375 individuals which will assist with the harvesting and will be worth up to R 970 000 for that period on an annual basis.

The expected annual project yield will be approximately 45 tons of grapes/ha which could generate an annual project income project of up to R 8.1 million.

Construction and operational phase job creation (local employment) and sustainable capacity building (skills, experience and resources development) of this project will aid in immediate and continuous local community upliftment and poverty alleviation and are therefore regarded as significant socio-economic benefits associated with the proposed project to motivate the need and desirability. As discussed in section 3, the outcomes of this project are also in line with the requirements and objectives of the National Development Plan; Northern Cape Provincial Spatial Development Framework; Northern Cape Provincial Growth and Development Strategy as well as the Pixley Ka Seme District Municipality and Siyathemba Local Municipality Integrated Development Plans.

6. ALTERNATIVES CONSIDERED

According to Chapter 1 of NEMA EIA Regulations 2014, Notice R982, “*Alternatives*”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to-

- (a) The **property** on which or **location** where it is proposed to undertake the activity;
- (b) The **type** of activity to be undertaken;
- (c) The **design** or **layout** of the activity;
- (d) The **technology** to be used in the activity;
- (e) The **operational** aspects of the activity; and
- (f) The option of **not implementing** the activity.

These NEMA EIA Regulations 2014, Notice R982, recognises that details on alternatives need to include “*a description of identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity*”.

The consideration of alternatives is therefore a key component of an EIA process. While an EIA process should investigate and comparatively **consider** all alternatives that have been identified, only those found to be “feasible” and “reasonable” must be comparatively **assessed**, in terms of the advantages and disadvantages that the proposed activity and alternatives will have on the environment and on the socio-economic aspects of communities that may be affected by the activity.

The “feasibility” and “reasonability” of an alternative are measured by:

- the general purpose and requirements of the activity;
- the need and desirability of the activity;
- opportunity costs;
- the need to avoid and/or minimise negative impacts;
- the need to maximise benefits; and
- how it impacts on the community that may be affected by the activity (DEA&DP, 2013b).

6.1 SCOPING PHASE ALTERNATIVES CONSIDERED

During the Scoping phase it was determined that the current economic value of the proposed project area is low due to low grazing capacity for livestock purposes. The portion is currently being used for small scale sheep grazing by the applicant only when necessary. Cultivation and irrigation of the land for agricultural

purposes was therefore determined to be a more suitable and economically viable option for optimal utilisation of the land portion.

Alternatives considered for the proposed vineyard cultivation during the Scoping phase included two pipeline and two settling dam layout and location alternatives and a no-go option. The results from the Scoping phase evidently and concisely demonstrated that there was no significant difference between the environmental impacts associated with the different pipeline and settling dam layout and location options and that proposed mitigation measures would be able to adequately reduce the impacts to within acceptable levels.

The Scoping Report was accepted by the competent authority and this EIA process has therefore continued to investigate the preferred final pipeline route and settling dam location alternative.

The following sections provide an overview of the alternatives considered during the Scoping phase.

6.1.1 Location Alternatives

An alternative viable site location was not identified and evaluated for the project. The specific proposed location for the vineyard cultivation on Portion 10 of the Farm De Eelt No 26 is preferred as it is the only viable portion of land available in that vicinity which is procurable. Procurement arrangements have been made between the applicant and the current land owner (see heading 4.1 for current owner details and Appendix F for owner consent letter). The portion is also situated directly adjacent to the homestead of the project applicant which is on Portion 11 of the Farm De Eelt No 26. Water will lawfully be obtained for irrigation through extraction from the Orange River on this farm portion. This will therefore render the proposed project area viable from an economic and logistic perspective.

6.1.2 Layout Alternatives

Two preliminary water pipeline routes and settling dam locations were determined on the proposed project footprint during the Scoping phase. There were no significant differences between the potentially anticipated impacts of the two alternatives and all identified impacts can be reduced to within acceptable levels with adequate mitigation measures. The final preferred pipeline route and settling dam location are indicated in Figure 3 (locality map).

6.2 NO-GO OPTION

Advantages

The potential negative environmental impacts associated with the proposed project and its alternatives as identified under Section 9 will be avoided if the proposed project is not implemented.

Disadvantages

If the proposed project however does not go ahead, the local communities will forego the economic benefits which the project will have on the area such as immediate additional employment opportunities and revenue streams and most importantly, sustainable capacity building (skills, experience and resources development) for the future.

The no-go option is therefore not recommended.

7. DESCRIPTION OF THE ENVIRONMENT

The following section provides an overview of the bio-physical as well as the socio-economic environments of the proposed project. The table below indicates the list of specialist studies that were conducted during the assessment process:

Table 15: List of Specialist Studies Conducted

Specialist Name	Organisation	Specialist Assessment Type
Rikus Lamprecht	Enviroworks	Ecological and Wetland Impact Assessment
Report externally reviewed by Prof. Johann du Preez	Enviro-Niche Consulting	
Dr. Lloyd Rossouw	Palaeo Field Services	Archaeological and Palaeontological Impact Assessment
Dr Pieter le Roux	Digital Soils Africa	Soil Suitability Assessment

7.1 BIO-PHYSICAL DESCRIPTION

This section provides a comprehensive description of the bio-physical environment of the proposed project area.

7.1.1 Climate

The rainfall of the region peaks during the autumn months and the Mean Annual Precipitation (MAP) of the area varies from 190 mm in the west to 400 mm in the north-east (Mucina & Rutherford, 2006). The specific project area falls in the lower section of this regional MAP (≤ 200 mm). The average monthly midday temperature for the summer months varies between 24°C and 33°C while the winter months varies between 18°C and 29°C for the town of Prieska. The average monthly night-time temperature varies between 7°C and 17°C for the summer months while the winter months varies between 2°C and 14°C for the town of Prieska.

7.1.2 Geology and Soils

According to Mucina & Rutherford, 2006, shales of the Volksrust formation and to a lesser extent the Prince Albert formation as well as Dwyka group diamictites form the underlying geology. Jurassic Karoo dolerite sills support this vegetation type in some areas while other wide stretches of land are covered by superficial deposits including clacerets of the Kalahari group. Soils vary from shallow to deep, red yellow apedal, freely drained soils to very shallow Glenrosa and Mispah.

7.1.3 Topography

The proposed project area is mainly characterised by a wide, flat open plain consisting of clayey soils. A slightly elevated rocky ridge area with well drained soils is also present in the northern section of the proposed project area. The topography of the area varies between 1000 to 1500 MASL according to Mucina & Rutherford, 2006.

7.1.4 Ecological and Wetland Impact Assessment

An Ecological and Wetland Impact Assessment was conducted for the proposed project area in order to determine the ecological value/significance and subsequent conservational importance and sensitivity of the area. The potential impacts that the proposed project will have on the ecology of the area were identified and evaluated to determine possible mitigation measures which could be implemented in order to acceptably reduce the significance of the associated impacts. An overview of the ecological aspects surrounding the proposed project is provided in the section below in accordance with the specialist report:

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 (organisation of individuals in space that constitutes a stand of plants) and species composition 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.

In accordance with the Provincial Spatial Biodiversity Plan, the proposed project area also falls inside an area categorised 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 (AZa 4) while the ground truthing indicated that the area rather falls inside the adjacently located vegetation type (NKu 3) and it is then rather only categorised as a CBA 2.

The location of the proposed project area in relation to the various vegetation types as well as potential ecologically sensitive features in the area is illustrated in the vegetation and sensitivity maps in the figures below:

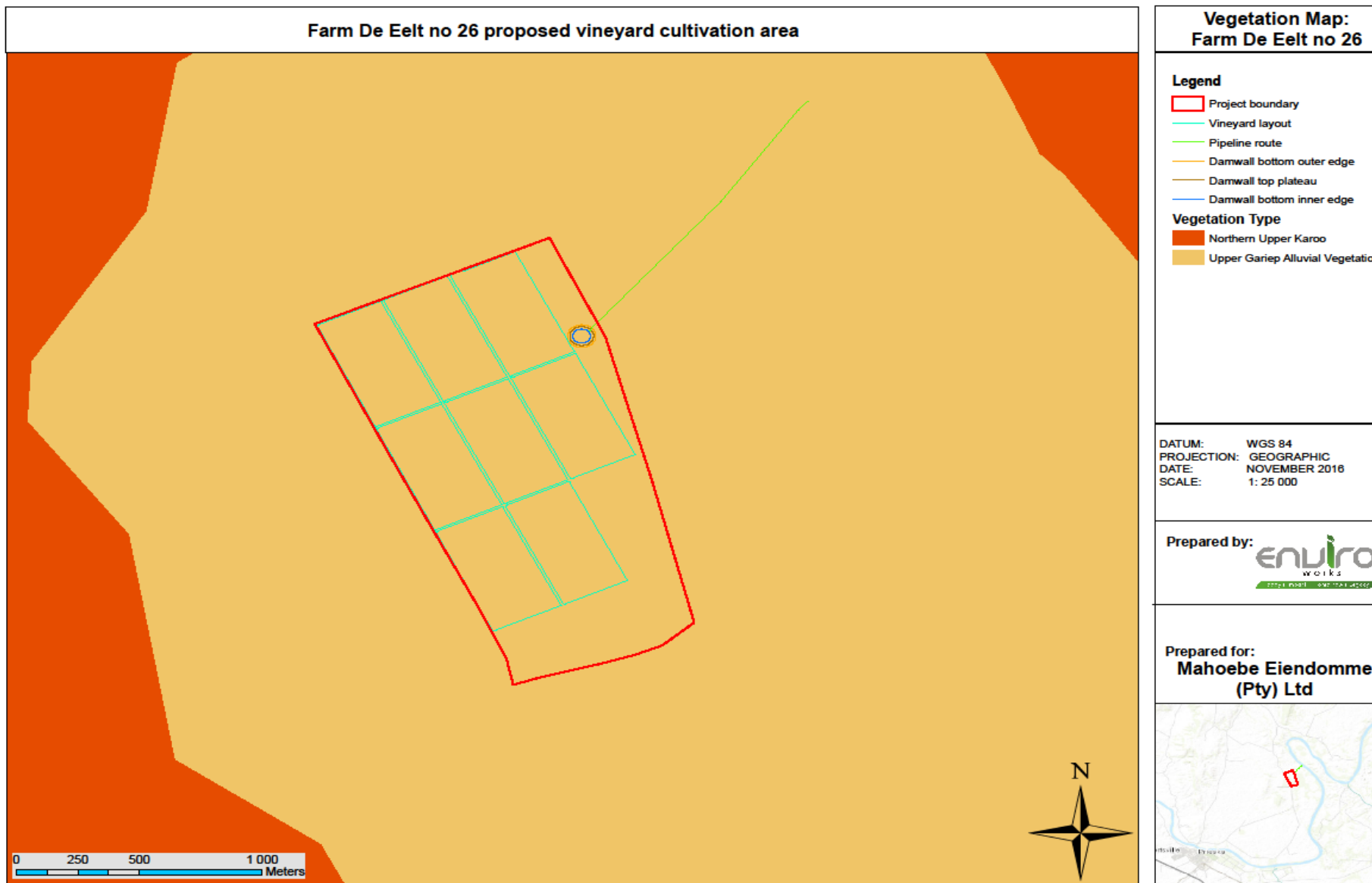


Figure 7: Vegetation map of the proposed project layout (see Appendix B for an A3 size version)

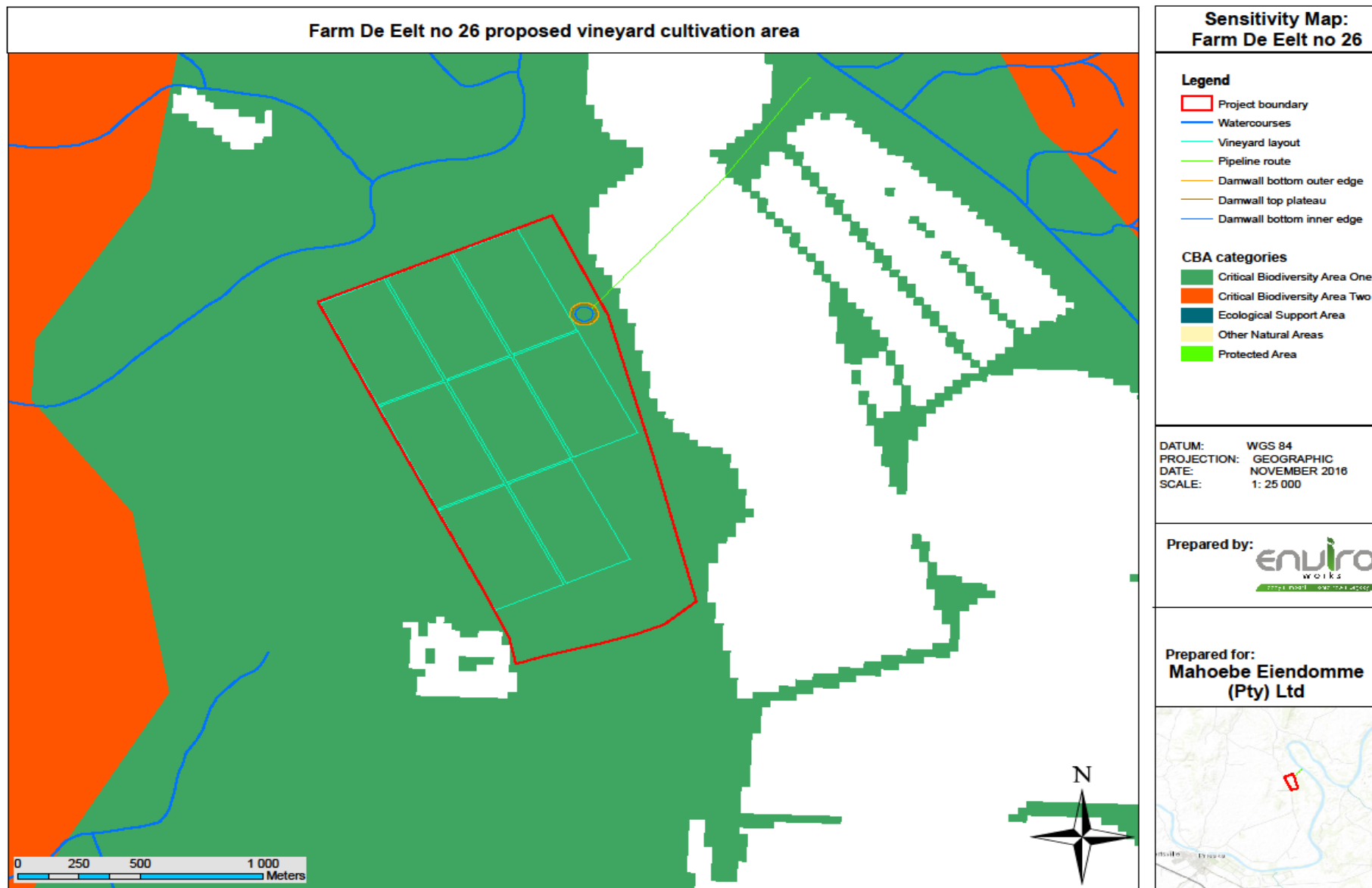


Figure 8: Ecological sensitivity map of the proposed project layout (see Appendix B for an A3 size version)

7.1.4.1 Terrestrial environment

Results and Discussion of the Specialist Report

The proposed project area can roughly be divided into the following five 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.
- Riparian vegetation at water extraction point.
- Proposed pipeline route.

Each of the sections will now be discussed:

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 (organisation of individuals in space that constitutes a stand of plants) 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:

Table 16: Species present on the top flat plateau with their conservation and protection statuses

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
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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 later under this heading.

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 higher localised 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 number of individuals have been identified by the applicant which will not be removed and will be conserved on the site. A minimum 10 m buffer zone will be implemented around each individual earmarked for conservation 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. It can be a physical or hypothetical buffer. 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.

The **Present Ecological State (PES)** of this area is classified as **Class B** as it is **largely natural** with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged.

The **Ecological Importance and Sensitivity (EIS)** of this area is classified as **Class C** as it is ecologically important and sensitive on provincial/local scale. Biodiversity is not usually sensitive to flow and habitat modifications.

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 higher localised 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. The protected tree individuals identified for conservation on site will be secured with a minimum 10 m buffer zone while permits will be obtained for the removal of other individuals.

The **Present Ecological State (PES)** of this area is classified as **Class B** as it is **largely natural** with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged.

The **Ecological Importance and Sensitivity (EIS)** of this area is classified as **Class C** as it is ecologically important and sensitive on provincial/local scale. Biodiversity is not usually sensitive to flow and habitat modifications.

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. A portion of this area will however form part of the 100 ha vineyard footprint.

The **Present Ecological State (PES)** of this area is classified as **Class C** as it is **moderately modified**. Loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged.

The **Ecological Importance and Sensitivity (EIS)** of this area is classified as **Class C** as it is ecologically important and sensitive on provincial/local scale. Biodiversity is not usually sensitive to flow and habitat modifications.

Riparian vegetation at water extraction point

An existing water extraction point in the Orange River with pumping system and pipeline is already present on Portion 11 of the Farm De Eelt no 26 which is being used for irrigation of other crops on site (see figure below). This is in accordance with the water user registration of the property. This existing extraction point and pumping system will simply be slightly widened by no more than 5 m to accommodate the proposed vineyard irrigation requirements and additional infrastructure.



Figure 9: Existing water extraction point in the Orange River

The riparian vegetation immediately surrounding the existing extraction point is largely disturbed and mainly consists of pioneer and weed species such as *Asparagus sp* (see figures below). This is mainly due to the original clearance and disturbance which took place for the establishment of the existing extraction point infrastructure. No vegetation species of conservational significance are present.





Figure 10: Disturbed vegetation directly adjacent to the existing pumping system and pipeline

A narrow additional section of approximately 5 m will be cleared directly adjacent to the existing extraction point pipeline route in order to accommodate the additional piping infrastructure. This will not significantly impact on any important riparian vegetation species or ecological functions as this area is mostly disturbed already. Outside this disturbed section, the natural riparian species mainly include *Acacia karroo*, *Phragmites australis* and *Searsia pendulina*. No large trees will be removed from the riparian area for the widening of the extraction point as trees provide the benefit of additional cover and protection of the established infrastructure in the event of floods episodes.

The **Present Ecological State (PES)** of this area is classified as **Class C** as it is **moderately modified**. Loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged.

The **Ecological Importance and Sensitivity (EIS)** of this area is classified as **Class C** as it is ecologically important and sensitive on local scale. Biodiversity is not usually sensitive to flow and habitat modifications.

Proposed pipeline route

The pipeline route outside of the proposed project footprint will run beside the route of the existing underground pipeline which is adjacent to an existing dirt access road of which the surface area is already degraded and where virtually no natural vegetation is still present. The area is in a highly transformed state with pioneer vegetation species and weeds mostly dominating the route. The pipeline route will then also

traverse an existing cultivated pivot field before it enters the proposed project footprint area on Portion 10 of the Farm De Eelt no 26.



Figure 11: Illustration of the route of the existing underground pipeline



Figure 12: Illustration of the proposed pipeline route traversing an existing cultivated pivot field

The **Present Ecological State (PES)** of this area is classified as **Class E** as it is **seriously modified**. The loss of natural habitat, biota and basic ecosystem functions is extensive.

The **Ecological Importance and Sensitivity (EIS)** of this area is classified as **Class D** as it is not ecologically important and sensitive at any scale.

***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. It can be a physical or hypothetical buffer. Any such damage will constitute a transgression of the law which can be criminally prosecuted. A total of 18 individuals were encountered during the site visit and their locations/coordinates have been noted and are indicated in the figure below. The applicant will apply for a removal permit for approximately 7 individuals which will have to be removed due to operational requirements of the project. The remaining 11 individuals will be left in situ and conserved. 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. The applicant will also procure a significant number of *Boscia albitrunca* samplings which will be planted along the boundary fence of the vineyard as part of mitigation measures for the removal of other individuals.



Figure 13: Locality map of the *Boscia albitrunca* individuals present on the proposed project area (see Appendix B for an A3 size version)

7.1.4.2 Aquatic environment

Streams & Wetlands

The topography of the area is relatively flat and contour lines are wide apart. No well-developed or seasonal drainage lines or watercourses therefore occur on the proposed project site. No wetlands or wetland vegetation is present on the proposed project site.

7.1.4.3 Faunal habitat

The proposed project area and vast surrounding natural land is very homogenous in terms of habitat and no significant faunal habitat variety exists. The project area therefore provides no potentially important or unique faunal habitats which need to be conserved for the purposes of Red Data Listed animal species management. No Red Data Listed animal species were encountered during the site visit conducted by the specialist. Due to the mobility of most animal species, individuals simply tend to leave an area where disturbance is taking place and disperse to other similar, adequate areas.

The proposed project area does not fall inside any Important Bird and Biodiversity Areas (IBA) as per the latest IBA map obtained from the Birdlife SA website (www.birdlife.org.za/conservation/important_bird_areas/iba-map). The area provides no potentially important or unique avifaunal habitats which need to be conserved for the purposes of Red Data Listed bird species management. No Red Data Listed bird species were observed during the site visit conducted by the specialist. Due to the mobility of bird species, individuals simply tend to leave an area where disturbance is taking place and disperse to other similar, adequate areas.

7.1.4.4 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. Ground truthing indicated that the area rather falls inside the adjacently located Northern Upper Karoo vegetation type and 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 impedes the local surface water catchment and drainage towards the river. The cultivation of the proposed project area would therefore not add significant additional negative impact to the local surface water catchment feeding the Orange River as it is already isolated. For these reasons, the transformation of the CBA 2 is not considered a fatal flaw for the proposed project.

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.

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. It is however recommended that the project rather attempts to keep and protect some of the individual trees on site. The applicant will apply for a removal permit for approximately 7 individuals which will have to be removed due to operational requirements of the project. The remaining 11 individuals will be left in situ and conserved. 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. It can be a physical or hypothetical buffer.

The proposed project area and vast surrounding natural land is very homogenous in terms of habitat and no significant faunal or avifaunal habitat variety exists. The proposed project area does not fall inside any Important Bird and Biodiversity Areas (IBA). The project area therefore provides no potentially important or unique faunal or avifaunal habitats which need to be conserved for the purposes of Red Data Listed terrestrial animal or bird species management. No Red Data Listed terrestrial animal or bird species were encountered during the site visit conducted by the specialist. Due to the mobility of most terrestrial animal and bird species, individuals simply tend to leave an area where disturbance is taking place and disperse to other similar, adequate areas.

This existing extraction point and pumping system in the Orange River will simply be slightly widened by no more than 5 m to accommodate the proposed vineyard irrigation requirements and additional infrastructure. The riparian vegetation immediately surrounding the existing extraction point is largely disturbed and mainly consists of pioneer and weed species such as *Asparagus sp.* Therefore, due to no conservationally significant vegetation species being present in the riparian area, the clearance process will not significantly impact on any important riparian vegetation species or ecological functions as this area is mostly disturbed already.

To conclude from an ecological perspective, no fatal flaws were identified which would merit rejection of the proposed project. All identified ecological impacts can be mitigated to an acceptable level. See specialist report in Appendix E.

7.1.5 Agriculture and Soil Suitability Assessment

A Soil and Irrigation Suitability Assessment was conducted for the proposed project area in order to determine the agricultural value of the area. Digital Soils Africa conducted an irrigation potential soil survey for a 149 ha field on De Eelt Farm no 26 in order to assess the suitability of the area for drip irrigation for vineyards. The topography is uniform flat with a maximum slope gradient of 3%.

Soils forms

The soils encountered during the survey are shown in the table below and the soil form distribution is shown in Figure 7 below. Figure 8 shows the distribution of the water infiltration impeding layers.

Table 17: Soil form encountered

Soil Form	A Horizon	B Horizon	B2/C Horizon	Nr of Profiles
Addo	Orthic A	Neocarbonate	Soft carbonate	16
Brandvlei	Orthic A	Soft carbonate	Soft carbonate	6
Prieska	Orthic A	Neocarbonate	Hard carbonate	6
Coega	Orthic A	Hard carbonate		3

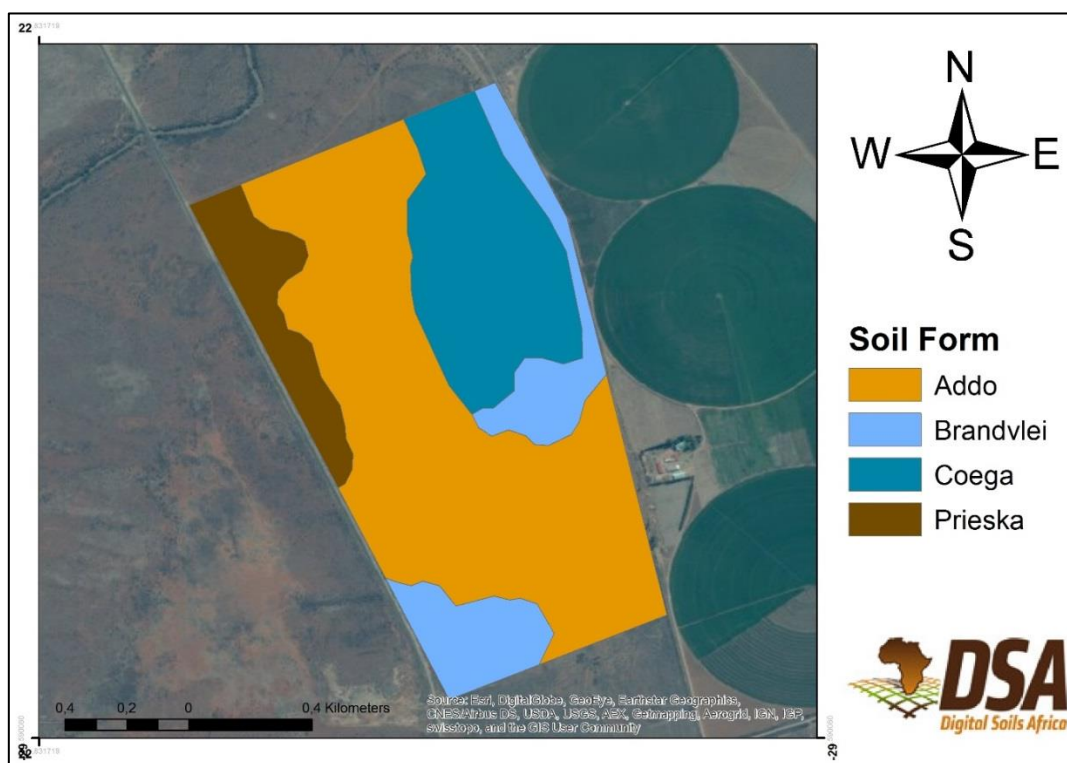


Figure 14: Illustration of soil forms encountered

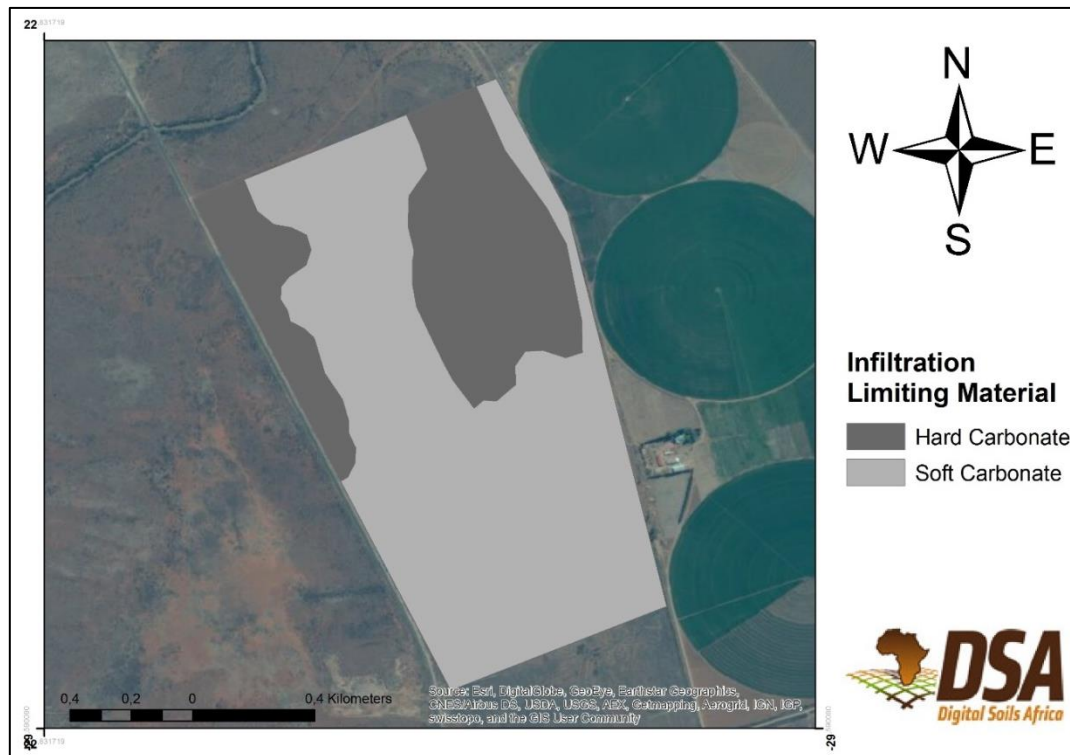


Figure 15: Illustration of infiltration limiting material

Soil Depth

The freely drainable depth is the depth where the water will freely drain, and includes the depth of the orthic A and neocarbonate B horizons. The drainable depth includes the depth of the soft carbonate as the informal experiment showed that it is also drainable. The freely drained depth reaches 1000 mm in places, while the drainable depth is much deeper, with most of the study site being deeper than 1000 mm, with a maximum encountered of 1800 mm. Vineyards require a drainable depth of 800 mm which means that a large part of the field is suitable for vineyard irrigation cultivation without significant soil preparation.

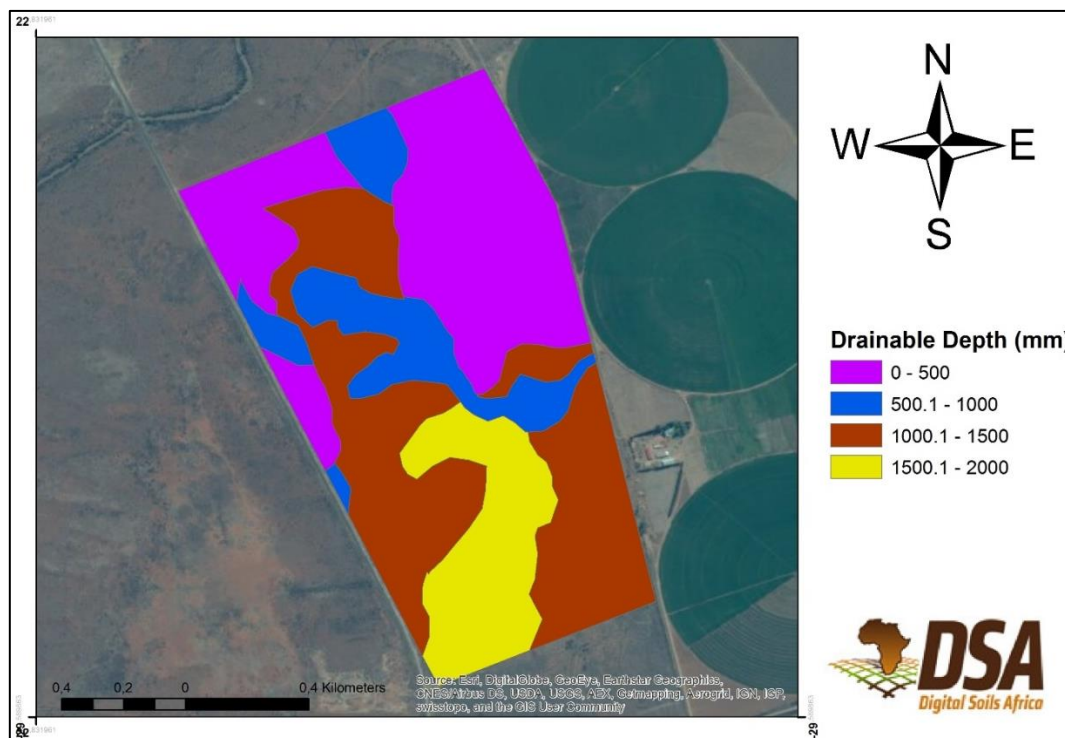


Figure 16: Illustration of drainable depths

Suitability

The suitability of Addo, Coega and Prieska soils for crop production under irrigation is controlled by the crop. Vineyards grow and produce quite well on these soils and the drip irrigation controls salinity. Soils with a drainable depth deeper than 800 mm were considered to be suitable for vineyard cultivation under drip or micro irrigation. This makes 91 ha of the land surveyed preferable for irrigation of vines while the remaining portion is also cultivatable but would require significantly more soil preparation. With deep ripping of the hard carbonate horizon, the remaining portion could also be cultivated to be suitable for vineyard production. The deep ripping of hard carbonate is more expensive than the deep ripping of the softer material found in the initial 91 ha.

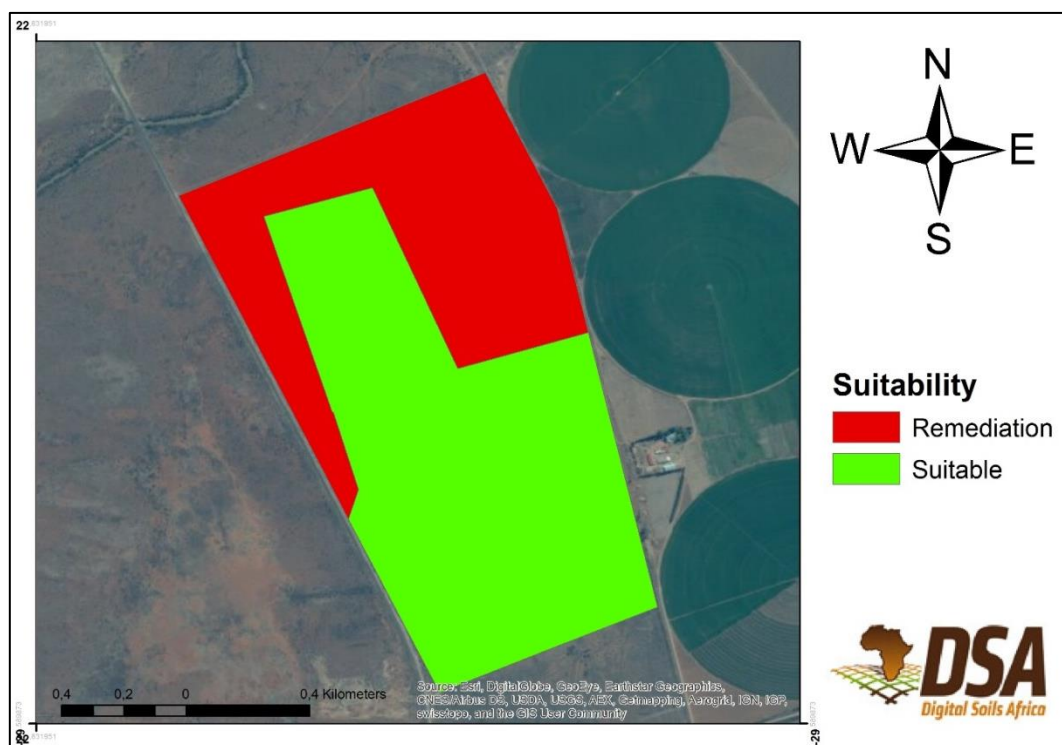


Figure 17: Illustration of suitability of the proposed project area

Conclusion

Pedological results indicate that 91 of the 149 ha is preferable for vineyard cultivation under drip and micro irrigation, with deep ripping of soft material needed as amelioration. Deep ripping of hard carbonate would also ameliorate the remaining 58 ha, but would cost more than the deep ripping of the initial 91 ha.

The entire proposed project area is therefore suitable for vineyard cultivation with the difference being the amount of soil preparation being required to suitably ameliorate the areas.

7.1.6 Heritage Impact Assessment

A Phase 1 Heritage Impact Assessment was conducted for the proposed project area in order to determine the heritage value of the area as well as identify and evaluate the potential impacts that the proposed project will have on any areas of historical significance. This information was then used to determine possible mitigation measures which could be implemented in order to reduce the significance of the associated impacts. An overview of the heritage aspects surrounding the proposed project is provided in the section below:

A relatively low density of weathered stone tools was recorded as isolated surface occurrences, but no above-ground evidence was found of fossils, fossil exposures or in situ Stone Age archaeological sites. There

are also no indications of rock art, prehistoric structures, graves or historically significant structures older than 60 years within the proposed development footprint. Except for the lower valley fills where rock art localities are likely to occur on rocky outcrops, the study area is characterized by flat terrain and is not considered paleontologically or archaeologically vulnerable. The survey area is assigned a rating of Generally Protected C (GP.C).

However, although considered unlikely, the potential occurrence of isolated and unmarked graves or intact subsurface archaeological finds not recorded during this survey can never be excluded. It is therefore instructed that work stops immediately in the event of potential exposure of any artefacts and that South African Heritage Resources Agency (SAHRA) and a qualified archaeologist are informed.

As far as the palaeontological and archaeological heritage is concerned, the proposed development may proceed within the footprint with no further heritage assessments required.

7.2 SOCIO-ECONOMIC DESCRIPTION

The proposed project does not hold any overriding negative social impacts to suggest a no development option. The investment, employment and income generation potential linked to the project will positively contribute to the socio-economic development objectives described in the local IDP (as discussed under heading 6).

The Department of Economic Development and Tourism in the Northern Cape has recently concluded the development of its Provincial Local Economic Development (LED) Strategy in line with the Northern Cape Growth and Development Strategy. The LED is an approach to sustainable economic development that encourages residents of local communities to work together to stimulate local economic activity that will result in, inter alia, an improvement in the quality of life for all in the local community. These Strategies provide the foundation for Integrated Economic Development Planning throughout the Northern Cape. A development such as the proposed project would present a definite benefit and addition to the LED through local job creation and skills development and contribute to the alleviation of poverty and unemployment in the local municipality. This will enable a better livelihood and a higher quality of life to individuals involved.

The establishment of the vineyard will take approximately 12 months to complete. Thirty un-skilled local individuals will be employed for the duration of the establishment period. The total annual financial income value including the planting and pruning processes will be approximately R 1.4 million for the employees over the establishment period.

The experience and skills involved in completing these vineyard establishment processes will provide valuable capacity building and skills development and transfer to approximately 400 people during this process.

A semi-skilled manager along with approximately 4 permanent employment positions can then be appointed on a permanent for the duration of the operational phase once the establishment phase has been completed.

Once the vineyard has been established and moves into the production phase, the harvesting period of 4 weeks will also provide an income to approximately 375 individuals which will assist with the harvesting and will be worth up to R 970 000 for that period on an annual basis.

The expected annual project yield will be approximately 45 tons of grapes which could generate an annual project income project of up to R 8.1 million.

Construction and operational phase job creation (local employment) and sustainable capacity building (skills, experience and resources development) of this project will aid in immediate and continuous local community upliftment and poverty alleviation and are therefore regarded as significant socio-economic benefits associated with the proposed project to motivate the need and desirability.

8. PUBLIC PARTICIPATION PROCESS

A continual and comprehensive Public Participation Process (PPP) was undertaken throughout the entire Scoping & EIA process with all stakeholders and Interested and Affected Parties (I & AP's), including the relevant organs of state and competent authority (Northern Cape Department of Environment and Nature Conservation) as identified during the Scoping Phase.

The PPP was conducted in accordance with the requirements of Regulation 41 of the EIA Regulations, 2014 and the designated Public Participation Officer ensured that the PPP was facilitated in a manner which ensured reasonable opportunity for all stakeholders and registered I & AP's to comment and provide input on the proposed project.

8.1 SCOPING PHASE

The PPP for the Scoping Report commenced on 12 September 2016 and concluded on 13 October 2016. The following means were used to notify the public of the commencement of the process:

- Email notifications were sent to all identified stakeholders, relevant Organs of State and competent authority on 11 September 2016.
- An advertisement were placed in a free local newspaper (Noordwester/Prieska Oewernuus) on 8 September 2016 to inform potential I & AP's and invite them to register for the proposed project.
- Written notices were placed at the Prieska municipal building, public library and post office on 12 September 2016.
- Site notices were placed at the main and secondary entrance of Portions 10 & 11 of the Farm De Eelt no 26 as well as at the farm turnoff from the main road R 386 on 12 September 2016.
- Hardcopies of the Scoping Report were made available at the Prieska municipal building and the Prieska public library for public viewing on 12 September 2016.
- A hardcopy was hand delivered at the offices of the competent authority on 12 September 2016.
- A hardcopy was also sent to the Department of Water Affairs.

All stakeholders and I & AP's were adequately notified of the Public Participation Processes taking place as well as the availability of the relevant documents for comment as per Regulation 41 of the EIA Regulations, 2014.

An I & AP's register containing the names and contact details of all relevant stakeholders and I & AP's was established and was submitted to the competent authority along with the Final Scoping Report as per Regulation 42 of the EIA Regulations, 2014 (see Appendix C).

All proof of notifications, I & AP registrations as well as comments received and responses provided during the PPP were incorporated into a Public Participation Report which is available in Appendix C.

The Scoping Report was accepted by the competent authority on 7 November 2016.

8.1.1 Comments received and responses provided during the Scoping phase

All comments received from the stakeholders and I & AP's during the Scoping phase together with the subsequent responses provided were incorporated into the initial Public Participation Report which was submitted to the competent authority along with the Final Scoping Report.

See table below providing the summary of all comments and responses during the Scoping phase:

Table 18: Summary of all comments and responses received during the Scoping Report PPP

Commenting party	Comment received	Response provided
1. Department of Agriculture, Forestry and Fisheries	<p>See proof of comment letter under number 1 below.</p> <p>2.1. It is recommended that comments be obtained from Nature Conservation.</p> <p>2.2. Provide an indication of the condition of the riparian vegetation at the water extraction point in the Orange River.</p> <p>2.3. The Department supports the recommendations that <i>Boscia albitrunca</i> individuals identified on site be left intact as far as possible but where it cannot be avoided and NFA license and Floral Permit must be applied for and obtained prior to disturbance.</p>	<p>2.1. A notification of the PPP on the project was sent to the Northern Cape Department of Environment and Nature Conservation on 11 September 2016 and a follow up reminder email requesting comment was sent on 28 September 2016.</p> <p>2.2. The riparian vegetation at the water extraction point has been discussed in the Final Scoping Report.</p> <p>2.3. Certain individuals of the protected species <i>Boscia albitrunca</i> will be left intact and conserved while a number of individuals will have to be removed due to operational requirements of the proposed project. Permits will be obtained for the individuals to be removed.</p>
2. South African Heritage Resources Agency (SAHRA)	<p>Comments from SAHRA were received on 11 October 2016. The final recommendations were as follow:</p>	<p>The following response was sent via email on 11 October 2016:</p> <p>Thanks a lot. I will review and get back to you if there are any question/uncertainties.</p>

	<p>The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit accepts and promotes the recommendations in the HIA. The recommendations in the HIA and the following additional conditions must be included in the Final EIA and Environmental Management Programme (EMPr):</p> <ul style="list-style-type: none"> • The final EIA and all appendices must be submitted to SAHRA and uploaded to the case file; • If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Itumeleng Masiteng/Mimi Seetelo 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be 	<p>Regards</p>
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	<p>contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required;</p> <ul style="list-style-type: none"> • Should the proposed development be granted an Environmental Authorisation, SAHRA must be informed and the decision letter must be uploaded to the case file. 	
<p>No further comments were received during the Public Participation Period.</p>		

See Appendix C for the Public Participation Report.

8.2 ENVIRONMENTAL IMPACT ASSESSMENT PHASE

The PPP on the Environmental Impact Report commenced on 11 November 2016 and concluded on 12 December 2016. A 30 day period was therefore afforded for comment on this document.

- The competent authority, identified stakeholders and registered I & AP's were notified of the commencement of the second PPP on the draft Environmental Impact Report and EMPr via email on 10 November 2016.
- Written notices were placed at the proposed project farm entries as well as the Prieska municipal building, public library and post office on 11 November 2016.
- A hardcopy was delivered to the competent authority on 10 November 2016 for comment.
- A digital CD copy of both the Final Scoping Report and Environmental Impact Report was provided to the Department of Water and Sanitation during the WULA pre-application meeting conducted on 24 November 2016.

- A second email was sent to the competent authority, identified stakeholders and registered I & AP's on 27 November 2016 to remind them of the closing of the PPP on the draft Environmental Impact Report and EMPr 12 December 2016.

After the completion of the PPP, the comments received and responses provided were incorporated into a Final PPP Report and submitted along with the Final Environmental Impact Report and EMPr to the competent authority for final decision making on environmental authorisation

See Appendix C for the Public Participation Report.

- The competent authority (Northern Cape Department of Environment and Nature Conservation) will now approve or reject the environmental authorisation application within a period of 107 days after receipt of the submitted Final Environmental Impact Report and EMPr and provide feedback to the applicant on their decision.

8.2.1 Comments received and responses provided during the Scoping phase

All comments received from the stakeholders and I & AP's during the EIA phase together with the subsequent responses provided were incorporated into the Final Public Participation Report which is submitted to the competent authority along with the Final EIA Report.

See table below providing the summary of all comments and responses during the EIA phase:

Table 19: Summary of comments received and responses provided

Commenting party	Comment received	Response provided
1. Department of Water and Sanitation	See the pre-application consulting form in Appendix C.	See the pre-application consulting form in Appendix C.
2. South African Heritage Resources Agency (SAHRA)	The South African Heritage Resources Agency (SAHRA) notes the submission of the Draft Environmental Impact Assessment (EIA) and appendices for the proposed cultivation of 100 ha for the establishment of a vineyard and associated pipeline on Portion 10 & 11 of the farm De Eelt, near	Thank you very much Natasha. This final SAHRA comments document will also be included into the Final EAI Report for consideration by the competent authority. Regards

	<p>Prieska, Northern Cape Province.</p> <p>It is further noted that the Final Comment issued by SAHRA on the 11/10/2016 has been incorporated into the dEIA.</p> <p>As per the Final Comment, the Final EIA and appendices must be submitted to the case application on the South African Heritage Resources Information System (SAHRIS) upon submission to the Department of Environmental Affairs (DEA). Should the Environmental Authorisation for the development be granted, SAHRA must be notified and the relevant documents uploaded to the case file on SAHRIS.</p>	
<p>No further comments were received during the Public Participation Period.</p>		

See Appendix C for the Public Participation Report.

8.3 CONCLUSION

- It is concluded that the level and time period of advertising, notification and additional mechanisms and communication incorporated into this Public Participation Process on both the Scoping Report and Environmental Impact Report, to inform surrounding land users, stakeholders, I & AP's and identified organs of state, was adequate for providing sufficient opportunity for participation and engagement.
- No significant comments were received opposing the project or which would potentially jeopardise the authorisation. All comments received were adequately addressed and queries could be mitigated to within acceptable levels.

9. ENVIRONMENTAL IMPACT ASSESSMENT

The following section identifies the potential environmental impacts (both positive and negative) which the construction as well as operational phases of 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.

9.1 METHODOLOGY FOR IMPACT ASSESSMENT AND RISK RATING

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 20: 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	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.
	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.
	Low: The activity is localised and might have a negligible cumulative impact.
	None: No cumulative impact on the environment.

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 21: 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.

9.2 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 during the Scoping phase.

9.2.1 Construction Phase

The potential environmental impacts associated with the construction phase of the proposed development.

9.2.1.1 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 (AZa 4). 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 (NKu 3) 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.

The 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 impedes the local surface water catchment area reaching 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.

Although complete transformation of the natural vegetation type takes place during cultivation processes, this is mostly confined to within the vicinity of the Orange River. The relevant vegetation type is large and

still well represented in the area. The cumulative impact of destruction through cultivation activities is therefore only regarded to be medium.

9.2.1.2 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* (Shepherd's tree/witgat) is present on the proposed project area. A total of 18 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 in order to ensure that no restricted activity is unlawfully carried out on these individuals.
- It is however recommended that the project rather attempts to keep and protect some of the individual trees on site. The applicant will apply for a removal permit for approximately 7 individuals which will have to be removed due to operational requirements of the project. The remaining 11 individuals will be left in situ and conserved. This will however only be finalised during the EIA phase. 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. It can be a physical or hypothetical buffer.
- The applicant will also procure a significant number of *Boscia albitrunca* saplings which will be planted along the boundary fence of the vineyard as part of mitigation measures for the removal of other individuals.

The adequate conservation and relocation of relevant nationally and provincially protected species during the proposed project will ensure that the cumulative impact associated with agricultural developments in the area will be of low significance. The majority of the surrounding areas are still under natural veld conditions and very few protected tree species individuals are removed. Permits are required for the removal of any protected individuals and this process is well and closely managed/governed by the relevant national and provincial departments. The cumulative impact of removal after implementation of mitigation measures is therefore regarded as low.

9.2.1.3 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.

As per the previous impact discussion, the majority of the surrounding areas are still under natural veld conditions and very few protected species individuals are removed. Permits are required for the removal of any protected individuals and this process is well and closely managed by the relevant provincial department. The cumulative impact of removal is therefore regarded as low.

9.2.1.4 Alien and invasive species establishment

The disturbance and transformation of the area by the cultivation processes will result in the increased establishment and potential spreading of undesired alien and invasive species.

Mitigation measures to reduce potential impacts:

- Continual monitoring and adequate active management (chemical or physical removal) of undesired alien and invasive species must take place during the construction phase in order to prevent significant establishment and spreading.

9.2.1.5 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 impedes the local surface water catchment area from reaching the Orange River. The cultivation of the proposed project area would therefore not add significant negative impact to the local surface 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.

The majority of other cultivated areas are in close proximity to the Orange River for water and irrigation purposes. This results in a cumulative impediment of the local surface water catchment areas from higher laying areas downwards towards the river. The cumulative impact of the project on impeding of the surface water catchment is regarded as medium.

9.2.1.6 Dust generation and emissions

Increased vehicle and machine activity will result in a significant increase in dust emissions into the surrounding environment. This could have a negative impact on adjacent farmers and the road as excessive dust fallout could result in negative ecological effects on fauna and flora and/or potential health implications. If managed correctly the cumulative impact of vehicles on dust generation can be limited to low.

Mitigation measures to reduce potential impacts:

- Dust Management measures must be implemented specifically during the construction phase in order to manage and minimize undesired dust emissions.

There is not a significant amount of new cultivation developments taking place in the area and the cumulative impact of dust generation is therefore regarded as low.

9.2.1.7 Damage or destruction of archaeological and palaeontological heritage

A relatively low density of weathered stone tools was recorded as isolated surface occurrences, but no above-ground evidence was found of fossils, fossil exposures or in situ Stone Age archaeological sites. There are also no indications of rock art, prehistoric structures, graves or historically significant structures older than 60 years within the proposed development footprint. The area therefore poses no archaeological and palaeontological significance or value.

Mitigation measures to reduce potential impacts:

- Restrict all cultivation work to the proposed project footprint as this was the only area assessed during the site inspection.
- If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Itumeleng Masiteng/Mimi Seetelo 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly

discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required.

Due to the low archaeological and palaeontological significance/value of the area and the low potential of the majority of the surrounding area, the cumulative impact is regarded as low.

9.2.1.8 Job creation and capacity building (skills, experience and resources development)

The proposed project will result in the creation of a significant amount of employment opportunities during both the construction and operational phases. This will provide a financial advantage/benefit to members of the local community and is therefore seen as a positive localised socio-economic impact associated with the project

Mitigation measures to reduce potential impacts:

- Ensure that the principle of local employment is applied as far as possible during the project.

Small scale agricultural job creation in the area contributes to the alleviation of unemployment in the local municipal area and the cumulative positive impact is therefore regarded as medium positive.

9.2.2 Operational Phase

The potential environmental impacts associated with the operational phase of the proposed development.

9.2.2.1 Continued destruction/transformation of a Critical Biodiversity Area due to initial construction phase

The initial impact as per the construction phase will continue.

Mitigation measures to reduce potential impacts:

- Ensure no unnecessary expansion of the project footprint occurs.

The same medium cumulative impact as per the construction phase applies.

9.2.2.2 Continued destruction/damage to nationally protected tree species individuals

Activities during the operational phase could still cause harm to individuals of the protected tree species *Boscia albitrunca* (Shepherd's tree/witgat) which are intended to be preserved on site if their protection is not managed.

Mitigation measures to reduce potential impacts:

- Once the protected individuals identified for preservation have been adequately buffered, it is important that the buffer be sufficiently maintained on a continual basis to ensure its integrity and functionality. It can be a physical or hypothetical buffer.
- Complete a training and awareness intervention with the employees and any new/additional employees in order to inform them of the protected tree individuals as well as the reasoning behind the protection.

The same low cumulative impact as per the construction phase applies.

9.2.2.3 Continued destruction/damage to provincially protected species individuals

Once all identified provincially protected species individuals have been adequately relocated the project will not have an impact on them anymore.

Mitigation measures to reduce potential impacts:

- Ensure all identified provincially protected species individuals are suitably relocated with the assistance of a specialist prior to the commencement of any cultivation.

The same low cumulative impact as per the construction phase applies.

9.2.2.4 Continued impeding of a water catchment

The initial impact as per the construction phase will continue.

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.

The same medium cumulative impact as per the construction phase applies.

9.2.2.5 Soil erosion

Although the topography of the area is relatively flat, the potential for loss of soil due to erosion is present due to the removal of natural vegetation and alteration of the landscape during the construction phase. This must be continually monitored and managed.

Mitigation measures to reduce potential impacts:

- Ensure adequate erosion control measures are implemented to reduce the risk of soil erosion during the operational phase.

The cumulative impact of this development is expected to be low due to the relatively flat topography of the larger area. This makes the larger area less prone to erosion.

9.2.2.6 Continued dust generation and emissions

The generation of dust will be considerably reduced once the vineyard has been established and continual irrigation commences. The generation of undesired dust will therefore be minimized.

Mitigation measures to reduce potential impacts:

- Continued Dust Management measures must be implemented in order to manage and minimize undesired dust emissions.

The same low cumulative impact as per the construction phase applies.

9.2.2.7 Continued damage or destruction of archaeological and palaeontological heritage

As per the construction phase the area poses no archaeological and palaeontological significance or value.

Mitigation measures to reduce potential impacts:

- Restrict all cultivation work to the proposed project footprint as this was the only area assessed during the site inspection.
- If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Itumeleng Masiteng/Mimi Seetelo 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required.

The same low cumulative impact as per the construction phase applies.

9.2.2.8 Continued job creation and capacity building (skills, experience and resources development)

Permanent job creation during the operational phase will be considerably lower than for the initial construction phase. It will however still provide a positive economic input/financial benefit into the local community and is therefore seen as a positive localised socio-economic impact associated with the project.

Mitigation measures to reduce potential impacts:

- Ensure that the principle of local employment is applied as far as possible during the project.

Small scale agricultural job creation in the area contributes to the alleviation of unemployment in the local municipal area and the cumulative positive impact is therefore regarded as medium positive.

9.3 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.

9.3.1 Construction Phase

Table 22: Environmental Risk and Significance Ratings for the Construction Phase

	Vineyard together with the preferred pipeline and water settling dam	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	<p>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.</p> <p>Restrict all cultivation work to the proposed project footprint and prevent any unnecessary increase of</p>	-

	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 (70)	-
	Vineyard together with the preferred pipeline and water settling dam	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)	-
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 in order to ensure that no restricted activity is unlawfully carried out on these individuals.</p> <p>It is however recommended that the project rather</p>	-

	<p>attempts to keep and protect some of the individual trees on site. The applicant will apply for a removal permit for approximately 7 individuals which will have to be removed due to operational requirements of the project. The remaining 11 individuals will be left in situ and conserved. This will however only be finalised during the EIA phase. 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. It can be a physical or hypothetical buffer.</p> <p>The applicant will also procure a significant number of <i>Boscia albitrunca</i> saplings which will be planted along the boundary fence of the vineyard as part of mitigation measures for the removal of other individuals.</p>	
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (34)	-
	Vineyard together with the preferred pipeline and water settling dam	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.	-																					
Cumulative impact post mitigation:	Low	-																					
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (32)	-																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;"></th> <th style="width: 45%; text-align: center;">Vineyard together with the preferred pipeline and water settling dam</th> <th style="width: 30%; text-align: center;">No-Go Alternative</th> </tr> </thead> <tbody> <tr> <td>Identified Environmental Impacts</td> <td>Alien and Invasive species establishment</td> <td>The proposed development will not take place and as such this impact will not occur</td> </tr> <tr> <td>Magnitude of Impact</td> <td>4 (low)</td> <td>-</td> </tr> <tr> <td>Duration of impact:</td> <td>2 (short term)</td> <td>-</td> </tr> <tr> <td>Extent of the impact</td> <td>2 (local)</td> <td>-</td> </tr> <tr> <td>Degree to which local resources are irreplaceable</td> <td>2 (low)</td> <td>-</td> </tr> <tr> <td>Degree to which the impact can be reversed:</td> <td>2 (high)</td> <td>-</td> </tr> </tbody> </table>				Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative	Identified Environmental Impacts	Alien and Invasive species establishment	The proposed development will not take place and as such this impact will not occur	Magnitude of Impact	4 (low)	-	Duration of impact:	2 (short term)	-	Extent of the impact	2 (local)	-	Degree to which local resources are irreplaceable	2 (low)	-	Degree to which the impact can be reversed:	2 (high)	-
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative																					
Identified Environmental Impacts	Alien and Invasive species establishment	The proposed development will not take place and as such this impact will not occur																					
Magnitude of Impact	4 (low)	-																					
Duration of impact:	2 (short term)	-																					
Extent of the impact	2 (local)	-																					
Degree to which local resources are irreplaceable	2 (low)	-																					
Degree to which the impact can be reversed:	2 (high)	-																					

Probability of occurrence:	3 (moderate)	-																											
Cumulative impact prior to mitigation:	Low	-																											
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (36)	-																											
Proposed mitigation:	Continual monitoring and adequate active management (chemical or physical removal) of undesired alien and invasive species must take place during the construction phase in order to prevent significant establishment and spreading.	-																											
Cumulative impact post mitigation:	Low	-																											
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (24)	-																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;"></th> <th style="width: 45%; text-align: center;">Vineyard together with the preferred pipeline and water settling dam</th> <th style="width: 30%; text-align: center;">No-Go Alternative</th> </tr> </thead> <tbody> <tr> <td>Identified Environmental Impacts</td> <td>Impeding a water catchment</td> <td>The proposed development will not take place and as such this impact will not occur</td> </tr> <tr> <td>Magnitude of Impact</td> <td>Low (4)</td> <td>-</td> </tr> <tr> <td>Duration of impact:</td> <td>Permanent (5)</td> <td>-</td> </tr> <tr> <td>Extent of the impact</td> <td>Local (2)</td> <td>-</td> </tr> <tr> <td>Degree to which local resources are irreplaceable</td> <td>Low (2)</td> <td>-</td> </tr> <tr> <td>Degree to which the impact can be reversed:</td> <td>Low (4)</td> <td>-</td> </tr> <tr> <td>Probability of occurrence:</td> <td>Medium probability (3)</td> <td>-</td> </tr> <tr> <td>Cumulative impact prior to</td> <td>Medium</td> <td>-</td> </tr> </tbody> </table>				Vineyard together with the preferred pipeline and water settling dam	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	Medium	-
	Vineyard together with the preferred pipeline and water settling dam	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	Medium	-																											

mitigation:																																
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)	-																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 35%; text-align: center;">Vineyard together with the preferred pipeline and water settling dam</th> <th style="width: 35%; text-align: center;">No-Go Alternative</th> </tr> </thead> <tbody> <tr> <td>Identified Environmental Impacts</td> <td>Dust generation and emissions</td> <td>The proposed development will not take place and as such this impact will not occur</td> </tr> <tr> <td>Magnitude of Impact</td> <td>Very low (2)</td> <td>-</td> </tr> <tr> <td>Duration of impact:</td> <td>Medium term (3)</td> <td>-</td> </tr> <tr> <td>Extent of the impact</td> <td>Local (2)</td> <td>-</td> </tr> <tr> <td>Degree to which local resources are irreplaceable</td> <td>Low (2)</td> <td>-</td> </tr> <tr> <td>Degree to which the impact can be reversed:</td> <td>High (2)</td> <td>-</td> </tr> <tr> <td>Probability of occurrence:</td> <td>Medium probability (3)</td> <td>-</td> </tr> <tr> <td>Cumulative impact prior to mitigation:</td> <td>Low</td> <td>-</td> </tr> <tr> <td>Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)</td> <td>Low (33)</td> <td>-</td> </tr> </tbody> </table>				Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative	Identified Environmental Impacts	Dust generation and emissions	The proposed development will not take place and as such this impact will not occur	Magnitude of Impact	Very low (2)	-	Duration of impact:	Medium term (3)	-	Extent of the impact	Local (2)	-	Degree to which local resources are irreplaceable	Low (2)	-	Degree to which the impact can be reversed:	High (2)	-	Probability of occurrence:	Medium probability (3)	-	Cumulative impact prior to mitigation:	Low	-	Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (33)	-
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Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (33)	-																														

High, or Very-High)		
Proposed mitigation:	Dust Management measures must be implemented specifically during the construction phase in order to manage and minimize undesired dust emissions.	-
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (16)	-
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Damage or destruction of archaeological and palaeontological heritage	The proposed development will not take place and as such this impact will not occur
Magnitude of Impact	Very low (2)	-
Duration of impact:	Medium term (3)	-
Extent of the impact	Site specific (1)	-
Degree to which local resources are irreplaceable	Very low (1)	-
Degree to which the impact can be reversed:	High (2)	-
Probability of occurrence:	Medium probability (3)	-
Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (27)	-
Proposed mitigation:	Restrict all cultivation work to the proposed project footprint as this was the only area assessed during the site inspection.	-

	<p>If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Itumeleng Masiteng/Mimi Seetelo 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required.</p>	
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (18)	-
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Job creation and capacity building (skills, experience and resources development)	The proposed development will not take place and as such this impact will not occur
Magnitude of Impact	High (8)	-
Duration of impact:	Medium term (3)	-
Extent of the impact	Regional (3)	-
Degree to which local resources are irreplaceable	None (0)	-
Degree to which the impact can be reversed:	0	-

Probability of occurrence:	High probability (4)	-
Cumulative impact prior to mitigation:	Positive	-
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive (+ 56)	-
Proposed mitigation:	None	-
Cumulative impact post mitigation:	Positive	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive (+ 56)	-

9.3.2 Operational Phase

Table 23: Environmental Risk and Significance Ratings for the Operational Phase

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued 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:	Ensure no unnecessary expansion of the project footprint occurs.	
Cumulative impact post mitigation:	Medium	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (70)	-

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued 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)	-
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>Once the protected individuals identified for preservation have been adequately buffered, it is important that the buffer be sufficiently maintained on a continual basis to ensure its integrity and functionality. It can be a physical or hypothetical buffer.</p> <p>Complete a training and awareness intervention with the employees and any new/additional employees in order to inform them of the protected tree individuals as well as the reasoning behind the protection.</p>	-
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation	Low (34)	-

(Low, Medium, Medium-High, High, or Very-High)		
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued 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:	Ensure all identified provincially protected species individuals are suitably relocated with the assistance of a specialist prior to the commencement of any cultivation.	-
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (32)	-

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued impeding of 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)	-

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Soil erosion	The proposed development will not take place and as such this impact will not occur
Magnitude of Impact	Low (4)	-
Duration of impact:	Medium term (3)	-
Extent of the impact	Site specific (1)	-
Degree to which local resources are irreplaceable	Low (2)	-
Degree to which the impact can be reversed:	Moderate (3)	-
Probability of occurrence:	Medium probability (3)	-
Cumulative impact prior to mitigation:	Low	-
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (39)	-
Proposed mitigation:	Ensure adequate erosion control measures are implemented to reduce the risk of soil erosion during the operational phase.	-
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (33)	-

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued dust generation and emissions	The proposed development will not take place and as such this impact will not occur
Magnitude of Impact	Very low (2)	-
Duration of impact:	Medium term (3)	-
Extent of the impact	Local (2)	-
Degree to which local resources are irreplaceable	Low (2)	-
Degree to which the impact can be reversed:	High (2)	-
Probability of occurrence:	Medium probability (3)	-
Cumulative impact prior to mitigation:	Low	-
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (33)	-
Proposed mitigation:	Continued Dust Management measures must be implemented in order to manage and minimize undesired dust emissions.	-
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (16)	-

	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued damage or destruction of archaeological and palaeontological heritage	The proposed development will not take place and as such this impact will not occur
Magnitude of Impact	Very low (2)	-
Duration of impact:	Medium term (3)	-
Extent of the impact	Site specific (1)	-
Degree to which local resources are irreplaceable	Very low (1)	-
Degree to which the impact can be reversed:	High (2)	-
Probability of occurrence:	Medium probability (3)	-
Cumulative impact prior to mitigation:	Low	-
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (27)	-
Proposed mitigation:	<p>Restrict all cultivation work to the proposed project footprint as this was the only area assessed during the site inspection.</p> <p>If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/John Gribble 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Itumeleng Masiteng/Mimi Seetelo 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as</p>	-

	possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required.	
Cumulative impact post mitigation:	Low	-
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (18)	-
	Vineyard together with the preferred pipeline and water settling dam	No-Go Alternative
Identified Environmental Impacts	Continued job creation and capacity building (skills, experience and resources development)	The proposed development will not take place and as such this impact will not occur
Magnitude of Impact	High (8)	-
Duration of impact:	Medium term (3)	-
Extent of the impact	Regional (3)	-
Degree to which local resources are irreplaceable	None (0)	-
Degree to which the impact can be reversed:	0	-
Probability of occurrence:	High probability (4)	-
Cumulative impact prior to mitigation:	Positive	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive (+ 56)	-
Proposed mitigation:	None	-
Cumulative impact post mitigation:	Positive	-

Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive (+ 56)	-
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9.4 CUMULATIVE IMPACTS

There are various cultivated areas in the vicinity, specifically directly adjacent or in close proximity to the Orange River for water and irrigation purposes. The majority of the area is however still under natural veld conditions rendering the cumulative impacts of the project less significant. The identified impacts together with their cumulative effects have been discussed under heading 9.2.

The cumulative effects of most of the identified impacts are regarded as low - medium. The only impacts which could potentially cumulatively contribute to more significant combined effects are the transformation of the relevant vegetation type and CBA as well as the impeding of the local surface water catchment areas to the Orange River.

Although the area is classified as a CBA 1, the ground truthing indicated that it rather falls inside the adjacently located CBA 2. The CBA 2 is mainly based on the vegetation type present and this vegetation type is classified as least threatened. The cumulative impact of transformation of the vegetation type along with other cultivation developments in the area is therefore only regarded as medium also due to the vast size of the vegetation type.

The cumulative impact of impeding of the local surface water catchment areas to the Orange River along with other cultivation developments in the area is also regarded as having a medium level effect.

The cumulative impacts have been rated by the specialists and included in the descriptions and risk rating tables present under headings 9.2 and 9.3.

Terrestrial and Wetland Ecology

This project will not result in any significant cumulative impacts (low - medium) as the vegetation type is classified as least threatened and nationally and provincially protected species will be preserved and/or relocated as far as possible. The potential effects of dust and/or erosion will be managed in order to reduce the associated impacts.

Heritage

Due to the low archaeological and palaeontological significance/value of the area and the low potential of the majority of the surrounding area, the cumulative impact is regarded as low.

Socio-Economic description

The proposed project, along with other agricultural developments in the area, will cumulatively contribute to reduction in poverty and unemployment figures in the local community and municipal area by means of job creation and skills and experience development and transfer.

Conclusion

The potential cumulative impacts of this proposed vineyard development have been adequately assessed and no fatal flaws or unacceptable environmental impacts have been identified due to the cumulative effects in combination with other similar developments in the region which cannot be acceptably mitigated.

9.5 PREFERRED ALTERNATIVE CONCLUDING STATEMENT

In identifying, evaluating and comparing impacts associated with the proposed vineyard establishment and considered alternatives as well as financial and logistic feasibility, it has been concluded that the preferred pipeline route and water settling dam location can be utilised for the proposed project. The positions of the vineyard, pipeline route and water settling dam do not pose significant environmental risk which warrants refusal of the authorisation and will not result in any unacceptable environmental impacts which cannot be adequately mitigated to within acceptable levels.

10. ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE

The processes of investigation which have led to the production of this report, harbours several **assumptions**, which include the following:

- All information provided by the applicant and his/her assistants to the environmental team was correct and valid at the time that it was provided;
- Strategic level investigations undertaken by the agricultural specialist upon instruction from the applicant prior to the commencement of the EIA process, determined that the development site represents a potentially suitable and technically acceptable location;
- The public received a fair and sufficient opportunity to participate in the Scoping process, through the provision of adequate public participation timeframes stipulated in the Regulations;
- The need and desirability was based on strategic national, provincial and local plans and policies which reflect the interests of both statutory and public viewpoints;
- The information provided by specialists is accurate and unbiased;
- The Scoping and EIA process is a project-level framework and is limited to assessing the anticipated environmental impacts associated with the construction and operational phases of the proposed facility
- Strategic level decision making is conducted through cooperative governance principles with the consideration of sustainable and responsible development principles underpinning all decision making.

Given that an EIA involves prediction, **uncertainty** forms an integral part of the process. Two types of uncertainty are associated with the EIA process, namely process-related and prediction-related.

- Uncertainty of prediction is critical at the data collection phase as final certainty will only be obtained upon implementation of the proposed development. Adequate research, experience and expertise may minimise this uncertainty;
- Uncertainty of values depicts the approach assumed during the Scoping and EIA process, while final certainty will be determined at the time of decision making. Enhanced communication and widespread/comprehensive coordination can lower uncertainty;
- Uncertainty of related decision relates to the interpretation and decision making aspect of the EIA process, which shall be appeased once monitoring of the project phases is undertaken.

The significance/importance of widespread/comprehensive consultation towards minimising the risk/possibility of omitting significant impacts is further stressed. The use of quantitative impact significance

rating formulas (as utilised in this document) can further standardise the interpretation of results and limit the occurrence and scale of uncertainty.

Gaps in knowledge can be attributed to:

The EIA process is being undertaken prior to the availing of certain technical information which would be derived from the final project design and layout. As such, technical aspects included herein are mainly derived through personal communication with the applicant and the project manager. The technical information will however pose no additional or higher threats of impact.

The potential impacts of the cultivation induced soil hydrology and fertility changes on the protected species individuals which are not removed from site is also uncertain to a degree. It is envisaged that an adequate buffer should minimise the risk of such changes potentially impacting on the longevity of these protected individuals.

The principle of human nature also provides for uncertainties with regards to the identified socio-economic impacts of the proposed development.

Enviroworks is an independent environmental consulting firm and as such, all processes and attributes of the EIA are addressed in a fair and objective manner. It is believed that through the running of a transparent and participatory process, risks associated with assumptions, uncertainties and gaps in knowledge can be and have been acceptably reduced.

11. PROFESSIONAL OPINION OF THE EAP AND ENVIRONMENTAL IMPACT STATEMENT

11.1 PROFESSIONAL OPINION OF THE EAP

After careful consideration of the findings and outcomes during the EIA phase, Enviroworks is of the opinion that the development of the proposed vineyard along with the associated pipeline and water settling dam can be undertaken without unacceptable or unmanageably significant negative impacts or fatal flaws on the environment, should the prescribed mitigation measures be adequately implemented. Based on all information that was captured in this report, the proposed development will not lead to unacceptable impacts or fatal flaws and should be considered plausible in the framework of NEMA. The majority of the anticipated impacts have low to medium ratings while the impacts determined to have medium-high to high ratings can be suitably reduced to acceptable levels by the implementation of the mitigation measures identified and recommended by the specialists.

The socio-economic benefits of the proposed project towards the local communities far outweigh the current socio-economic and agricultural potential of the property. These benefits also outweigh the significance of identified potential environmental impacts after mitigation implementation.

An Environmental Control Officer (ECO) must be appointed by the applicant/developer to actively assist and undertake environmental compliance audits to ensure that the construction phase of the development is acceptably implemented in an environmentally responsible and sustainable manner in accordance with the recommendations of the EMPr. The ECO must also ensure compliance with the conditions of approval in the EA to be issued by the competent authority.

The results of the appointed ECO's audits should be used to inform an Environmental Close-out Audit Report, which should be submitted to the competent authority at the end of the construction phase.

11.2 ENVIRONMENTAL IMPACT STATEMENT

The key findings of the Scoping phase can be summarised as follows:

The Receiving Environment

The surrounding area is mainly characterised by farming activities and natural veld. Although the proposed project area is of ecological significance due to the presence of nationally and provincially protected species, the potential impacts can be successfully mitigated to acceptable levels through relocation and buffer activities. The proposed project area is currently regarded as being of little economic or heritage

significance/value according to the results of the various specialist reports. The proposed project also poses significant potential local socio-economic benefits which will outweigh the potential negative impacts.

Public Participation

To support public interest and inform the Scoping & EIA process, a continual public consultation process occurred throughout the duration of the assessment processes. A diverse mix of authorities, stakeholders and I & AP's was consulted during this time, representing the environment, social, economic and political sectors of local, regional and provincial bodies.

Comments were responded to during the various stages of the public participation process in the Scoping & EIA phases and were formally addressed in project reports. It is considered that through the public participation conducted by the EAP, all relevant parties have had adequate opportunity to partake in this process and express opinions and concerns. All relevant concerns were adequately addressed in a PPP Report to ensure that parties are in agreement with the proposed project.

12. CONCLUSION

This EIA process has adequately assessed the potential impacts associated with the proposed vineyard development and determined based on the outcomes of a multitude of contributing information that the proposed development would not result in any unacceptable environmental impacts or fatal flaws and as such may be authorised.

The project phase within which this report falls is the Final Environmental Impact Report, which was coupled with it a 30 day PPP comment period. All stakeholders and registered I & AP's were informed of the commencement of the PPP via email. Site notices were put up at the various farm entrances and Siyathemba Municipal offices and Prieska public library and post office. Hardcopies of the report were made available at the Siyathemba Municipal offices and Prieska public library.

This report is available on the following website link to download:
<http://www.enviroworks.co.za/projectdownloads.php> under the name De Eelt no 26, 100 ha vineyard FEIR.

All comments received during the PPP were responded to and addressed in the Final PPP Report. Upon receipt of the Final EIA Report, the competent authority will review the report and its appendices and do one of the following:

- Accept the report and provide an Environmental Authorisation;
- Inform the applicant that the report is being sent for specialist review;
- Request for amendments to be made to the report; or
- Reject the report, should it not materially comply with regulations.

On the issuing of the decision by the competent authority, all I & AP's will be notified of the decision and be afforded the opportunity to appeal against the decision if desired. The EAP will communicate the decision and appeals process through to I & AP's within 14 days of the receipt of the decision from competent authority.

13. REFERENCES

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